LIST OF ABBRIVIATIONS

CO2	Carbon Dioxide
°C	Degree Celsius
dB(A)	Decibel (Unit of Noise)
IEE	Initial Environmental Examination
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EP&CC	Environmental Protection and Climate Change Department
HSE	Health, Safety & Environment
m3/h	Cubic meter per hour
NOC	No Objection Certificate
NOx	Oxides of Nitrogen
PM	Particulate Matter
IPA	Iso Propyl Alcohol
PPEs	Personal Protective Equipment
PEPA 1997	Punjab Environmental Protection Act 1997
SOPs	Standard Operating Procedures
SOx	Oxides of Sulfur
Xyl	Xylene
Ace	Acetone

EXECUTIVE SUMMARY

The project is "Installation of Chemicals Storage Facility" at Plot No.537, Chunian Bypass Road, Raiwind, District Lahore. The project is planned for the storage of xylene and other chemicals. These chemicals are mainly used by pesticide manufacturing factories. The present site is open land and management of the project will start construction phase activities after obtaining environmental approval from EPA under section 12 of PEPA 1997. The salient features of the project are as under:

Sr. No	Salient Features	
i.	Title of Project	Installation of Chemicals Storage Facility by Tara Imperial Industrie (Pvt) Ltd, Chunian Bypass Road, Raiwind, District Lahore.
ii.	Location of Project	Plot No.537, Chunian Bypass Road, Raiwind, District Lahore"
iii.	Nature of Project	The project is simple one. It involves installation of Tanks for storage of different Chemicals. The project proponent will take the desired amount/ quantity of chemicals from these storage Tanks as and when required.
iv.	Coordinates	Latitude: 70°2248.46 Longitude: 32° 3845.25
v.	Name of Project Proponent	Dr. Khalid Hameed
vi.	Name of Organization/ Environment Consultant	Environment Division of Tti Testing Laboratories, Kot Lakhpat, Lahore
Brief Outline of Project		
i	Area of project	4 Kanals
ii	Nature of Area	The site selected for the project is the premises of existing Industrial Unit I.e. Pesticides Manufacturing Unit of M/S Tara Imperial Industries (Pvt) Ltd. The project area does not exist in the environmentally sensitive and prohibited areas.
iii	Quantity of Wastewater	The project is not likely to generate any kind of Wastewater.

iv	Quantity of Gaseous Emissions	The project will not generate any kind of air emissions as there is no any kind of industrial activity involving boiler operations.
v	Environmental Impacts anticipated during Construction Phase of Project	The anticipated impacts during construction phase may include dust, noise, vehicle emissions, workers' safety and employment issues. Chapter 4 of the EIA Report describes all possible environmental impacts and mitigation measures.
	Environmental Impacts Anticipated During Operation Phase of the Project	The operations/processes of this project are not likely to generate any kind of gaseous emissions or process wastewater. Hence no any kind of adverse environmental impacts are expected during operational phase of project.
	Mitigation Measures	Environmental impacts during the construction phase may include noise, dust, solid waste and workers' safety. Mitigation measures have been included in Chapter 4 of the EIA report. There is no any kind of effects on the nearby human settlements. Construction-related noise will be mitigated by regular servicing and tuning of the machinery and vehicles. Dust (the only significant air emission) will be controlled by water sprinkling and covering the construction material. The use of adequate PPEs and adherence to the SOPs will ensure the safety of the workers. The contractor will hire local labor for construction work to avoid employment conflicts.
	Proposed Monitoring	The plan of Environmental Monitoring has been prepared and made the part of EIA Report.

Table of Contents

List of Table

CHAPTER NO.1

INTRODUCTION

CHAPTER 1: INTRODUCTION

The Project Proponent has planned the installation of a Chemicals Storage Facility and this document is the Environmental Impacts Assessment (EIA) of said Project. The main objective of the study is to keep the project in compliance with prevailing Environmental Laws, Rules, and Regulations. The report indicates potential environmental impacts of the project and suggests mitigation measures to enhance the environmental performance of the proposed project. The report is comprehensive and presents the Environmental Assessment of the project during its construction and operational phase along with a monitoring framework to keep the project in compliance with Environmental Laws and Punjab Environmental Quality Standard (PEQS).

1.1 The Main Purpose and Objectives of EIA

The main purpose of this report is to meet legal requirements prescribed in Punjab Environmental Protection Act, 1997. Section 12 of Punjab Environmental Protection Act, 1997 states as under:

"No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination (IEE) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof"

The Punjab Environmental Protection Agency (Review of IEE and EIA Regulations, 2000) provides the details regarding categories of Projects.

The following are the main objectives of EIA Report: -

i. To determine and document the state of the environment of the project area to establish environment baseline for assessing the suitability of the Project site.
ii. To identify construction and operational activities of project and assess their impacts on the environment.
iii. To assist the proponent in planning, designing, and implementing the project in a way that eliminates or minimizes the negative impacts on the biophysical and socio-economic environment and maximizes the benefits for all parties/stakeholders.

iv. To present an Environmental Mitigation and Monitoring Plan to smoothly implement the mitigation measures and supervise their efficiency and effectiveness.

v. Eliminate or minimize the negative impacts on the biophysical and socio-economic environment and maximize the benefits to all parties in cost cost-effective manner

vi. To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.

To provide an opportunity to the public to understand the project and its impacts on the community and their environment in the context of sustainable development.

1.2 Details of Environmental Consultant

The project proponent has hired the services of an Environmental Consultant i.e. M/S Tti Testing Laboratories (Environment Division) for the preparation of IEE/EIA Report and other documents of his project. A team consisting of professionals from two important disciplines i.e. Environmental Sciences and Chemistry have worked for the collection of requisite data/information, monitoring of baseline environmental conditions of the project site/area, and preparation of an Environmental Impact Assessment Report.

1.3 Environmental Consultant Services

The Environment Division of Tti Testing Laboratories consists of well-trained professionals who provide the following services as per national standards and procedures.

A. EPA NOC/ Permit

i. Initial Environmental Examination
ii. Environmental Impact Assessment
iii. Socio-Environmental Impact Assessment

B. Environmental Monitoring (Air)

i. Ambient Air Quality Monitoring
ii. Vehicular Emissions Monitoring
iii. Indoor Air Quality Monitoring
iv. Stack Emissions Monitoring

C. Environmental Monitoring (Water and Waste Water)

i. Drinking-Water Analysis
ii. Waste Water Analysis
iii. Surface Water Analysis
iv. Wastewater Flow Monitoring

D. Solid Waste Analysis

i. Chemical Analysis of Sludge
ii. Chemical Analysis of Solid Waste

E. Occupational Health & Safety

i. Noise Level Monitoring

ii. Lux Level Monitoring

iii. Dust Monitoring

iv. VOCs Monitoring

1.4 Contact Details of Environment Consultant

The Contact details of Environment Consultant are in the Table 1.1

Table 1.1 Contact details of Environment Consultant

Focal Section	Environment Division (Tti Testing Laboratories)
Address	347-S, Quaid-E-Azam Boulevard, Quaid-e-Azam Industrial Estate, Lahore
Contact Person	Nisha Lal Din (0301-8496189) Business Development Executive

1.5 Details of Project Team

The following Team of qualified professionals has conducted an environmental assessment and contributed to preparing the IEE/EIA Report of aforesaid project.

Table 1.2 Details of Project Team

Sr. No	Name	Qualification	Roles
i.	Mr. Muhammad Tahir	MSc Environmental Sciences MSc Agricultural Engineering	• Team Lead
ii.	Ms. Nisha Lal Din	MS Environmental Sciences	• Data and Documents Collection • Report Writing
iii	Ms. Aqsa Tabbasam	BS (Hons) Environmental Sciences	• Data and Documents Collection • Report Writing
iv.	Mr. Muhammad Ahsan	MSc Chemistry	• Environmental Monitoring
v.	Mr. Sibtain Farooq	BS Chemistry	• Environmental Monitoring

1.6 Brief Description of Nature, Size, and Location of Project

The project is "Installation of Chemicals Storage Facility". The size of project is average rather small one. The project site is located at Chunian Bypass Road, Raiwind, District Lahore. The project coordinates are as under as: -

Table 1.3 Coordinates of Project Site

Coordinates		
1.	North	Industrial Unit
2.	South	Industrial Unit
3.	East	Agricultural Field
4.	West	Drain

1.7 Scoping and Data Collection

All necessary information and documents relating to project have been collected and reviewed. A list of potential environmental impacts as well as social issues have been prepared. Relevant data has been compiled to develop a baseline of the project area's physical and

biological environment. Field visits to the site have been carried out. Information/ data has also been taken from secondary resources including the reports of the studies carried out earlier, published books and data, and relevant websites. With the help of these resources, a generic profile of the project area has been developed. During these field visits, information on environmental and social parameters has been gathered and made part of Report.

