Document Title: Environmental Impact Assessment		
Prepared For: M/S Al Qaswa Orchard Housing Scheme		
Prepared By: M/S EHS Services (Pvt.) Limited		
Document No: **EHS/EIA/CGHS/09/24**	**Distribution:** ☑ Official ☐Public ☑ Confidential	**Date:** 13 August. 2025
Report Summary: This document presents findings of Environmental Impact Assessment (EIA) regarding Development of Housing Scheme M/S Al Qaswa Orchard, located at Mouza Rakh Bholi Jamadar , Tahsil Muridke, District, Sheikhupura.		

LIST OF ANNEXURES

GLOSSARY

a. **Act:** means Punjab Environmental Protection Act, 1997.

b. **Dust:** are fine powdery materials such as dry earth/ pollen that can be blown in the air.

c. **Discharge:** means spilling, leaking, pumping, depositing, seeping, releasing, flowingout, pouring, emitting, emptying or dumping

d. **Environment:** means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned.

e. **Environmental Impact Assessment:** means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed.

f. **Effluent:** means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapour.

g. **Hazardous Substance:** a substance or mixture of substances, other than a pesticide as defined in the Agricultural Pesticides Ordinance, 1971 (II of 1971), which, by reason of its chemical activity or toxic, explosive, flammable, corrosive, radioactive or othercharacteristics causes, or is likely to cause, directly or in combination with other matters, an adverse environmental effect; and any substance which may be prescribed as a hazardous substance.

h. **Hazardous Waste:** means waste which is or which contains a hazardous substance or which may be prescribed as hazardous substance or which may be prescribed as hazardous waste, and includes hospital waste and nuclear waste.

i. **Industrial Activity:** means any operation or process for manufacturing, making, formulating, synthesizing, altering, repairing, ornamenting, finishing, packing or otherwise treating any article or substance with a view to its use, sale, transport, delivery or disposal or for mining, for oil and gas exploration and development, or for pumping water or sewage, or for generating, transforming or transmitting power or for any other industrial or commercial purpose.

j. **Industrial Waste:** means waste resulting from industrial activity.

k. **Incineration:** The thermal destruction of waste for the primary purpose of

disposal, with or without recovery of energy.

l. *Note: the term incineration generally means 'the act of burning to ashes'.*

m. Initial Environmental Examination: means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an environmental effect for requiring preparation of an environmental impact assessment.

n. Leachate: A liquid that has percolated through and/or been generated by decomposition of waste material. It includes water that come in contact with waste and is potentially contaminated by nutrients, metals, salts and other soluble or suspended components and products of decomposition of waste.

o. Landfill: A waste disposal site used for the controlled deposit of solid waste onto or into land.

p. Mitigation Measure: means measure for control, reduce or elimination of an adverse impact of a development on environment, including a restorative measure.

q. Punjab Environmental Quality Standards: means the permissible standards for emission of air pollutants and noise and for discharge of effluent and waste.

r. Regulations: means the Pakistan Environmental Protection Agency, Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

s. Recycling: Set of processes (including biological) for converting recovered materials that would otherwise be disposed of as waste into useful material and/or products

t. Reuse: using a waste product again for the same or different purpose without further manufacture.

u. Suspended Solids: are solid particles suspended in water or air that can be removed by filtration or settlement.

v. Sustainability: means such developments that meet the needs of the present generation without compromising the ability of future generations to meet their needs.

w. Waste: means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process.

LIST OF ABBREVIATIONS

EPA	Environmental Protection Agency
EPCCD	Environment Protection and Climate Change Department
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
EA	Environmental Approval
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMP	Environmental Monitoring Plan
EPD	Environment Protection Department
EPO	Environmental Protection Order
LESCO	Lahore Electric Power Company
HW	Hazardous Waste
IEE	Initial Environmental Examination
IMC	Independent Monitoring Consultant
LAA	Land Acquisition Act
MoE	Ministry of Environment
MSW	Municipal Solid Waste
NA	Not Applicable
NCS	National Conservation Strategy
ND	Not Detected
NO	Not Objectionable
PEQS	Punjab Environment Quality Standard
NGO	Non-Government organization
NOC	No-Objection Certificate
NOx	Oxides of Nitrogen
PC	Public Consultation
PEPA	Punjab Environmental Protection Act, 1997
PEPC	Punjab Environmental Protection Council
PM	Particulate Matter

PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
RAP	Resettlement Action Plan
RFP	Request for Reports
Sox	Oxides of Sulphur
SP	Seismic Provisions
TES	Threatened, Endangered and Special Status Species
TOC	Total Organic Carbon
UBC	Uniform Building Code
VOC	Volatile organic compound
WAPDA	Water and Power Development Authority
WHO	World Health Organization
WWTP	Waste Water Treatment Plant

EXECUTIVE SUMMARY

INTRODUCTION

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) report for the Development of "Development of Housing Scheme M/S Al Qaswa Orchard, located at Mouza Rakh Bholi Jamadar , Tahsil Muridke, District, Sheikhupura.". The project will include the development of Houses, Commercial Buildings, Parks and Mosque. Environmental Impact Assessment (EIA) of the project has been conducted in accordance with the Punjab Environmental Protection Act, 1997 and IEE/EIA Regulations, 2022. The process for conducting environmental assessment and the results of EIA is described in this document.

BRIEF OUTLINE OF THE PROPOSAL

Proponent Name:	Muhammad
Project Title:	Al Qaswa Orchard Housing Scheme
Project Location:	Mouza Rakh Bholi Jamadar , Tahsil Muridke, District, Sheikhupura.
Consultant Name:	EHS Services Private Limited
Total Area:	870 Kanal
Distance-From Industry:	No industry in surroundings
Nature Of Area:	Open Land
Source Of Power:	WAPDA
Current Status Of Project:	Barren Land

Total Cost Of Project: 90 Million Rupees

Source Of Water: Groundwater

PROJECT OBJECTIVES

- Promote and safeguard the economic interests of the allottees and residents of the colony.
- Develop the project's land in accordance with the best engineering standards and provisions of the Controlling Authority.
- Construct houses and apartment buildings for sale at very reasonable and affordable price.
- Provide pollution free hygienic environments to the residents of the scheme.
- Provide space and facilities for best education, health and recreation.

SITE ALTERNATIVES FOR HOUSING SOCIETY

It would provide positive benefits such as employment for a significant number of persons; many who will be employed from the wider community. Additionally, the cumulative effect of this type of development would result in noticeable economic benefits for the community. The project will also make a positive contribution to social infrastructure and overall residential development, so there is no need of considering site alternatives. Therefore, off-site alternative locations were not studied for this project.

SCREENING

As per directions of PEPA Act 1997, the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulations, 2022, the Development of **"**Al Qaswa Garden Housing Scheme**"** falls in the category of "Housing Schemes" mentioned in Schedule II, under the category H (1).

ENVIRONMENTAL CONSULTANTS

An Environmental Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts likely to arise from the commencement of the project along with environmental impact statement followed by delineation of appropriate Environmental Management Plan and Environmental Monitoring Plan to check the implementation of the EMP. Proponent of housing scheme have decided to conduct EIA report through Environmental Consultants, namely EHS Services Private Limited.

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES

Following impact assessment methodology; i.e., defining the criteria for evaluation of the impacts, identification of mitigation measures (all possible options) for impacts identified as significant, evaluation of the residual impacts and identification of the monitoring requirements, adequate and effective mitigation measures have been for all construction and operation related likely environmental impacts of the project. These mitigation measures have been in order of attempts to eliminate or minimize the impact, provide some compensation or rehabilitate the environment by some means.

Key impacts related to the construction phase include:

- Construction Noise
- Solid Waste
- Soil Contamination
- Air Pollution
- Community and Workers' Safety

EMPLOYMENT CONFLICTS

Since the project is to be commenced on Proponent owned area and no human settlement exists on site, construction related impacts are not expected to extend to the community.

Mitigation measures recommended to be incorporated into the project include running the machines and vehicles on good quality (low-sulfur fuels) in good

working order ensuring regular maintenance, tuning and servicing, and providing them with emission control devices, such as mufflers and silencers, etc. Water suppression and covered transportation and storage of the construction materials and slow driving on unpaved roads will control dust emission. Regular testing for leakage detection will also be ensured. Solid waste of construction and demolition activities will be used for flooring, while the remaining solid waste will be managed as per TMA practices in the area.

Key impacts related to the operation phase include:

- Wastewater
- Solid Waste
- Energy Management
- Safety, Public Health & Nuisances

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS

The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities. These plans have been included in Chapter-6 of the report.

During construction, ambient air quality for dust level in particular, vehicle and equipment exhaust, noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. Monitoring Plan has been included in Chapter-6. During operation Phase, solid waste management will be monitored. Plan has been included in Chapter-6.

PROPOSED MONITORING

An environmental management and monitoring plan provide a delivery mechanism to address the potential environmental impacts of a Project during its construction and operational phases, to enhance project benefits, and to introduce health and safety standards of good practice to be adopted for project.

This process requires proper monitoring to report any performance or any mitigation measurement during the construction and operational phases. The proponent will ensure the proper implementation of mitigation measures for the concerned operation and maintenance phase through adequate monitoring. The proposed management and monitoring plan is given below.

Table 0.1 Proposed Management and Monitoring Plan

Sr. No.	Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Authority
	Construction and Operational Phase					
1	Land Resource	Solid waste	Construction activities, at site camps etc.	Record keeping and timely transfer of solid waste to the disposal site	Daily	EMC
2	Air Resource	Air emissions and dust	Air quality will deteriorate due to transportation and construction activities	Monitor the emissions as per standards	Once before construction phase	EMC
3	Water Resource	Water pollution	Water quality will deteriorate due to transportation and construction activities	Water testing as per PEQS	As required	EMC
4	Biological	Flora	Uprooting of trees during construction	Re-vegetation	After construction phase	EMC

CONCLUSION

It is concluded in this study that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context. This report further draws the conclusion that the impacts identified are easily manageable and reversible, no long-term impact is expecting and no deterioration or consequential depletion of local natural resources is expected. It is accordingly recommended that Environmental Approval for the project should be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

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CHAPTER 1: INTRODUCTION

1.1 PURPOSE OF REPORT

The purpose of this report is to define the project, examine various characteristics of the site – specifically the physical, ecological and socio-economic makeup of the site. In so doing, all the potential impacts of the site that may arise from the construction of the development will be identified. It is therefore the intention of the report to furnish all the findings, discuss all the recommendations and mitigation measures which will be taken to protect the environment as well as ensure that these options are recognized and implemented.

1.2 IDENTIFICATION OF THE PROPONENT

Name	Address
Muhammad Nawaz	Near to Sheikh Hospital , Rahim Town KPS road Ferozwala , District Sheikhupura.

1.3 IDENTIFICATION OF THE PROJECT

The Project under study is titled as Development of **"**Al Qaswa Orchard Housing Scheme**".** Its salient features have been described later in this Chapter, Chapter 2 and briefly in Executive Summary of the EIA.

1.4 NATURE, SIZE AND LOCATION OF THE PROJECT

- **NATURE OF PROJECT**

This project is the Development of Housing Scheme.

- **SIZE OF PROJECT**

Project area is 926 Kanal 10 Marla. The project will include the development of Houses, Commercial Buildings, Parks and Mosque. The layout Map of Housing Scheme is annexed with the report.

- **LOCATION OF PROJECT**

This project is located at Mouza Rakh Bholi Jamadar , Tahsil Muridke, District, Sheikhupura.

COST OF THE PROJECT

Cost of project has been estimated at 90 Million Rupees. Including Construction, Infrastructure, labor and landscaping Cost.

1.5 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of the proposed project, the proponent has hired the services of the environmental consultants; **M/S EHS Services (Pvt.) Limited** Team comprising of Environmental Engineers, Chemical Engineers, Environmental experts and Environmentalists has worked on this report. EHS Services (Pvt.) Limited is one of the pioneers Environmental Consultancy Companies in Pakistan with an unrivalled reputation for providing expert, tailored services and solutions. EHS Services (Pvt.) Limited provides the environmental services, litigation and consultancy to clients both industry and government.

EHS Services (Pvt.) Limited is providing quality services in various environmental sectors i.e.

- Environmental Assessment Reports i.e., IEE/EIA
- Baseline Studies
- Environment Management Plans (EMP)
- Designing of Emission Control Equipment
- Waste Water Treatment Plant (WWTP) Designing
- WWTP Construction Supervision, Commissioning and Operations
- Establishing Bottled Water Plant based on RO or UF

- Lab testing (Drinking Water & Waste Water Analysis, Soil Analysis, Sludge Testing, Petroleum/ Lube Oil Testing, Fertilizer Analysis, Pesticides in Water, Soil, Fertilizer, Coal, Coke Analysis)
- Monitoring and inspection
- Environmental modelling

Contact Details:

Chief Executive	Engr. M. Asif (C.E.) 0304-4404111
Address	House No. 1, Haqbahu Street, Lalazar Colony (Judicial Employees Society), Thokar Niaz, Lahore

Study Team:

The following table lists the names of experts involved in the making of EIA report:

Name	Profession	Qualification	Professional Experience	Roles
Mr. Muhammad Asif	Environment Consultant	MS Chemical Engineering	10 Years	• CEO • IEE report Review • Assessment of physical and socioeconomic baseline conditions at the Project Site.
Mr. M Iqbal	Senior Environmentalist	M.Phil. Env. Sci.	7 Years	• Capacity building & training • Conducting and monitoring of health assessment surveys • Environment health risk assessment and management
Ms Maryam Mazhar	Environmentalist	BS. Environmental Sciences	5 Year	• IEE report writing • EIA report writing • Impacts assessment and proposed their mitigation measures.
Ms. Amna Shahzadi	Environmental Engineer	MSc Environmental Engineering	4 Year	• IEE/EMP report writing • EIA report writing • Assessment of physical and socioeconomic baseline conditions at the Project Site. • Impacts assessment and proposed their mitigation measures

1.5 SCOPE OF STUDY

For the EIA study, the scope of work is as under:

- Description of physical, ecological and socio-economic conditions in and around the facility.
- Project impact identification, prediction and significance at all stages of the project including planning, implementation and operation.
- Identification and assessment of the workability of mitigation measures to offset or minimize negative project impacts on environment.
- Identification of occupational hazards during all stages of the project and laying down suggestions for improvement in the conditions.

1.6 METHODOLOGY

Methodology of preparing EIA report follows:

- **SCOPING**

The key activities of this phase include:

Project Data Compilation: A generic description of the activities relevant to environmental assessment is compiled with the help of the proponent.

Published Literature Review: Secondary data on weather, water resources and vegetation, and other relevant environmental features of the project area and the similar projects, is reviewed and compiled.

Legislative Review: Information on relevant legislations, regulations, guidelines, and standards is reviewed and compiled.

Identification of Potential Impacts: The information collected is reviewed and potential environmental issues are identified.

Identification of Mitigation Measures: Mitigation measures are identified for all the likely impacts in order of preference for avoiding the impacts altogether,

minimizing their frequency or extent and compensating or rectifying the losses; as may be found practicable in the project.

Selection of Alternatives: Based on the potential impacts and the cost required to mitigate them, most crucial project employing the best available technology at the most feasible site is selected.

Scoping Meeting: A scoping meeting was held to share this basic level of project information with all the project stakeholders before the information is incorporated into the report, so that some improvement can be sought out in the data as may be necessary, better or more friendly alternatives can be selected, and better and more practicable mitigation measures can be suggested.