1.8 Environmental Impacts of Project

The Team determined the potential environmental impacts of the proposed project during the study. Subsequently, the potential environmental impacts have been characterized to determine their significance. Mitigation measures have been identified to minimize the significant environmental effects. A management framework has also been developed in the form of an EMP for the implementation of the mitigation measures identified during the study.

1.9 Structure of Report

This EIA study reviews information on existing environmental attributes of the project Area. All-important ecological features, air quality, noise, water quality, soils, social and economic aspects are included. The report predicts the expected impacts on the environment due to the said project. This EIA proposes various environmental management measures. Details of background environmental quality, environmental impacts/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided in this report.

The structure of this assessment report is as follows:

F. Introduction
G. Description of the Project
H. Description of Environment
I. Screening of Potential Environmental Impacts and Mitigation Measures
J. Stakeholders Consultations
K. Environmental Mitigation and Monitoring Plan (EMMP)
L. Conclusion and Recommendations

CHAPTER NO.2

LEGISLATIVE FRAMEWORK

Chapter 2: LEGISLATIVE FRAMEWORK

Pakistan is a signatory of multilateral Environmental Agreements and different international treaties. Pakistan has a comprehensive set of environmental legislation covering multiple environmental issues facing Pakistan like pollution of freshwater bodies, gaseous emissions from Industrial Units degradation of ambient air quality, deforestation, loss of biodiversity, lack of proper waste management, and adverse impacts of climate change. The basic policy and legislative framework along with detailed rules, regulations, and guidelines required for implementing the policies and enforcement of legislation for the protection of the environment and biodiversity are in place, in Pakistan.

2.1 Punjab Environmental Protection Act 1997

After the 18th Amendment in the Constitution of Pakistan, the Federal Ministry of Environment has been dissolved and the subject of Environment and Ecology was devolved to provinces of Pakistan. The province of Punjab has made its own Environment Act titled Punjab Environmental Protection Act, 1997. The Punjab Environmental Protection Act (PEPA), 1997 covers the following important topics /subjects.

i. Establishment of the Punjab Environmental Protection Council.
ii. Functions and Powers of the Council.
iii. Establishment of the Provincial Environmental Protection Agency.
iv. Functions of the Provincial Agency.
v. Powers of the Provincial Agency.
vi. Establishment of the Provincial Sustainable Development Fund.
vii. Management of the Provincial Sustainable Development Fund.
viii. Prohibition of certain discharges or emissions.
ix. Initial environmental examination and environmental impact assessment
x. Prohibition of import of hazardous waste.
xi. Handling of hazardous substances.
xii. Regulation of motor vehicles.
xiii. Environmental Protection Order.
xiv. Penalties.
xv. Offences by bodies corporate.

xvi. Offences by Government Agencies, local authorities or local councils.

xvii. Environmental Tribunals.

xviii. Jurisdiction and powers of Environmental Tribunals.

xix. Appeals to the Environmental Tribunal.

xx. Appeals from orders of the Environmental Tribunal.

xxi. Jurisdiction of Environmental Magistrates.

xxii. Appeals from orders of Environmental Magistrates.

2.2 Punjab Environmental Quality Standards (PEQS)

The Govt of Punjab has notified Punjab Environmental Quality Standards for different kinds of pollutants, as described in the following tables: -

Table 2.1 Punjab Environmental Quality Standards for Ambient Air

Sr. No	Pollutant	Time-Weighted Average	Concentration in Ambient Air	Method of Measurement
1.	Sulfur Dioxide (SO2)	Annual Average*	80 µg/m3	Ultraviolet Fluorescence Method
		24 hours**	120 µg/m3	
2.	Oxides of Nitrogen as (NO)	Annual Average*	40 µg/m3	Gas phase chemiluminescence
		24 hours**	40 µg/m3	
3.	Oxides of Nitrogen as (NO)	Annual Average*	40 µg/m3	Gas phase chemiluminescence
		24 hours**	80 µg/m3	
4.	Ozone (o3)	1 hour	130 µg/m3	Non-Dispersive UV Absorption Method
5.	Suspended particulate matter (SPM)	Annual Average*	360 µg/m3	High volume sampling (average flow rate not less than 1.1 m3/min)
		24 hours**	500 µg/m3	
6.	Respirable Particulate Matter PM10	Annual Average*	120 µg/m3	Preferably β-Ray absorption method
		24 hours**	150 µg/m3	
7.	Respirable Particulate Matter PM2.5	Annual Average*	15 µg/m3	Preferably β-Ray absorption method
		24 hours**	35 µg/m3	
	Pollutant	Time-weighted average	Concentration in Ambient AIR	METHOD OF MEASUREMENT
		1 hour	15 µg/m3	
8.	Lead (Pb)	Annual Average*	1 µg/m3	Ass method after sampling using EPM2000 or equivalent Filter paper
		24 hours**	1.5 µg/m3	
9.	Carbon Monoxide (CO)	8 hours**	5 µg/m3	Non-Dispersive Infra-Red (NDIR) method
		1 hours**	10 µg/m3	

- *Annual arithmetic means of minimum 104 measurements in a year taken twice a weak 24 hourly at uniform interval.
- **24 hourly / 8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.

2.2 Punjab Environmental Quality Standards for Drinking Water:

Sr. No.	Properties /Parameters	Standard Values	WHO Standards	Remarks
1.	All water intended for drinking (E. Coil or Thermo-tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards.
2.	Treated water entering the distribution system (E. Coil or thermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards.
3.	Treated water in the distribution system (E. Coil or thermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample In the case of large supplies, where sufficient samples are examined, must not be present in 95 % of the sample taken throughout any 12-month period.	Must not be detectable in any 100 ml sample In the case of large supplies, where sufficient samples are examined, must not be present in 95 % of the sample taken throughout any 12- month period.	Most Asian countries also follow WHO standards
4.	Color	≤15 TCU	≤15 TCU	
5.	Taste	Non objectionable/ acceptable	Non objectionable/ acceptable	
6.	Odour	Non objectionable/ acceptable	Non objectionable/ acceptable	
7.	Turbidity	<5 NTU	<5 NTU	
8.	Total hardness as CaCO3	< 500 mg/l	_	
9.	TDS	< 1000	< 1000	
10.	pH	6.5 – 8.5	6.5 – 8.5	
11.	Essential Inorganic	mg/Liter	mg/Liter	
12.	Aluminum (AI) mg/l	≤0.2	0.2	
13.	Antimony (Sb)	≤0.005 (P)	0.02	
14.	Barium (Ba)	0.7	0.7	

15.	Arsenic	≤0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
16.	Boron (B)	0.3	0.3	
17.	Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
18.	Chloride (Cl)	<250	250	
19.	Chromium (Cr)	≤0.05	0.05	
20.	Copper (Cu)	2	2	
21.	Toxic Inorganic	mg/l	mg/l	
22.	Cyanide (CN)	≤0.05	0.07	Standard for Pakistan similar to most Asian developing countries
23.	Fluoride (F)*	≤1.5	1.5	
24.	Lead (Pb)	≤0.05	0.01	Standard for Pakistan similar to most Asian developing countries
25.	Manganese (Mn)	≤0.5	0.5	
26.	Mercury (Hg)	≤0.001	0.001	
27.	Nickel (Ni)	≤0.02	0.02	
28.	Nitrate (NO3)	≤50	50	
29.	Nitrite (NO3)	≤3 (P)	3	
30.	Selenium (Se)	0.01 (P)	0.01	
31.	Residual chlorine	0.2-0.5 at consumer end 0.5-1.5 at source		
32.	Zinc (Zn)	5.0	3	The standard for Pakistan similar to most Asian developing countries
33.	Organic			
34.	Pesticides mg/l			PSQCA No. 4639 – 2004, page No. 4 Table No. 3 Serial No. 20 – 58 may be consulted
35.	Phenolic compound (as Phenols) mg/l			

36.	Poly-nuclear aromatic hydrocarbons (as PAHs) g/l		0.01 (By GC/MS method)	
37.	Alpha Emitters bq/L	0.1	0.1	
38.	Beta emitters	1	1	

*Indicates priority health-related inorganic constituents, which need regular monitoring.