- **BASELINE DATA COLLECTION**

A considerable amount of baseline information on the project area was available from the environmental studies previously conducted in the region of other projects. A field visit was conducted to collect primary data on the water quality, ambient air quality, noise level, and ecological species surviving in the area and the ecosystems prevalent, and the lifestyle, socio-cultural setup, income and sources of income and the facilities available for the residents in the areas around the unit. For ambient air and water quality, tests were conducted by an EPA-certified laboratory, noise level was measured using noise meter, and for socioeconomic profile, people around the site were interviewed.

- **IMPACT ASSESSMENT**

The environmental and socio-economic features and other project information collected, is used to assess the potential impacts of the activities. The issues studied include potential project impacts on:

  - Geomorphology

- Meteorology
- Groundwater and surface water quality
- Ambient air quality& noise level
- The ecology of the area, including flora and fauna
- Local communities

Wherever possible and applicable, the discussion covers the following aspects:

- The potential change(s) in environmental parameters likely to be affected by project related activities
- The identification of potential impacts
- The evaluation of the likelihood and significance of potential impacts
- The defining of mitigation measures to reduce impacts to as low as practicable
- The prediction of any residual impacts, including all long-term and short-term, direct and indirect, and beneficial and adverse impacts
- The drafting of monitoring arrangements of residual impacts

- **DOCUMENTATION**

This EIA Report is prepared according to the relevant guidelines prescribed by the Punjab Environmental Protection Agency at the end of assessment. It includes findings of all the phases of the assessment process. Before preparation of the final report for submittal to the EPA Punjab, draft report was presented to the Proponent for review and comments.

1.6 STRUCTURE OF REPORT

EIA Report comprises following chapters:

Chapter 1: Introduction (A description of the project, proponent and consultants, the need for the project and the report and method of preparing it).

Chapter 2: Project Description (Full description of the relevant parts of the project and summary of project inputs and outputs).

Chapter 3: Policy, statutory, and institutional Framework (A description of the pertinent national & provincial legislations, regulations and policies that are relevant and applicable to the project and a demonstration of how the project conforms to them).

Chapter 4: Baseline Study (Description of project area's existing physical, biological and socio-economic condition, including geomorphology and soils, water resources, air quality, flora, fauna and demography).

Chapter 5: Project Impacts and mitigation measures (Presents an assessment of the project's impacts, suggested mitigation measures in order of eliminating or minimizing the impacts or compensating for the loss or rehabilitating the environment, residual impacts and the monitoring requirements).

Chapter 6: Environmental Management & Monitoring Plans (Provides Environmental Management Plan & Environmental Monitoring Plan for both construction and operation phases of the project).

Chapter 7: Stakeholder Consultations (Role of the public participation is very important in the design making process to achieve the goal of sustainable development).

Chapter 8: Conclusions & Recommendations (Concludes the EIA Report with a few recommendations to conduct the project in environment-friendly manner).

CHAPTER 2: DESCRIPTION OF PROJECT

2.1 GENERAL

This section of the study concentrates on details of the project and its salient features; such as location, site layout, objectives, selection of alternatives, cost and magnitude of operation and various phases. Inputs and discharges relevant to different phases of the project, such as electricity & materials, etc. have also been examined as a response to possible environmental concerns.

2.2 TYPE AND CATEGORY OF PROJECT

As per directions of PEPA Act 1997, the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulations, 2022, the Development of **"**Al Qaswa Orchard Housing Scheme**"** falls in the category of H(1) mentioned in Schedule II.

2.3 OBJECTIVES OF PROJECT

- Promote and safeguard the economic interests of the allottees and residents of the colony.
- Develop the project's land in accordance with the best engineering standards and provisions of the Controlling Authority.
- Construct houses for sale at very reasonable and affordable price.
- Provide pollution free hygienic environments to the residents of the scheme.
- Provide space and facilities for best education, health and recreation.

2.4 ALTERNATIVES

- **Site Alternatives**

It would provide positive benefits such as employment for a significant number of persons; many who will be employed from the wider community. Additionally, the cumulative effect of this type of development would result in noticeable economic benefits for the community. The project will also make a

positive contribution to social infrastructure and overall residential development, so there is no need of considering site alternatives. Therefore, off-site alternative locations were not studied for this project.

2.5 LOCATION AND SITE LAYOUT OF PROJECT

- **LOCATION OF THE PROJECT**

Project site is located at Mouza Rakh Bholi Jamadar , Tahsil Muridke, District, Sheikhupura. A Wider and Closer Layout Map view of project site map is annexed with the report.

- **SITE LAYOUT OF THE PROJECT**

Layout map of the project site is annexed with the report.

2.6 LAND USE ON SITE

Currently the land is open, since land use change to more useful purpose from less useful purpose is considered generally a kind of no environmental impact because the land use pattern at and around the project site is typical to that of built-up structures for residential, commercial usages.

2.7 ROAD ACCESS

All the roads accessing the project site are metaled.

2.8 VEGETATION FEATURES OF SITE

Land is clear and there are no plants or vegetation on site. Local plants will be grown at the project and along the boundary and roadsides.

2.9 COST AND MAGNITUDE OF OPERATION

Total Cost of project approximately is 90 Million Rupees including land cost. Magnitude off project includes the planning work, site survey, site clearing work, infrastructure work, structural work, electrical and mechanical works and Activities of construction includes the following:

a) Demarcation of the Area for various facilities

b) Infrastructure works (water supply, sewerage and drainage, electrical works etc.)

c) Plantation of plants and grass

2.10 SCHEDULE OF IMPLEMENTATION

It is estimated that the entire project will take 01 year for completion of construction phase, if the activities go as per the plan.

Activities involved are:

- Land acquisition – already done (Land ownership documents are along with this report)
- Lay out plan of project (attached herewith this EIA report)
- Leveling of land
- Construction of site boundary wall
- Construction of Infrastructure

2.11 DESCRIPTION OF PROJECT

The project site is spread over area of 926 Kanal 10 Marla. This will be developed into residential plots, roads, green parks, commercial site, mosque etc. The housing scheme will provide electricity, water supply and sewerage system. The cost for the project is 90 Million Rupees. This project is a 100% local investment. The project will provide employment opportunities for local people.

2.11.1 PROJECT'S MAIN COMPONENTS

As per information obtained from the proponent, the project includes the following essential components:

- **Pre-Construction Phase**

1. Conducting necessary feasibility studies including the cost benefit analysis and the expected internal rate of return.

2. Preparation of the project documents, layout/master plan, architectural& engineering designs and the cost estimates.

3. Conducting various investigative studies such as geo-technical studies, environmental impact assessment, and economic feasibility studies.

• Construction Phase

1. Procurement of constructional materials and their onsite stacking and storage by the contractor.

2. Establishment of the proponent's site office, contractors' site offices and the campsite for the resident labour including provision of temporary toilets with the site offices.

3. Carrying out excavation and digging for construction of foundations.

4. Construction of houses.

5. Construction of infrastructure and the superstructures.

6. Construction of a water storage tanks for storing water for constructional needs.

7. Installation of generator and laying of temporary wiring to facilitate constructional activities.

8. External development, landscaping, pavements, beautification, and floral ornamentations.

• Post Construction Phase

1. Routine as well as emergency repair and maintenance work which may include repair and maintenance of machinery, equipment, infrastructure, superstructures, building and fittings.

2. Maintaining round the clock water supply through overhead water reservoirs.

3. Regular and periodic cleaning and disinfection of the overhead water reservoirs.

4. Maintenance and upkeep of the greenbelts, trees, and grass.

5. Maintaining a trouble-free wastewater disposal system and preventing choking of the sewer lines.

6. Environmental management including wastewater collection and disposal, solid waste collection disposal, janitorial services, horticulture, and beautification (plantation of trees, exotic shrubs, and flowers).

7. Attending to and addressing the complaints of the residents and occupants of the apartments.

8. Regular environmental audit and compliance monitoring as per the schedule recommended by the EPA Punjab.

The project also provides for construction of internal roads and footpaths for providing easy access to houses and the places of public utility. Whereas, the footpaths will be paved with tough tiles, the roads will be triple surface treated blacktop and asphalt concrete carpet roads. Spaces for parking have been provided along the road margins as shown in the schematic plan. Each housing unit will have all the major civic amenities such as water supply, sanitation, electricity, and curbside solid waste collection etc. Round the clock water supply will be maintained by constructing appropriate number of tube wells. Similarly, all sanitation and non-sanitation wastewater will be collected through the sewerage network and will be treated at the wastewater treatment unit before discharging out to drain.

In order to ensure healthy ambience and green environment, the project will have reasonable number of greenbelts, grassy lawns and public parks at various locations. Besides providing recreational facilities, these greenbelts will provide playing areas for the young children. As per the master plan, approximately 15% of the total land area has been reserved for open spaces and greenbelts.

2.11.2 PROJECT'S PLANNING & CONSTRUCTION ACTIVITIES

The main activities for accomplishment of the project include the following:

- Essential topographic, hydrological, geological studies and surveys to determine the essential and the most appropriate engineering parameters for construction and structural designing
- Detailed architectural, engineering, environmental, economic, social, and cost-benefit feasibility and technical studies
- Completion of the codal and legal formalities and obtaining NOCs and go-ahead clearances from the concerned regulatory agencies of the Government
- Preparation of the project documents containing project's scope of activities, mode of execution, and mechanism for supervision of construction
- Awarding of contract for construction and allied works as per proponent's code of practice
- Monitoring and supervision of the work for ensuring its proper execution quantitatively as well as qualitatively
- Removal of unspent materials, constructional wastes and debris
- Post execution operations, maintenance, and monitoring of all project activities and operations

2.11.3 FIRE FIGHTING SYSTEMS

The firefighting facilities such as fire hose reel, fire extinguishers are installed at various strategic places of the housing scheme. Water firefighting vehicle will be provided on the housing scheme. This firefighting standard requires that houses and the buildings as well as the immediate surroundings be well protected in case of a fire outbreak at the housing society. However, local administration & rescue 1122 will also be onboard in case of large fire outbreak.

2.11.4 LABOUR & HUMAN RESOURCE DEPLOYMENT

The project, being a large sized developmental activity, will provide a good number of job opportunities for the skilled and the unskilled personnel all

during the construction and operation phases. It is estimated that approx. 60-70 persons of various trades will work at one time during construction phase and about 30-40 will be permanently employed for the routine repair and maintenance services during operation phase of the project. The number of indirect job opportunities and income prospects will be three to four times the direct opportunities. Table 5 below presents estimated HR opportunities likely to come up in the wake of project implementation during both stages.

Table 2.1: Manpower Required

Description	Construction	Operation
Skilled workers	40-50	20
Unskilled & Semiskilled Workers	10	5
Others (drivers, security guard)	5	4
Junior Engineers	2	2
Surveyors/overseers	1	1

2.12 SUPPLIES

- **WATER BALANCE**

The Expected demand of water supply during construction phase is 10,000 gallons/day. Water demand for operational phase can be calculated on basis of total no. of houses and per capita water consumption and comes to be 207,060 gallons per day. Water Supply line will be laid separate from sewerage line. The demand depends upon the conditions of weather and firefighting usage.

- **Water Source**

The water requirement for the project is only for domestic purpose and commercial purpose and Ground Water will be supplied.

- **Water Demand and Waste Water Generation**

Water demand of the housing scheme is estimated by taking per capita consumption of 321 liters per capita per day (LPCD).

Table 2.4: Water Requirement and Wastewater Generation during construction

Sr. No.	Description	Water Consumption (gallons/day)	Wastewater Generation (gallons/day)	Mode of Disposal
1	Domestic	2000	1600	Will be disposed off into the drain through a septic tank / soak-pit system.
2	Construction and sprinkling	8000	-	-

The breakup of water requirement and wastewater generation during operational phase of project are given in Table 2.5:

Table 2.5: Water Requirement and Wastewater Generation during operational phase

Sr. No.	Description	Water Consumption (gallons/day)	Wastewater Generation (gallons/day)	Mode of Disposal
1	Domestic	207,060	176,001	Will be disposed off into drain through a septic tank / soak-pit system after primary treatment.

- **ELECTRICITY**

Source of power will be WAPDA only.

2.13 WASTEWATER DISPOSAL (LIQUID WASTE)

All the wastewater will be collected from houses through a proper sewerage system. A proper sewage network will be laid for proper collection of the waste water. The collected wastewater will be disposed of into drain after proper treatment. Treatment of wastewater will be carried out by Septic Tanks. The total wastewater generated by the proposed housing scheme will be 666.2 m3/day.

2.14 SOLID WASTE DISPOSAL

Solid wastes generated during operational phase (occupancy phase) of the project complex will comprise mainly the miscellaneous municipal wastes of domestic, household and marketplace origin. Solid wastes from such a source typically contain paper, glass, empty cans, tin bottles, food packaging, peelings, PET bottles, plastics, toys, and rags. According to a study, the municipal wastes of household origin contain relatively higher amounts of organics compared to other sources. Therefore, the place is allotted for disposal of solid waste collected from housing scheme on daily basis from where it is collected by local administration.

2.15 HEALTH & SAFETY OF PROJECT

Health, Safety & Hygiene includes the following:

- **First Aid facility**

  At workplace, workers and employers should have enough information, knowledge and training regarding first aid treatment in case of any emergency.

  The subject project provides proper medical facilities to workers and staff to cope with any incidental accidents and proper training about first aid is provided to workers and staff.

- **Safety Trainings**

Workers and all the staff should be provided with proper training about the work and safety practices.

- **List of Personal Protective Equipment (PPEs)**

Required personnel protection equipment (PPE) must be worn at all times when on construction or renovation sites at site project.

Depending on the circumstances and potential hazards present, additional PPE may also be required. This determination will be made by your supervisor based on the preliminary Hazard Analysis. Main PPEs to be used are:

- Protective gloves
- Hearing protection
- Full face shields when cutting, grinding, or chipping
- Chemical splash goggles
- Respiratory protection
- Fall protection equipment when working above 6 feet
- Specific protective clothing such as welding leathers when welding or FR clothing when working with live electric.

2.16 RESTORATION AND REHABILITATION PLANS

There exists no human settlement on the selected project site to be displaced owing to the commencement of the Project. No structure of any significance stands at the site to be relocated or dismantled. Land is already under proponent's ownership, and no fresh land is to be occupied. Hence, no relocation and rehabilitation are required.

2.17 GOVERNMENT APPROVALS

Proponent has applied for Environmental Approval and after getting Environmental Approval, they will apply for other required approvals.

CHAPTER 3: STATUTORY REQUIREMENTS & STANDARDS

3.1 EXISTING LEGISLATION AND LEGAL FRAMEWORK

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

3.2 INSTITUTIONAL SETUP

3.3 ENVIRONMENTAL PROTECTION COUNCILS

The Punjab Environmental Protection Council (PEPC) is the apex decision-making body of Punjab. It has been developed under the provision of Punjab Environmental Protection Act 1997. It is headed by Chief Minister of Punjab with other members.

3.4 RELEVANT LEGAL / INSTITUTIONAL FRAMEWORK

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) that was replaced by the PEPA, 1997, through an Act of Parliament. According to the 18thAmendment in Constitution, the PEPA 1997 has been confined to Federal Area and provinces have been allowed to formulate their own environmental legislation in the subject of environment.

Provincial Environment Protection Departments are also working on the formulation and enforcement of environmental statutes and by-laws. The Pak EPA has issued several policies guidelines and adopted measures for streamlining the environmental assessment. Though, the need for environmental screening and assessment has received some weight during the

recent past, strict implementation of the PEQS is still a dream to be realized. The applicable laws for the environmental study of the Project are briefly described below:

3.5 PAKISTAN ENVIRONMENTAL PROTECTION ORDER (PEPO) 1983

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

3.6 PUNJAB ENVIRONMENTAL PROTECTION ACT, 1997

Under section 12 (4) of PEPA, 1997 "The Provincial Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination or environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the Initial Environmental Examination or, as the case may be, the Environmental Impact Assessment shall be deemed to have been approved, to the extent to which it does not contravene the provisions of this Act and the rules and regulations".