*PSQCA: Pakistan Standards Quality Control Authority.

Table 2.3 Punjab Environmental Quality Standards for Industrial Gaseous Emissions (Mg/Nm3)

Sr. No.	Parameter	Source of Emissions	Stander
1	**Smoke**	Smoke opacity not exceed	40% or 2 Ringelmann Scale or equivalent Smoke number
2	**Particulate matter**	Boilers and furnaces	
		Oil fired	300
		Coal-fired	500
		Cement Kilns	300
		Grinding, crushing, clinkers coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
3	**Hydrogen chloride (HCL)**	Any	400
4	**Chlorine**	Any	150
5	**Hydrogen fluoride**	Any	150
6	**Hydrogen Sulphide**	Any	10
7	**Sulphur Oxides**	Sulfuric acid/Sulfonic acid plants	5000
		Other plants expect power plant operating on oil and coal	1700
8	**Carbon Monoxide Parameter**	Any Source of Emission	800 Stander
9	**Lead (PB)**	Any	50
10	**Mercury (Hg)**	Any	10
11	**Cadmium (Cd)**	Any	20
12	**Arsenic (Ar)**	Any	20
13	**Copper (Cu)**	Any	50
14	**Antinomy (Sb)**	Any	20
15	**Zinc (Zn)**	Any	200
16	**Oxides of Nitrogen**	Nitric acid manufacturing unit	3000
		Other plants expect power operating on oil or coal	
		Gas fired	400

CHAPTER NO.3
SCREENING AND SCOPING

Chapter 3: SCREENING AND SCOPING

This section of the study focuses on the details of project screening, scoping, and the selection of alternatives.

3.1 Type and Category of Project

According to Section 12 of Punjab Environment Protection Act, 1997. "No proponent of a project shall commence construction or operation unless he has filed with the Provisional Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment (EIA) and has obtained from the Provisional Agency approval in respect thereof.

The IEE/EIA Regulation 2022, classify the projects under two schedules called Schedule-I and Schedule-Il. The Regulations read that a proponent of a project falling in any category specified in Schedule II shall file an EIA with the Provincial Agency and the provisions of section 12 shall apply to such project. According to the said regulations, the proposed project falls under Schedule II.

3.2 Scoping

The scoping exercise helps identify key environmental issues that should be highlighted and further investigated in the EIA. Effective scoping is essential in term of the following: -

i. Defining the spatial and temporal boundaries.
ii. Consulting with stakeholders to identify a full range of concerns.
iii. Focusing on key issues that have been characteristic of the existing environment in the baseline study.
iv. Reviewing the types of alternatives to be considered.
v. Making logical decisions that have been more significant and need to be prioritized in the EIA.

3.3 Objectives of the Project

The objective of the project is to establish a safe storage system that minimizes environmental impacts. The project is a simple one. It involves installation of Tanks for storage

of different Chemicals. The project proponent will take the desired amount/ quantity of chemicals from these storage Tanks as and when required.

3.4 Alternatives

3.4.1 Environmental alternatives

The surrounding environmental conditions are congenial for the project. Both the construction as well as operation phases will not adversely affect the environment. All of the aspects will be kept strictly within the limits defined under Punjab Environmental Quality Standards (PEQS) and the project shall comply with requirements prescribed in Punjab Environmental Protection Act 1997.

3.4.2 Site alternative

The site selected for the project is highly suitable as it is located adjacent to an existing industrial unit. Further, there are a number of Industrial Units in its surroundings while no human settlement exists in the proximity of the project site. Project site has good access of roads for transportation of all kinds of materials of the project. the project proponent has considered other sites in the nearby areas but sites are not feasible as their acquisition as well as existence of villages in their surroundings do not favor those sites.

CHAPTER NO.4

DESCRIPTION OF PROJECT

Chapter 4: DESCRIPTION OF PROJECT

This section of EIA study concentrates on salient features of the project, such as location, site layout, objectives and magnitude of the operations. Inputs and outputs including different kinds of discharges have been examined to ascertain the potential environmental impacts and to suggest necessary corrective measure required during the construction and operational phase of project.

4.1 Objectives of Project

The main and major objective of this project is installation of Chemicals Storage Facility which meets the standards of safe storage and handling of chemicals. It aims to ensure operational efficiency, minimize environmental risks, and adhere to safety regulations. The facility will support industrial needs while prioritizing sustainability and safety.

4.2 Particulars of Project Site

Particulars of a project are as under: -

Table 4.1 Particulars of project.

Sr. No	Particulars	Details
1	Name of Project	Installation of Chemicals Storage Facility
2	Name of Company	M/S Tatra Imperial Industries (Pvt) Ltd.
3	Latitude Longitude	70°2248.46 32° 3845.25
4	Location	Chunian Bypass Road, District Lahore
5	District	Lahore
6	Nature of Area	The proposed project is Installation of a Chemicals Storage Facility has been planned at 2 Kanals vacant area of an existing Industrial Unit i.e. Pesticides Manufacturing Unit, Chunian Bypass Road, District Lahore of M/S Tatra Imperial Industries (Pvt) Ltd.
7	Road Access	Chunian Bypass Road, District Lahore

4.3 Location and Layout of Project

The site of proposed project is located at Chunian Bypass Road, District Lahore. Google map showing the location of the project is attached: -

Table 4.2 Geographical Coordinates of Project Site

Coordinates		
1	North	Industrial Unit
2	South	Industrial Unit
3	East	Agricultural Field
4	West	Drain

4.4 Size of Project

The Chemicals Storage Facility will consist of the following Storage Tanks/Godowns.

Table 4.3 Size of Project

Sr. No	Name of Chemical	Storage Type	Storage Capacity
1	Xylene	Underground Tanks	595,872 liters
2	Acetone	Storage Godown	95 liters
3	IPA (Isopropyl Alcohol)	-do-	42,984 liters
4	VAM (Vinyl Acetate Monomer)	-do-	42,984 liters
5	Methanol	-do-	84,287 liters

4.5 Area and Cost of Project: 4 Kanals, Rs. 30. 00 million

4.6 Nature of Area

The project has been planned in the vacant area of an existing Industrial Unit i.e. Pesticide Manufacturing Unit of M/s Tara Imperial Industries (Pvt) Ltd.

4.7 Land Use on Site

The site is a vacant plot, located near Pesticide Manufacturing Unit of M/s Tara Imperial Industries (Pvt) Ltd.

4.8 Vegetative Features on Site

Land is clear and there are no plants or vegetation on the site. Different vegetation species that are found in the vicinity of project area include the trees, ground covers, shrubs, bushes, seasonal plants and climbers.

4.9 Relocation and Rehabilitation Plans

No any kind of structural settlement exists at the project site to be relocated or dismantled. The land is a vacant piece of land and hence, no relocation and rehabilitation are required.

4.10 Staff/Manpower

The construction of project "Installation of Chemicals Storage Facility" will require manpower during both the construction and operational phases. During the construction phase, a workforce of 5-10 workers will be engaged. Once operational, the project/unit will require a total of 10 workers. This workforce will primarily consist of mechanics and helpers to handle daily operations and maintenance tasks. All recruited staff will receive appropriate training to perform their specific duties effectively.

4.11 Electricity

WAPDA is the main source of electricity for the said Project (Installation of Chemicals Storage Facility).