As per definition given in the Punjab Environmental Protection Act 1997, Environmental Impact Assessment (EIA) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory, and compensatory measures, formulation of environmental management& training plans & monitoring arrangements, and framing of recommendations and such other components as may be prescribed. The provision of Section 12 has been incorporated "as it is" in the new Punjab Environmental Protection Act, 1997.

3.7 NATIONAL ENVIRONMENTAL POLICY, 2005

The National Environmental Policy (2005) provides a framework for addressing the environmental issues (particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of bio diversity, desertification etc.) confronting Pakistan.

3.8 REVIEW OF IEE / IEE REGULATIONS, 2022

The EPA has issued Review of the Initial Environmental Examination and Environmental Impact Assessment Regulations 2022, to review the Initial Environmental Examination (IEE) / Environment Impact Assessment (EIA) reports. Categorization of the projects for IEE and EIA is one of the main components of the Regulations. As these regulations, the Projects have been classified based on expected degree of adverse environmental impacts. Project's type listed in Schedule I are designated as potentially less adverse effect, schedule I projects require an IEE and projects given in schedule II require EIA to be conducted.

3.9 GUIDELINES FOR THE PREPARATION OF IEE/EIA REPORTS

The EPA has also framed Guidelines for the Preparation of IEE / EIA of projects in various developmental sectors. These Guidelines are ideal for preparing the IEE or EIA report but line-to-line preparation not necessary because Guidelines are not part of PEPA and EPA Punjab has not any notification for adoption or follow these Guidelines.

However, this EIA report has been prepared in following the Guidelines.

3.10 PAKISTAN PENAL CODE, 1860

Noise pollution has been covered in section 268, which defines and recognizes noise as a public nuisance. "A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury,

danger of annoyance to the public or the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right''.

3.11 THE LAND ACQUISITION ACT, 1894

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

3.12 LABOR LAWS

Construction and operational activities during the course of construction may affect occupational health of workers. Employers are required to abide by labor laws in respect of their own employees and to ensure that contractors to follow the relevant labor laws and rules relating to safety of the workforce and creating a healthy working environment.

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 GENERAL

The existing environment around the site of project has been studied with respect to physical, ecological and socio-economic resources. The existing information to establish a database for the EIA of the project was collected from different departments, review of previous studies and through the site visits carried in out in the project area.

4.2 PHYSICAL ENVIRONMENT

The study examines the physical resources, topography, soil, climate, surface and ground water and geology of not only the project site but also the city as whole to assess whether the project under review can or does impact on any of these parameters. The description of physical environment of Sheikhupura city and the project site is present in the following sub sections.

4.3 Geological Formation

The soil of the Sheikhupura belongs to the typical alluvium of the Indo-Gangetic plains. The majority of the soils are loamy or sandy loam consisting of soil crust of different depths. Hardly any profile characteristics are observed; soluble soils are present in considerable amounts. The lower layer consists of kankar nodules. The soils have generally an alkaline reaction and are adequately supplied by phosphorus and potash, but are deficient in organic matter and nitrogen.

Geologically the alluvium is divided into khaddar, i.e., the newer alluvium of sandy generally light colored and of less concretionary composition; and Bhangar, i.e., the older alluvium of the more clayey composition, generally of dark appearance and full of kankar.

The soil differs in consistency from drift sand to loam and from fin silt to stiff clay. A few occasional pebble beds are also present. Layers of kankar in the Indo-Gangetic alluvium of the district are also observed.

4.4 Climate

The Climate of Sheikhupura is tropical. It is very healthy and salubrious. Except of few months of summer, Sheikhupura is a suitable place to live.

The people of Sheikhupura have to experience extremes of temperature. The summers are really hot and the winters are very cold. There are three main seasons in Sheikhupura, namely, summer, winter and rainy season. During the summers Sheikhupura experiences heat wave

Table 0:1: Seasons in Sheikhupura

Weather	Months
Autumn	1 Oct – 15 Nov
Winter	15 Nov – 15 Feb
Spring	15 Feb – 1 Apr
Summer	1 Apr – 30 Sep
Monsoon	July – Sep

4.5 Temperature

Sheikhupura weather is hot and humid. The city experiences an extreme climate during the months of May, June and July, when the city witnesses summer season. The temperature in Sheikhupura ranges between 40°C to 45°C, during the summer months. Sheikhupura experiences winters during the months of December, January and February. The temperature during

this season varies between 5°C to 8°C. Given below are the maximum and minimum temperatures of Sheikhupura throughout the year:

4.6 Rainfall

Sheikhupura has a distinct rainy season, during which the weather is very humid. The rainiest months of the year are July and August, with June and September also gets some rain. During the rest of the year, barely any rain falls in Sheikhupura.

4.7 Topography

Sheikhupura District is a district located in Lahore Division of Punjab Province, Pakistan. Sheikhupura City is the headquarters of Sheikhupura district. According to the 1998 census of Pakistan, the district had a population of 3,321,029 of which 25.45% were urban. In 2005 one of its subdivisions was split off to form the new Nankana Sahib District.

4.8 Wind Direction

The Sheikhupura region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months.

4.9 Ambient Air Quality

Atmospheric pollution particularly in urban area has a strong impact upon daily life. Sheikhupura is the second largest city of Pakistan. Its economic growth and rising energy consumption are causing the increase in air pollution. The main sources of the air pollution are motor vehicles and industrial activities. SO2, NO2, CO2, CO, O3 and Particulate Matter (PM) are investigated as the pollution indicators.

The overall air quality in the study area is of moderate nature. Dust particles along with oxides of nitrogen, sulphur and carbon are the major causes of air pollution in the ambient air quality.

It was however observed during the visit that environment of the project area is clean as the area is far away from the city center. Results of tests conducted to assess ambient air quality of the project area are given in annexures of the report.

4.10 Water Resources

Surface Water

There is no fresh surface water resource like canal or ponds, near the project area. Pajian drain is a municipal drain however running in close vicinity.

Ground Water

The city of Sheikhupura is underlain by the deep permeable aquifer formed within the alluvial plain of the Ravi River, which is the part of Greater Indus Plain.

Groundwater is the principal source of municipal water supply in Sheikhupura. This is also the case in the immediate vicinity of the site. The City's drinking water is obtained from groundwater aquifer by means of tube wells located throughout the area. Groundwater is pumped from 400-800 feet and is generally good for direct consumption. About 83% of the city's population is consuming groundwater for drinking purposes. Results conducted to assess the groundwater quality in the area in context of six parameters of concern for drinking water.

4.11 Drinking Water Quality

Local Municipal administration is providing drinking water to the residents of Sheikhupura. It claims the quality of water conform to the Drinking Water Standards.

The increase in population will have direct impact on the water sector for meeting the domestic, industrial and agricultural needs. Pakistan has now essentially exhausted its available water resources and is on the verge of becoming a water deficit country. The quality of water supplies in many cities of Pakistan is deteriorating fast. Over pumping of groundwater due to extended drought has affected the water quality adversely.

4.12 Noise Level

There are many a large, medium and small industries which are still working within city premises. Industrial activity and vehicular emissions are causing excessive noise in the city.

The affluent areas of Sheikhupura are quieter than rest of the city; the noise level in these areas is still far higher than the standards set by the World Health Organization and the EPA. Noise pollution in the city is on the rise with most residents complaining that the noise is becoming a public nuisance.

4.13 BIOLOGICAL ENVIRONMENT

Sheikhupura is enriched with the presence of natural flora and fauna, although with the growing population and development activities, the presence of the same has been somewhat affected.

There are no significant or well-shaped trees and shrubs on the project site as the site is located in plane land within the premises of unit.