4.12 Air Emissions and Waste Water

The project will generate a minimum level of dust emissions and waste water during the construction phase of the project. There is no likelihood of gaseous emissions and waste water during operational phase of project. The project is simple in terms of environmental parameters. It does not involve any kind of processes/operations, hence no generation of gaseous emissions/ stack emissions and waste water. During Construction Phase, some quantity of solid waste, such as construction debris, may be generated. This waste will include bits of masonry, broken

bricks, and wood pieces. Reusable materials will be sold to waste vendors, while non-recyclable materials will be utilized for leveling depressions.

4.13 Noise

During the construction Phase of the Project, machines like trucks, tractors, mixers and grinders may generate noise. Proper preventive measures will be taken to minimize the same and PPEs will be used during working hours. Construction phase noise will be temporary and there will be no any kind of noise during the operational phase of the Project.

4.14 Schedule of Implementation

The project construction phase will take 6 months from start to completion. The following Table describes the schedule of Project construction/implementation: -

Table 4.4 Schedule of Project Construction/Implementation

Sr. #	Activities	First (2 Months)	Second (2 Months)	Third (2 Months)
1.	Designing and development of Chemicals Storage Tanks/ Godowns			
2.	Installation of Chemicals Storage Tanks/ Godowns			

4.15 Cost of the project

The estimated capital cost of the project is Rs. 30.00 million comprising construction cost and machinery cost.

4.16 Material for the Tanks and Piping

The use of tanks for storage of chemicals has many advantages. These include space considerations, appearance, fire safety, and protection from the elements and vandalism. Chemicals tanks have the potential for leakage from the tanks or related piping. Necessary preventive measures will be taken during designing, installation and operational phase of the project for the detection of leakages and control of such leakages.

4.17 Materials of Construction

Tanks are usually made from steel with a protective coating. The selection of tank type may depend on use and installation location. Fiberglass tanks are typically unsuitable for storage of heated materials and for high-load locations. However, they are low maintenance and are not susceptible to corrosion. Steel tanks must be coated with a corrosion-resistant coating, and corrosion protection is required.

4.18 Piping

Piping is usually steel with a protective coating. Other piping material may be copper or hydraulic flex hosing. Metallic piping must be coated with a corrosion-protective coating and corrosion protection is required.

4.19 Working of the Unit

Working on the project is simple as management of the project will purchase chemicals store them in Tanks and then use those chemicals as and when required.

Potential Pictorial View of Chemicals Storage Tanks

Potential Pictorial View of Chemicals Storage Tanks

CHAPTER NO. 5
DESCRIPTION OF THE ENVIRONMENT

Chapter 5: DESCRIPTION OF THE ENVIRONMENT

This section describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Project Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other relevant agencies.

5.1 Data Collection

The primary data has been collected by surveying the project area and its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, hydrology, and climatology) has been obtained by visiting relevant departments and their official websites. The biological parameters (flora and fauna) have also been studied in the project area. The vegetation of the project area has been studied by preparing a floristic list based on visual observation. The species have been recorded with reference to their historical existence in the project area.

Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area has been compiled based on opportunistic observation, gathering the existing information, and consultation with local experts, community members, government, and Non-Government Organizations (NGOs). The socio-economic aspects have been studied and analyzed by conducting detailed village profiles and household surveys.

5.2 Physical Environment

This part examines the physical resources such as topography, soil, climate, surface, and groundwater resources, ambient air quality, and geology of the Project site to assess whether the project under assessment can have any impacts on any of these parameters. The description of the physical environment of the project site is present in the following sub-sections.

5.3 Physical Resources

The physical resources in the surroundings of the project area include fertile alluvial plains ideal for agriculture, supported by the Ravi River and an extensive irrigation system. The district Lahore has deposits of clay and sand used in construction, along with urban greenery and parks.

5.4 Geography and Geology

The project area is located in Lahore district and lies on the alluvial plains of the Ravi River. The district is characterized by fertile soils, primarily formed by river deposits, making it ideal for agriculture. Geologically, it is part of the Indo-Gangetic Plain, with a flat terrain and minimal elevation changes, and it experiences a subtropical climate.

5.5 Topography

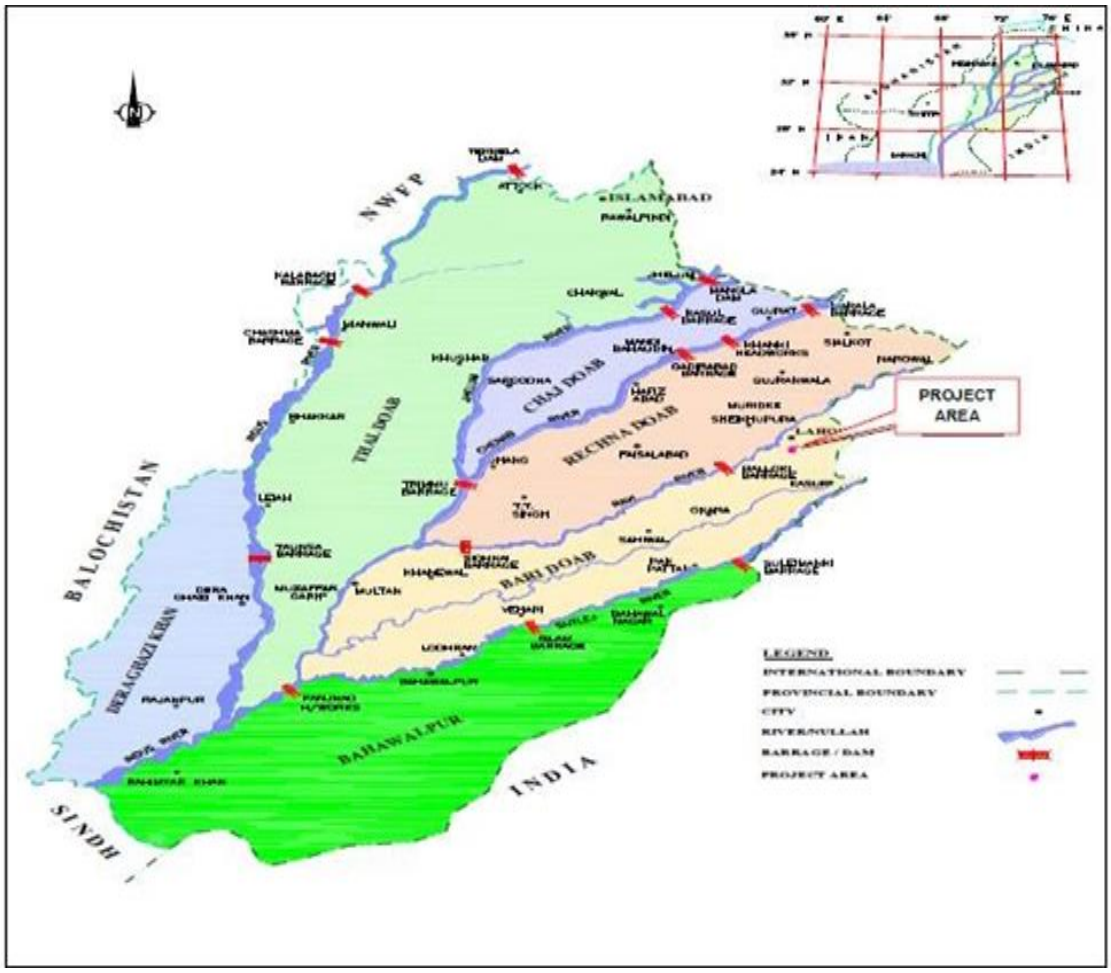
Raiwind and Lahore District lies between the river Ravi, which flows along its boundary with Sheikhupura District. The district has two main types of land: a low-lying area near the river and canals that often floods during the monsoon season, and a higher, flat area farther from the water. The soil in the low-lying parts is sandy, while the upland areas gently slope from north to south. The elevation in Lahore generally ranges from 200 to 250 meters above sea level.

Figure 5.1 Project site on Google Map

5 .6 Hydrology

Groundwater from depth of 200-250 ft can be used for drinking and other purposes. Groundwater is the major source of water in the study area, which is extracted with the help of

pumps and motors. The groundwater extracted is used to fulfill various domestic, irrigation and industrial needs. Ground water quality report of area is annexed with this Report.



5.7 Climate

The District Lahore including Tehsil Raiwind has extreme climate conditions and summer season starts from April and continues till October. During the summer season, temperature ranges from 30 °C to 48 °C.

The winter season starts from November and continues till March. December and January are the coldest months with a mean minimum temperature of about 7-8 °C. The dust storms occur occasionally during the hot season, June, July and August. Climate of District Lahore is very hot and dry in summer and cool in winter.

At an average temperature of 33.5 °C | 92.4 °F, June is the hottest month of the year. The lowest average temperatures in the year occur in January, which it is around 12.3 °C | 54.1°F. Average temperature in Lahore over the year. Average weather in Lahore, Pakistan Climatological information about changes of temperature over the years in Lahore.

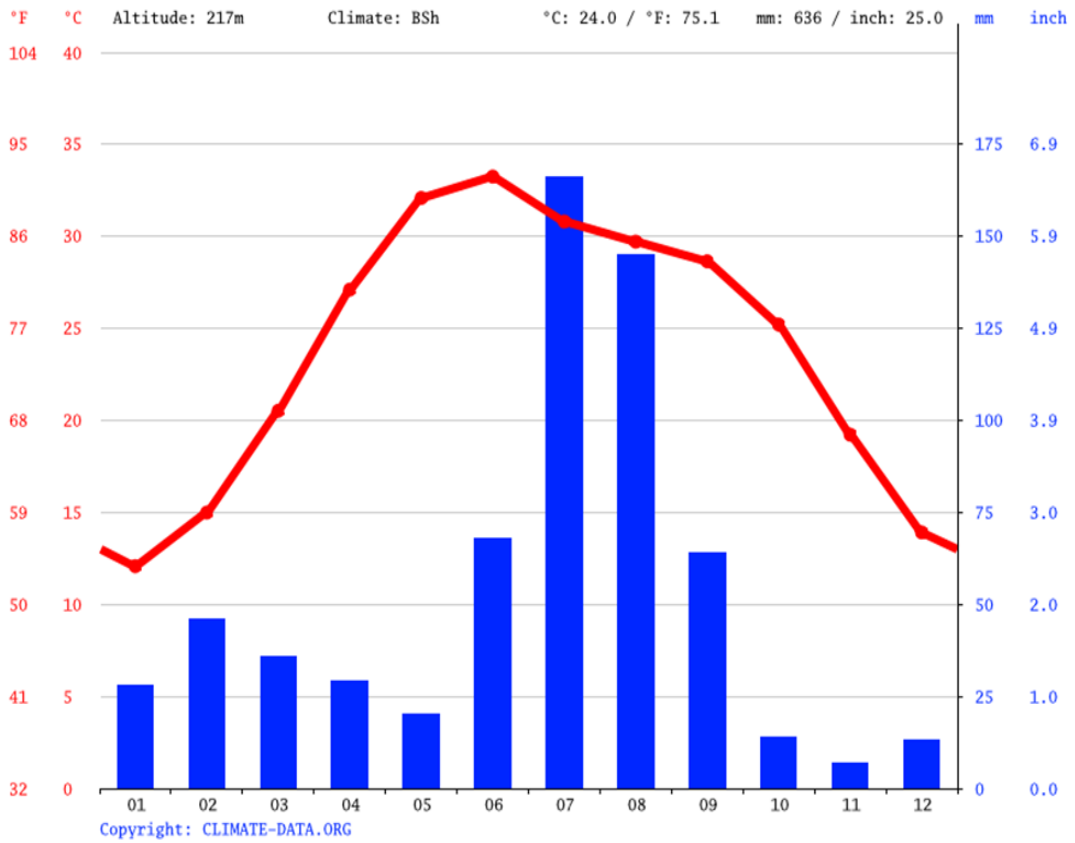


Figure 5.2 Average Annual Temperature and Precipitation of District Lahore

The month of June is the hottest month, reaching around 47°C, while January is the coldest month with temperatures around 7-8°C. This results in a temperature difference of 15°C between the hottest and coldest months. Additionally, there is a significant variation in rainfall, with August having the highest precipitation and November experiencing the least, resulting in a difference of 114 mm.

5.8 Biological Environment

5.8.1 Flora

Several types of floral species are present in district Lahore as well as the project area. However, some of the principal species are in the following pics.

Figure 5.2 Species of Flora

5.8.2 Fauna in the Area

Common mammals found in the area are dogs, cats, house rats, and bats.

Snakes such as cobra, kraits, etc. were once common in the tract, but now cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away. Lizards such as Spiny-tailed lizard (Uromastix hardwickii) and fringed-toed lizard (Acanthodactylus cantoris) are also reported by the residents of the area.

Amphibians frequently seen in and around the project area, especially during the rainy season, include the common Frog (Rana tigrina) and Indus Valley toad.

House sparrow (Passer domestics), House crow (Corvus splendens), and Mynah (Acridotheres tristis) are the most common sights in the area.

There are no endangered species of flora and fauna in the Study Area.

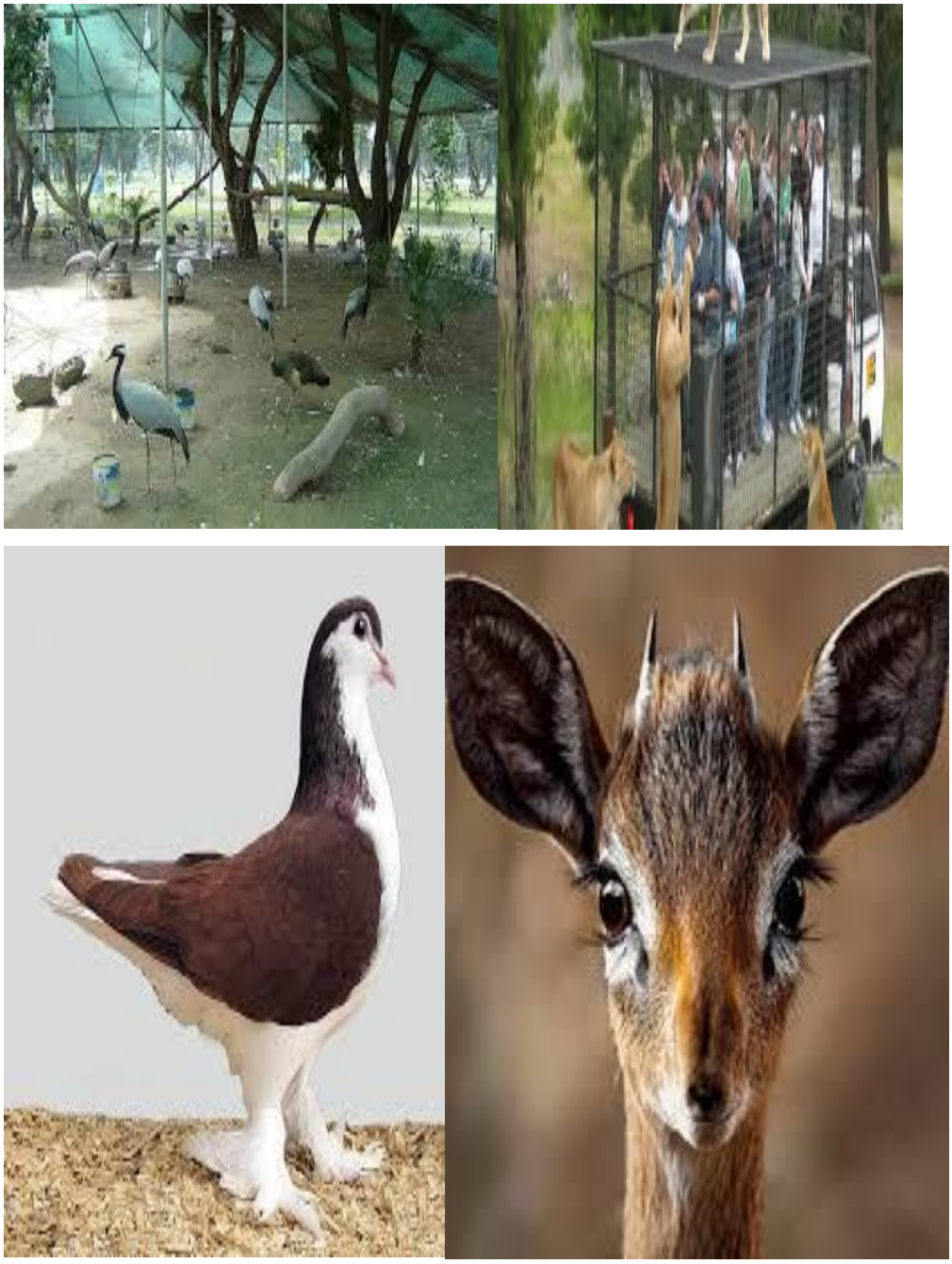


Figure 5.3 Species of Fauna

5.9 Socio-Economic Resources

Socio-economic resources refer to the social and economic factors that impact and are influenced by a project. These include:

i. Human Resources: The availability of a skilled and unskilled workforce for construction, operation, and maintenance.
ii. Economic Resources: Local businesses, industries, and markets that may benefit from the project's economic activity.
iii. Community Infrastructure: Access to roads, healthcare, education, and other services that can be impacted or enhanced by the project.
iv. Livelihoods: Employment generation, income opportunities, and economic upliftment for the local population.
v. Social Well-being: The project's influence on public safety, community health, and overall quality of life.

The project area is rich in term of human resources, economic resources, community infrastructure, livelihoods, and social well-being.

5. 10 Demography

The population of Teshil Raiwind is 855,626 and Lahore is 12,978,661 (13 million) as of 2024. The principal tribes residing here include the Jats, Arains, Dogars, Ansari, Sheikh, Pashtuns etc. Among them, there are also a concentration of Kashmiris who had migrated earlier, during partition. There are also Moreens or artisans; they include Christians, blacksmiths (Lohar), carpenters (Tarkhan), ceramicists (Kumhar), barbers, weavers etc.+

5.11 Literacy Rate

As of the 2023 census, Lahore District has a literacy rate of 79.62%, with male literacy at 81.41% and female literacy at 77.59%. This reflects a significant improvement from earlier years; for instance, the 2006-07 Pakistan Social & Living Measurement survey reported an overall literacy rate of 64.7% in Lahore District. This upward trend highlights the district's ongoing efforts to enhance educational attainment among its residents.

5.12 Industries

The Lahore district hosts a mix of industries, including textile mills, steel mills, foundries food processing units, and small-scale manufacturing facilities. The area may also feature brick kilns and agricultural product processing industries due to its proximity to farming lands.

Additionally, logistic and warehousing facilities are common, supporting transportation and trade along the bypass.

5.13 Amenities

Raiwind (project area) is in the proximity of Lahore city and Lahore city offers extensive facilities, including advanced healthcare services with public and private hospitals, a well-established educational network comprising schools, colleges, and universities, and robust transportation infrastructure like roads, railways, and the Metro Bus. It has recreational facilities such as parks, museums, and shopping malls, along with modern utilities like electricity, water supply, and communication networks to support urban living.

CHAPTER NO. 6
STAKEHOLDER CONSULTATION

CHAPTER 6: STAKEHOLDER CONSULTATION

Stakeholders' consultation refers to the process by which the concerns of relevant persons/ departments who have a plausible stake in the environmental impacts of the project or activity are ascertained to consider all the material concerns in the project design as appropriate.

6.1 Objectives of Stakeholder Consultation

Stakeholders' consultation sessions have been held to take comments/views/ proposals of different stakeholders. The objectives of the Stakeholder Consultation are as under: -

i. Share information with Stakeholders on project installation and operations.
ii. Share the potential impacts on the physical, biological, and socioeconomic environment of the area.
iii. Understand stakeholder's concerns regarding various aspects of the project.
iv. Collect valuable suggestions from the stakeholders to improve the said project design.
v. Understand the perceptions, and assess social impacts and concerns of the people/communities of the project area.
vi. Raise the awareness level and identify any issues for the implementation of the said project.
vii. Invite people to express their views about the positive/negative impacts on their lifestyles and environment
viii. Disclose information of contact offices/officers for any complaints/queries.

Stakeholders' consultation plays a vital role in ascertaining the impacts of the project on stakeholders in the successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. The involvement of stakeholders is essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those that are not known or are specific to the project.

Information disclosure, public consultation, and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies. Surveys have been carried out to investigate physical, biological, and socioeconomic resources falling within the immediate AOI of the project.

A team of environment consultant has conducted interviews of the following residents of surrounding areas in order to take their perceptions / opinions about the project.

Sr. No	Person Name and parentage	Address
1	Sajjad Ali S/O M. Rafique	Shadra Lahore, Rehmat Colony
2	M. Hadeer S/O Farzand Ali	Lahore,
3	M. Imran S/O Abdul Rahim	Township, Lahore
4	Niaz Muhammad S/O Khushi Muhammad	35S Block/C, Shersha Colony, Raiwind
5	Usman S/O Razaq	Raiwind, Bypass, Lahore
6	Shaid Abbas S/O Nazir Hussain	Raiwind, Bypass, Lahore
7	Farooq S/O Rafique	Raiwind, Bypass, Lahore
8	Qadeer Ahmad S/O Nazir Ahmed	Raiwind, Bypass, Lahore
9	Abdul Majeed S/O Allah Dita	Raiwind, Bypass, Lahore
10	M. Mumtaz S/O Imam Bakish	Raiwind, Bypass, Lahore
11	M. Zahid S/O Rahim Bakish	Raiwind Bypass
12	M. Bilal S/O Muhammad Saleem	Raiwind, Bypass, Lahore
13	Sajjad S/O Iqbal	Raiwind Bypass
14	M. Anwar S/O Wali Muhammad	Raiwind Bypass
15	M. Ali Rizwan S/O Amant Ali	Raiwind Bypass
16	Usman Ali S/O Basuat Ali	Lahore
17	Ali Hassan S/O Shabir	Lahore
18	Amant S/O Mumtaz	Lahore

CHAPTER NO. 7
POTENTIAL ENVIRONMENT IMPACTS AND MITIGATION MEASURES

CHAPTER 7: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Assessment of impacts depends on the nature and magnitude of the project/ activity being undertaken, as well as the type of environmental control measures that are envisaged as part of the project proposal. The potential impacts of the project have been identified and assessed based on the type and scale of the various activities associated with this project. This section discusses the project's potential environmental impacts on the area's geomorphology, soil, water resources, air, biological resources, and socioeconomic conditions and, where applicable, identifies mitigation measures that will reduce, the adverse impacts.

7.1 Identification of Potential Environmental Impacts

In the first step, potential environmental impacts of the project are identified by desktop work using checklists, professional judgment, published literature on environmental impacts of similar projects, and standard environmental guidelines. Potential impacts are also identified through discussion with project proponent, and consultation with stakeholders and community to identify their concerns. The main aspects associated with potential environmental impacts are as follows: -

i. Ambient Air Quality
ii. Waste water and Solid waste
iii. Noise pollution
iv. Ecology of the area, including flora and fauna
v. Vehicles movement
vi. Socio-economic conditions
vii. Archaeology

7.2 Scoping Criteria for Impacts

The potential impacts of the Project/ (Chemicals Storage Facility) are evaluated based on the following criteria:

The current baseline conditions and the anticipated changes in environmental parameters likely to be affected by Project/ Chemicals Storage Facility Activities. Whether any impact will

violate applicable Punjab Environmental Quality Standards (PEQS). Community concerns were expressed regarding different environmental aspects.

7.3 Methodology for Impact Assessment

The impact assessment methodology defines three levels of consequences (or severity) and likelihood (chance of occurrence) i.e. Low, Moderate/Medium, or High. The significance of an impact is determined based on the level of consequence and likelihood of the impacts.

Table 7.1 Methodology for Impact Assessment

Sr. No	Level	Severity of Impact (Results)	Likelihood
1.	High	Significant or catastrophic harm to the local and regional environment. A serious threat to the company's reputation, profitability, and overall ability to operate.	Measurable harm to the environment. Potential impact on reputation and costs. Decreased operational efficiency
2.	Moderate	Measurable damage to the environment Potential to affect reputation/cost Reduced efficiency	Moderate likelihood of occurrence throughout the operational lifetime. Periodic or occasional aspects of the operations.
3.	Low	Negligible damage to the environment No risk to business	Unlikely to occur during lifetime of operation.