4.13.1 Flora

Trees, also called the 'lungs' of the earth, are important for the restoration of the eco-system. People can benefit immensely from their survival and existence. Trees have also been a source of medicine for thousands of years and a refuge for various species of birds. Several species of the trees in Sheikhupura are being used in medicine and provide excess raw material for Indian ayurvedics. Trees such as Neem, Bhaira, Harrar, Dhair and Moosri have great medicinal value and can be grown easily in the city.

No trees are found in the vicinity of the project area. Therefore there is no adverse impact on the flora. There is no Reserve Forest in the 5 km radius. No threatened or endangered species and no medicinal plants are present in the project area.

4.13.2 Fauna

With an increase in the rate of urbanization, the ecology of Sheikhupura has been considerably affected and population of birds in Sheikhupura has reduced to just 85 including the resident and migratory ones.

Some birds and few animals like Buffaloes, cows, goats, donkeys, hen, rats, cats, dogs are present in the vicinity. Some reptiles like lizards are also present. The only amphibian seen the project area is frog. No threatened or endangered species are found in the project site. Similarly no wildlife is present.

4.14 SOCIO ECONOMIC ASSESSMENT

Social change is the consequence of almost any intrusion into the community life of any society. The intrusion can be in the form of any developmental projects or nonspecific, less tangible forms such as increased exposure to other cultures, technological changes and so on. The social change that results from intrusion into community life can also be beneficial, but can have undesirable or negative outcomes. Even that

change in the long run may have positive effect on the social wellbeing of a community.

Social Impact Assessment is a methodology used for examining social change due to external sources, especially specific developmental projects, but also government policies, technological changes and social processes or anything that has a social impact.

The objectives of the given study are outlined as follow:

To carry out the assessment of social impact.

Acquire socioeconomic data to evaluate and identify the project interventions.

Assess needs of community related environmental concerns.

To assess adverse and beneficial socioeconomic and health impacts of the activity.

To suggest remedial measures and solutions to improve socio economic conditions.

To analyze socio economic conditions of community, with special reference to environment and conservation of natural resources

4.15 Demographic Profile of Sheikhupura

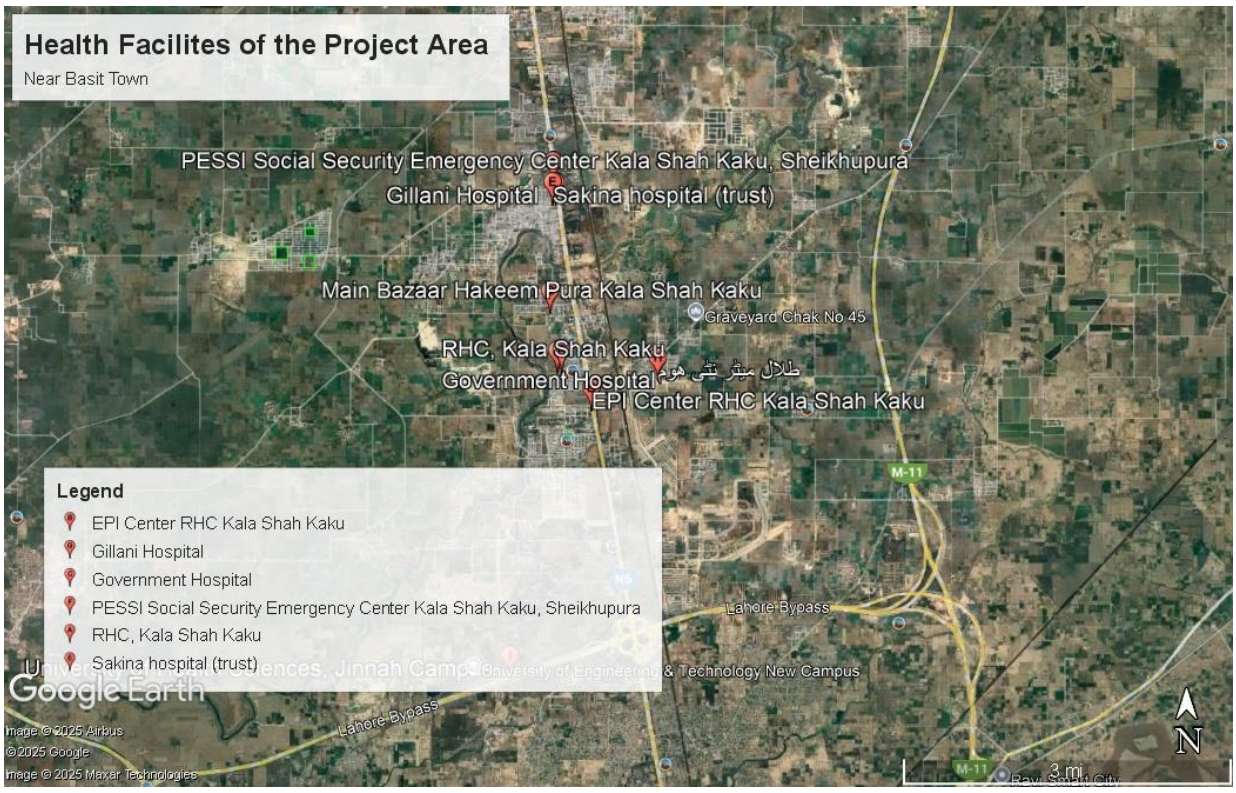
Sheikhupura is the Industrial City of Punjab is one of most important cities in the country, which is also known as “The Industrial Hub of Punjab”. In 2023, Sheikhupura district had a population of 4,049,418, with 593,260 households. The sex ratio was 105.58 males per 100 females, and the literacy rate was 68.88%. A significant portion, 1,087,191 (26.85%), were under 10 years of age, and 38.30% (1,550,793) lived in urban areas.

Urdu, which is the official language of Sheikhupura, is mostly used in the city. However, the people in Sheikhupura also use other languages like English, Punjabi. It is noteworthy that Pakistan is an Islamic country,

where the majority of the population is Muslim. Sheikhupura, being a city in Pakistan, could not be an exception to this. As a result, 96% of the total population in Sheikhupura is Muslim. Other religions in the city accounting for the rest 4% are Christianity, Hinduism and Sikhism.