7.4 Impacts Assessment

The impacts are classified based on their spatial distribution, i.e. local when impacting an area of approximately 1 km radius from the project area, moderate spread, when impacting an area of 1 to 2 km radius, and regional beyond 2 km.

The impacts are classified as short-term, moderate-term, and long-term in terms of their existence on a temporal scale. Impacts with less than 1 year of existence as short-term term, while those with 1 to 3 years as moderate term and more than 3 years as long term.

The negative impacts are termed as adverse impacts while positive impacts as beneficial. The significance of the environmental impacts of various involved activities has been evaluated based on the following criteria.

Table 7.2: Impacts Significance Area

Sr No	Impacts Significance	Criteria
1.	Long Term	When the impact is of high intensity with high spread and high duration.
2.	Moderate Term	When the impact is of moderate intensity with high moderate spread and high-moderate duration.
3.	Short Term	When the impact is of low intensity but with moderate spread and moderate duration.
4.	Insignificant	When the impact is of low intensity, low spread, and low duration.
5.	Beneficial	When the Impacts are Positive.

7.5 Environmental Mitigation Measures

7.5.1 Change in Project Site

The said project is located in vacant area where no population or a sensitive area is present. hence, there is no need to change the site of the project. Further, the project proponent has planned his project in the vacant area of his existing Industrial Unit.

7.6 Improved Management and Monitoring Practices

Improved management practices will be done to keep the project's surrounding environment within safe limits in terms of air and water quality. Environmental monitoring will be conducted as per requirements of environmental law and EPA directions.

7.7 Compensation in Money Terms

There is no damage to flora, fauna, or any other resource, hence compensation in money is not needed.

7.8 Replacement/ Relocation/ Rehabilitation

The said project is planned in an area where there is no sensitive area, population, or natural resource. So, replacement, relocation, and rehabilitation are not required.

7.9 Potential Environmental Impacts associated with Project Location

i. The proponent has selected a site for his project which exists in the vacant area of his existing Industrial Unit.
ii. There is no community or human settlement within the safe radius of the site.
iii. There is no flora & fauna (particularly belonging to an endangered species) within a 2 km radius of the site.
iv. There is a good road network in the area of the project.
v. There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, or any structure of socio-cultural significance (historical or archaeological site or religious structures.

It can be concluded that the selected site is best suited for the project, and will not pose any adverse environmental impacts.

7.10 Methodology for Impact Assessment

The environmental aspects of the project during all stages namely construction and operation have been selected from a master list of environmental items which is widely used world over for this purpose. The extent of qualitative and quantitative impacts has been described and mitigation measures have been proposed to keep them within permissible limits

7. 11 Ways of Achieving Mitigation Measures

i. Changing in Project Site

The said project is located within the premises of the Industrial Unit where no population or a sensitive area is present. So, there would be no need to change the design of the project.

ii. Improved Management and Monitoring Practices

Improved management and monitoring activities will be undertaken to keep both the phases of project environment-friendly.

iii. Compensation in Money Terms

There is no damage to flora and fauna, or any other resource. So, compensation in money is not needed.

iv. Replacement/Relocation/Rehabilitation

Said project is located in the vacant area of existing Industrial Unit where there is no sensitive area, population, or natural resource. So, replacement, relocation, and rehabilitation are no required.

7. 12 Impacts due to Project Location

The project envisages the construction of Chemical Storage Facility. The establishment of this unit is not expected to cause any negative impacts at the location of the project because all the environmental aspects shall be kept under strict control with the help of stringent mitigation measures.

7. 13 Impacts associated with Construction Phase and Mitigation Measures

The Environmental and Socio-Economic Impacts associated with the construction phase of project, are the following:

v. Dust Emissions
vi. Noise
vii. Community and worker's Safety
viii. Employment Conflicts
ix. Solid waste generation

7.14 Mitigation Measures for Dust Emissions

i. Fit vehicles will be allowed for the transportation of construction materials.
ii. Personal Protective Equipment will be provided to all the workers.
iii. A portion of the plot shall be kept open. Vegetation/Tree plantation shall be done to improve air quality.
iv. Workers shall be provided with masks to prevent entry of particulates into their breathing system.

7.15 Mitigation Measures for Noise

i. Activities with the great potential to generate noise shall be planned during periods of the day that will result in least disturbance.

ii. The noise levels shall be mostly within acceptable limits. Moreover, residential areas are far away from the project site.
iii. Proper lubrication and maintenance of all construction equipment shall prevent unwanted sounds leading to noise.
iv. Ear plugs shall be provided to workers during construction.

7.16 Impacts of Solid Waste

Solid waste expected to be generated from construction activities may include broken bricks, left over of sand and cement, excess fill materials, concrete waste, sanitary wares, electricity wires, wooden cuttings, scrap metals, cement packaging, empty cartons/containers and wooden cuttings.

7.17 Mitigation Measures for Solid Waste

i. Waste management hierarchy of reduce, reuse and recycle shall be ensured for all of the construction activities
ii. A comprehensive solid waste management plan will be devised and adhered to collect, segregate and dispose of solid waste
iii. Recyclable and non-recyclable waste will be segregated, and stored separately at source.
iv. Recyclable waste will be sold to contractors of recycling market and the non-recyclable construction waste will be sold to contractors who usually dump such waste debris in pits / low lying area.
v. No on-site burning of wastes will be allowed at any time.
vi. The collection schedule of solid waste will be according to the rate of waste generation.

7.18 Impacts of Wastewater

There is no water usage in operational activity. As operation of the project is a storage of chemicals and filling of chemicals. Water shall be needed for hygiene purposes in toilets or for irrigation of lawns. The source of water for meeting all needs of water for the unit shall be groundwater. The sewerage shall be generated from toilets. Such waste water is not part of regular operations and may not have bad composition. The overall requirement shall be 50-100 gallons per day only

7. 19 Mitigation Measures for Waste Water

Septic tanks will be constructed for the treatment of wastewater before ultimate disposal to keep its environmental quality parameters within PEQS.

7. 20 Occupational Health and Safety

i. A large portion of work shall involve cutting, grinding and welding of metal parts. Moving machinery shall also have potential of injuries to the workers.
ii. Handling of construction materials sometimes causes skin problems. Due to interaction of people from different backgrounds and health conditions. allergies may be caused if precautions are not taken.
iii. The construction activity will be performed only 08 hours a day and additional time for lunch break. Thus, there are less chances of night fatigue.
iv. During hot season of summer, there may be chances of heat stress.

7. 21 Mitigation Measures

i. Adequate shuttering should be established and used for all kinds of construction activities
ii. Work at height should be performed only after permit to work by HSE staff who shall issue such permit to work at height after taking all appropriate measures.
iii. Safety signage should be adequately displayed,
iv. Clean drinking water availability should be ensured for use by all construction staff.
v. Emergence response plan should be made, communicated to all and maintained during all construction activities.
vi. First aid facility should be readily available for workers at the site.
vii. Good house-keeping should be practiced to prevent the events of slips.
viii. Personal protective equipment like helmets, masks gloves and helmets should be strictly used by the labor according to their assignments at the work site.
ix. Fire and any other emergency shall be managed with the help of emergency services.
x. Proper fire safety arrangements will be provided at site. A part form installation of fire hydrant, smoke detectors, fire alarm, safety sign, emergency exits, trained staff from rescue 1122.
xi. During hot season, outdoor work timing may be changed. Only indoor construction activities may be performed during sunny part of the day. In case of inevitable circumstances, workers should be given adequate breaks.

xii. Workers should be given proper fluids during hot season to balance electrolytes in their body.

xiii. Painting activity should be performed with all occupational health and safety precautions.

7. 22 Environmental Enhancement Measures

The following steps shall be taken for environmental enhancement:

i. Daily sweeping and dusting/cleaning shall be ensured.

ii. Vacuum cleaning shall be done daily where required.

iii. The perimeter and lawns of the plot shall be vegetated with flowering plants and fruit trees for environmental enhancement

iv. Adequate firefighting system will be established and maintained at all times according to the requirements of respective Regulatory Authority.

v. Visual impacts of the unit and its surroundings shall be given due consideration. Visiual impacts shall be improved through landscaping and tree plantation.

The potential environmental impacts of the project and respective mitigation measures are summarized below: -

7.3 Environmental Impact & Mitigation Measures

Potential Impact	Mitigation Measures
CONSTRUCTION PHASE	
Solid Waste	
• Solid waste shall be generated in the form of excavation waste, broken bricks, waste concrete material, steel trimmings, etc.	• All types of waste shall be kept segregated. The waste shall be managed regularly. • The construction waste shall be disposed of through construction waste contractors. The recyclable part of the waste shall be sold to the recyclers.
Air Pollution	

• Particulate matter may arise due to excavation and movement of off-road and on-road vehicles during transport of construction materials such as sand, aggregate, etc. • Cutting, grinding and welding may cause noise pollution. • Off-road or on-road vehicles may also cause exhaust pollution.	• Construction contractor shall be directed to ensure using well-conditioned and well-tuned vehicles and equipment. • Contractor will ensure Sprinkling of water on the exposed surfaces. • Contractor will Cover all trucks loaded with sand and other such lose construction materials. • Regular sweeping of roads and parking areas shall be ensured to avoid deposition of dirt /dust. • Contractor will ensure use of appropriate masks by workers to prevent entry of dust in their breathing system.
Noise Pollution	
• Operation of construction machinery and equipment may be a source of noise pollution. • Cutters grinders and welding activities may also cause noise. • Movement of off-road or on-road vehicles may generate noise	• The Project proponent and contractor will ensure that all vehicles are well maintained. • Contractor will ensure use of ear plugs by workers to prevent entry of noise in their ears.
Occupational Health & Safety	
• Cutting, grinding, welding operations may operate metal dust	Contractor will ensure use of personal protective equipment by respective workers.
Socioeconomic	

• Disturbance of local population • Jobs for locals	• The construction labor shall be advised to respect the local culture and moral values. • Locals shall be preferred for job as far as possible according to their competence/ education/ skills.
Operational Phase	
Solid Waste	
• Project does not involve any such operation /activity during operational phase which may generate Solid Waste, hence no any kind of solid waste issue /problem.	• Not Applicable
Air Pollution	
• There is no any such operation /activity during operational phase of project which may generate air pollution, hence no any kind of problem of air pollution.	• Not Applicable
Occupational Health & Safety	
• Fire incident may occur if proper precautionary measures are not taken • Minor and major injuries during Loading and unloading of equipment are possible.	• Training about OHS aspects will assist in managing the risks. • Workers shall be provided with all necessary personal protective equipment to prevent any harm. • Fire extinguishers, fire hydrants and smoke detectors shall be installed.
Socioeconomic	
• Disturbance to local population • Jobs for the locals	• The construction labor shall be advised to respect the local culture and moral values. • Locals shall be preferred for job as far as possible according to their competence/ education/ skills.

CHAPTER NO. 8

ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

CHAPTER 8: ENVIRONMENT MANAGEMENT & MONITORING PLANS

This chapter provides the Environmental Management and Monitoring Plan (EMMP) of the project for its construction and operation phases to keep its environment benign and to ensure the compliance of Punjab Environmental Quality Standard (PEQS).

This section a underline the monitoring framework for both construction and operational phases to check compliance of Monitoring Plan and to take timely actions for correction.

8.1 Components of Environmental Management and Monitoring Plan

The EMMP consists of the following:

i. Environmental Management Plan
ii. Environmental Monitoring Plan
iii. Communication and Documentation
iv. Institutional Capacity
v. Environmental Training

8.2 Environmental Monitoring Plan

Environmental Monitoring is a vital component of Environmental Management Plan. It is the mechanism through which the effectiveness of the environmental management Plan in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions.

Table 8.1 Environmental Monitoring Plan

Environmental Component	Standards	Monitoring Frequency	Responsibility
CONSTRUCTION PHASE			
Ambient Air Quality	PEQS	Bimonthly	Project proponent
Noise Level	PEQS	-do-	-do-
Health and Safety	OSHA	-do-	-do-
OPERATIONAL PHASE			
Ambient Air Quality	PEQS	Quarterly	Project Proponent
Noise Level	PEQS	-do-	-do-
Health and Safety	OSHA	-do-	-do-

8.3 Supervision & Monitoring

The Environmental Manager will be responsible for all environmental issues and the implementation of EMMP.

8.4 Communications & Documentation

An effective mechanism will be developed to store and communicate environmental information to the responsible persons.

8.5 Environmental Training

Environmental Training will help to ensure that the requirements of the EIA and EMMP are clearly understood and followed by all project personnel in the course of construction and operational phase of project.

Table 8.2 Training Schedule

Target Personal	Topic	Schedule
Selected management staff	HSE Management	Quarterly
All personnel of project	Fire Fighting	-do-

CHAPTER NO. 9

CONCLUSION AND RECOMMENDATIONS

Chapter 9: CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

The EIA findings showed that the project design is the most suitable based on the current best practices and the available technology. The project is feasible and desirable from the perspective of environmental and social-economic evaluation undertaken in this study. The overall benefits of the proposed development are far higher than the potential cost of the marginal negative environmental changes which are likely to occur. The proposed project is desirable because it will improve the socio-economic status of the people in the area. It will create employment and deliver a wide range of other socioeconomic benefits.

The baseline environmental assessment of the proposed project site indicate that the site selected for the project does not contain any sensitive area. The EIA establishes that the proposed project design is far more suitable than the No project option.

The project shall contribute to environmental protection and safety of workers. It will also fulfill the requirements of Regulatory Authority i.e. Ministry of Petroleum. Employment opportunities shall be provided to skilled, unskilled, and high qualified persons.

Based on an overall assessment of the environmental impacts of the project, it is concluded that the project is not likely to cause any significant adverse impacts on the social, physical, and biological environment of the area.

It is recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, in favor of this project

9.2 Recommendations

In view of the findings of the EIA, the proposed project is considered an environmentally safe project.

Following are recommendations to make this project more Environmentally friendly.

i. Implementation of EMP must be given priority.
ii. Proper PPEs including gloves should be provided to workers during Construction and Operational phase of project.
iii. Workers must be directed to follow SOPs.

iv. Installation of fire extinguishers in the premises and their regular maintenance must be ensured.

v. Equipment maintenance and efficiency must be checked regularly.

vi. No compromise on public health and the environment should be allowed during Construction and Operational phase of project.

vii. A proper tree plantation plan should be developed to support the environment and air quality of the area.

viii. Waste storage bins should be installed at different points for proper waste collection and disposal.

ix. Smoking should be avoided within the premises of the project site and near chemicals/fuel storage areas.

x. The Security Guards shall be trained to provide necessary support in case of any emergency situations.

xi. The fire alarms should be installed to signal the evacuation.

xii. Proper, communication system in an effective manner shall be made with hospitals, emergency services, and police for urgent support.

Annex I

CNIC of Proponent


PAKISTAN National Identity Card

ISLAMIC REPUBLIC OF PAKISTAN

Name

Mian Khalid Hameed

میاں خالد حمید

Father Name

Mian Abdul Hameed

میاں عبدالحمید

Gender	Country of Stay
M	Pakistan

Identity Number	Date of Birth
35202-7434791-9	01.10.1965

Date of Issue	Date of Expiry
16.08.2018	16.08.2028

Holder's Signature

موجودہ پتہ: ٹھوکر نیاز بیگ، مکان نمبر 32، محلہ جوڈیشل کالونی فیز 1، یکشنیشن، لاہور

35202-7434791-9

مستقل پتہ: ڈاک خانہ بنگلہ شاہی والہ، چک نمبر 75 ڈی این بی، تحصیل یزمان، ضلع بہاولپور

Usman Y. Mobin

Registrar General of Pakistan

505291596411

347-65-319841

گمشدہ کارڈ ملنے پر قریبی لیٹر بکس میں ڈال دیں

Annex II

Property Documents

Annex III

Baseline Monitoring Reports

Annex IV

EPA Validation