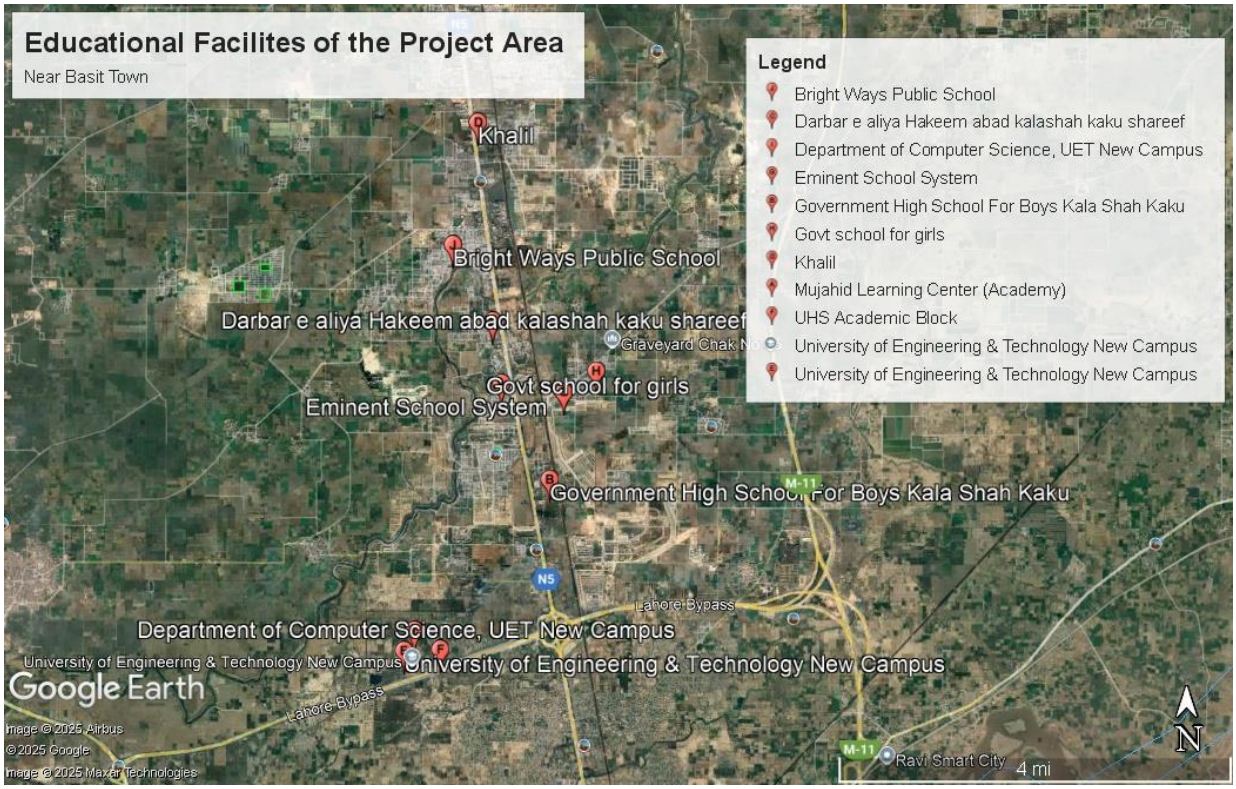
4.16 Health facilities

The city of Sheikhupura in Punjab Province of Pakistan is served by a number of private and government hospitals offering world class medical facilities. The rural and urban areas are served by various other medical centers and dispensaries offering modern medical facilities. The hospitals, dispensaries and medical centers in Sheikhupura aim to provide the citizens best medical facilities and prevention from contagious and other harmful diseases. There is no health facility or any dispensary near the project area.



4.17 Educational Facilities

Sheikhupura have many public and private colleges and schools. Sheikhupura is Pakistan's among largest producer of professionals in the fields of science, technology, IT, engineering, medicine, nuclear sciences, pharmacology, telecommunication, biotechnology and microelectronics. The current literacy rate of Sheikhupura is 64%. No educational facility is present in the vicinity of the project area.



4.18 Transportation and Communication

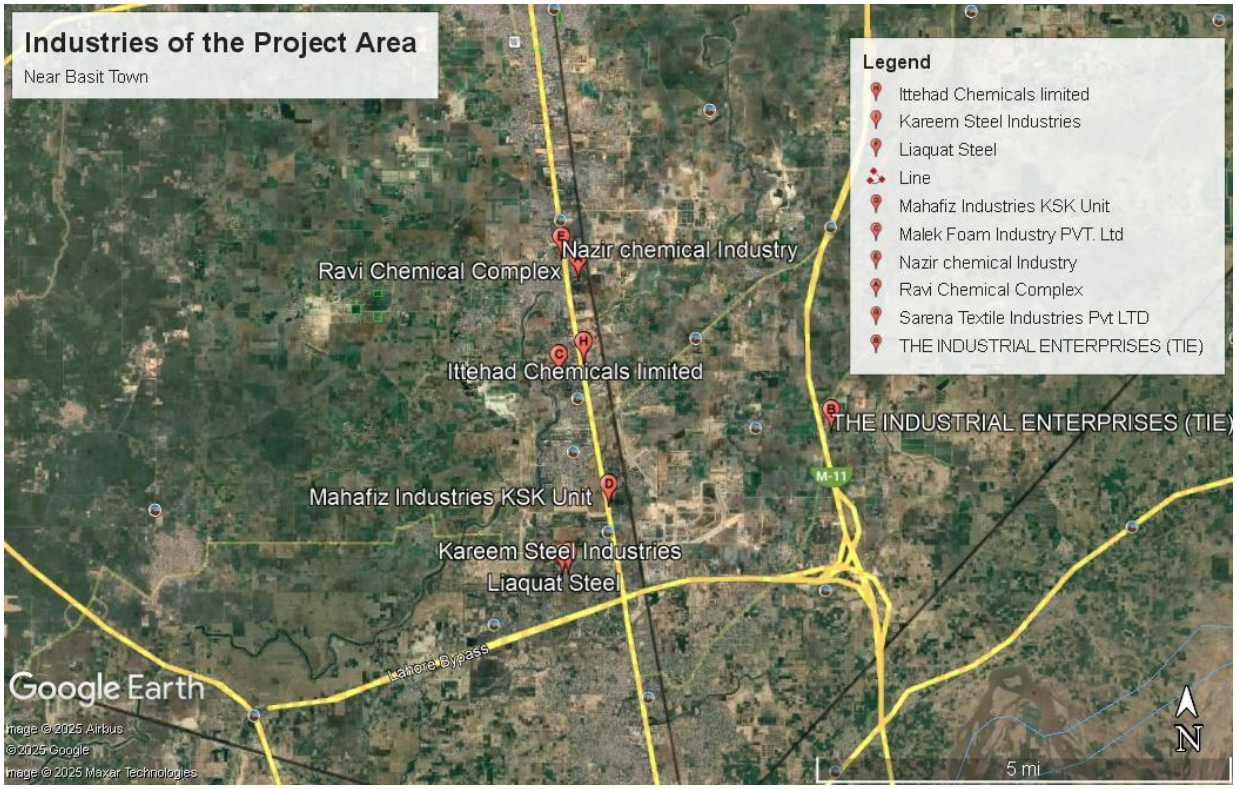
Sheikhupura is one of the most accessible cities of Pakistan and the only unique city of Pakistan where you can find Public and private Transport, 24 hrs. a day and 7 days in a week.

Public transport is always available in the project area. To fulfill the remaining needs of transport there are thousands of rickshaws and taxis which run on compressed natural gas to reduce pollution in the city and of course about 75 percent of the residents have their own conveyances.

4.19 Industrial Activities

Sheikhupura trade and industries thrives on certain large-scale industries such as steel, textile, carpet and IT industries. Sheikhupura is known as the industrial belt of Pakistan contributing the largest share in the GDP of the country. The city is home to 20% of Pakistan's industrial producers; manufactures include textiles, rubber, iron, and steel. Handicrafts, especially gold and silver work, also flourish.

The proposed project area is also present in a plain area and is surrounded by mostly industries and little agricultural land.



4.20 Water Supply

The project has an independent water supply system comprising storage tank of sufficient capacity. Water is supplied to office and works through motor pump.

4.21Telephone Facilities

Landline and Cellular telephone facilities are not present in the project area.

4.22 QUALITY OF LIFE VALUES

No residential area is present near the project site; therefore, individuals and workers from neighboring areas were interviewed. The individual assessed from the neighboring communities of the project area were involved in small businesses and private jobs in nearby industries. Most of the people have sound earning sources and practice leisure lifestyles in fresh environments provided by the private housing societies in the nearby areas. Most of the people hesitated telling their incomes; however, incomes average in the range of 20000 to as much as 100000 PKR; enough to meet their basic needs. They avail all the basic facilities of healthy living and enjoy human rights and civil liberties.

The diseases prevalent in the community were stomach disorders, fatigue, joint pain, diabetes and arthritis. But it was also observed that all these diseases are commonly due to improper diet and water contamination.

Almost all of the interviewed members were in favor of the project; rather they commented even more similar projects should be initiated in such areas as to yield lowering of goods prices and controlling inflation when not comprising on quality of the products and the environment.

4.23 Conclusion

The gathered and assessed data produces the conclusion that commencement of the project will prove to be beneficial for the inhabitants of the area. The project will provide job opportunities for the local

inhabitants, and will provide basic religious and primary educational facilities to them, hence improving their socio economic status.

The project, overall, does not have major adverse impacts on the existing environment and people with due implantation of the mitigation measures. It is further concluded that project confirms to the local environment.

CHAPTER 5: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 GENERAL

This section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

5.2 OBJECTIVES

Objectives of screening out all possible impacts and then providing their mitigation measures are:

- To find different alternatives and ways of carrying out the project activities.
- To enhance the Environmental and Social benefits of proposal.
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept in acceptable limits

5.3 IMPACT ASSESSMENT METHODOLOGY

- **Screening of Potential Impacts**

Based on site visit, observation, brain storming, provided information and social interviews, significant impacts are anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is carried out.

- **Identification of Mitigation Measures**

After anticipation and screening of significant impacts, certain mitigation measures are provided in order to enhance benefits of project and reducing impacts.

5.4 IMPACTS ASSOCIATED WITH PROJECT LOCATION

The proponent has selected the site owing to the following reasons:

- The site is undisputed and under the ownership of the proponent
- There is no community or human settlement on the site
- There is no fauna flora (particularly belonging to an endangered species) on the site
- Main road network runs in front of the unit
- There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, any structure of socio-cultural significance (historical or archaeological site or religious structures; Masjid, temples, etc.) within 2 km of the selected site

It can be concluded in view of these reasons that the selected site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

5.5 IMPACTS ASSOCIATED WITH DESIGN PHASE

At the design phase, no considerable impact will occur on land, soil, topography, ground water, and on people of the area. However, in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the building will adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health.

- **Mitigation Measures at Design Phase**

At design, phase special attention should be given to the design of the project in the sense that it has been designed in such a way as to cause minimum disruption and deterioration of environment and surroundings. There will be buffer zone to avoid any disaster.

5.6 IMPACT DURING CONSTRUCTION PHASE

The potential environmental impacts of the project at site and surrounding area during the development / construction phase are described as follows:

5.6.1 Physical Environment

The main impacts of the project during development / construction of the civil works, installation of water supply system, sewer system and installation of utility and equipment will be the dust and noise from transportation of construction materials and equipment. Standard Engineering Practices will be enforced on the construction / development site.

- **Seismic Hazard**

In this zone, distant earthquakes with fundamental period's greater than 1.0 second may cause damage to structures. This factor requires special consideration of the designers. This will be a moderate negative impact.

- **Mitigation**

  All the foundations of the structures (electric poles, water supply and other lines etc.) will be designed to withstand even moderate to large earthquakes. For seismic hazard analysis, updated structural and seismic evaluations will be consulted.

- **Impact on Soil**

During construction phase, the soil quality may be affected due to digging for construction and for very small number of discharges during vehicle and equipment maintenance and leakage from equipment and vehicles. The impact is not significant.

Depending on the nature of the material, location of spill and quality of spill, soil can be contaminated. However, if mitigatory measures applied, the overall impact on soil during construction phase is minor.

- **Impact on Geology**

The geology of the area is flat. No hills, mountains and slopes are present so during construction phase there will be no impact on geology of area.

- **Impact on Topography**

The topography of project area is nearly flat and remains unchanged during construction phase.

- **Ecological Impacts**

The project area is devoid of any trees cover or any endangered or threatened animal species. The impact will be Nil.

- **Impact on Water Bodies**

No fresh water bodies are known to exist in the vicinity of the project area. Therefore, there will not be any deterioration of surface water quality.

- **Impacts on Air Quality**

Following potential impacts on air quality may occur during construction phase.

- **Emission of Dust and Particulate Matter**

  During the development / construction, vehicles and machinery will be employed. These will generate some dust and smoke temporarily, which will stop on completion of the construction work. During construction phase due to continuous operation of machinery and movement of heavy trucks and vehicles can generate gaseous emissions and can have a slight adverse effect on the surrounding environment. Combustion exhaust from vehicles and construction equipment during construction phase can affect ambient air quality of project area.

  This impact is classified to be short term, reversible and limited, as it will only occur during the excavation activities. In addition, these impacts are expected to be contained within the site boundaries.

- **Vehicular Exhaust Emission**

During construction, the continuous operation of machinery and movement of cranes, heavy trucks and vehicles may generate gaseous emissions and may have an adverse impact on the surrounding environment. The overall impact on the quality of air during the construction stage will, however, be of less intensity. This will be of moderate negative impact.

- **Health and Safety of Workers**

During construction phase minor and severe injuries to workers due to operation activities may occur but if managed properly this impact can be mitigated.

5.7 Mitigation Measures during Construction phase

The potential negative impacts during construction and operational stage of the project should be mitigated to an acceptable level. Following environmental protection measures are adopted to eliminate adverse environmental impacts or to reduce them to an acceptable level within the legislative and regulatory framework. The mitigation measures are listed below:

- Appropriate waste disposal mechanism should be followed during the construction phase. The construction waste would be disposed in a manner that does not contaminate surface or groundwater.
- The construction waste generated will be used for earth filling within the project site premises.
- The Contractor needs to make sure that their machinery and equipment are properly tuned and serviced and there is no leakage of oil from construction equipment and machineries.
- Contractor should give assurance of quality of machineries and equipment which will be used during excavation and construction process.
- All vehicles, machineries, equipment and generators used during construction activities should be in good working condition and be properly maintained in order to minimize exhaust emissions.
- Construction labor must be trained in safety procedures for all

relevant aspects of construction

- Helmets or hard hats should be worn by workers at all time of work and everywhere on the Project Site.
- Regular checks should be carried out to ensure that the contractor is following safe working procedures and practices.
- Workers should be provided with personal protective equipment (PPE's) such as safety jackets, earplugs or earmuffs, special boots and dust masks.
- Use of up-to-date and well-maintained machineries or equipment with reduced noise level.
- Confining excessively noisy work to normal working hours in the day, as much as possible.
- Providing construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use.
- Earmuffs or ear caps should also be provided to those people living in nearby area.

5.7.1 Disposal of Construction Waste/Excavated Material

Dumping of construction wastes/excavated material in the surrounding area of the housing scheme may limit the use of land in the Project Area. This will be a moderate negative impact.

- **Mitigation**

  Management of construction activities will ensure minimum degradation to the soil around the project area and dumping of excavated waste will be used for earth-filling and in the depressions within the project area.

The administrator will be bound to take care of the waste generated from the construction activities.

5.7.2 Noise and Vibration

When the construction work is undertaken, constant rattle of heavy machinery will raise the noise level in the Project Area. This noise and vibration will affect directly the residents of nearby areas. Noise due to the construction will be a minor negative impact.

- **Mitigation**

  Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

  - Selection of up-to-date and well-maintained plant or equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.
  - Confining of excessively noisy areas and limiting the work to normal working hours in the day;
  - Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; and
  - Regular checkups and maintenance of the construction equipment, and oiling and greasing of the noise making mechanical parts.

5.7.3 Flora

There are no trees in the vicinity of project area. This will be a minor negative impact.

- **Mitigation**

After construction besides introducing new ornamental plants, local tree and plants species, as uprooted from the Project Site, will be planted for landscaping. In addition to providing a better view to the area, the vegetation's will help minimize the excess noise, vehicular emissions and dust pollution.

5.7.4 Fauna

There is no wildlife present in the Project area. In addition, the local animals and bird species of the area are very much domesticated and will not be adversely affected by the Project execution.

- **Mitigation** Not required

5.7.5 Relocation of Utilities

The construction of the infrastructure will not involve relocation of any public utilities.

- **Mitigation** Not required

5.7.6 Traffic Congestion and Disturbance to People

During the construction phase, the movement of heavy machinery and transportation of raw material and equipment may cause traffic congestions. As a result, the daily activities of the people of nearby localities as well as of the visitors may be disturbed, which will require proper mitigation measures. This will be a moderate negative impact.

- **Mitigation**

During construction, following mitigation measures will be followed:

- Observation of timing by the vehicles carrying construction material of infrastructure to cause minimum disturbance to traffic on existing road. The construction equipment and machinery must be stationed

in the boundary premises to avoid the traffic congestion on the main Road.

- Transportation of raw material and heavy machinery will be done early in the morning; and
- There will be coordinated planning of traffic movement by the Traffic Police and the Transport Department in accordance with the construction program with advance warnings to the affected residents and road users.
- All the machinery will stay inside the periphery of project site so it will not cause disturbance in the traffic.

5.7.7 Poverty Alleviation

Construction of the housing scheme will generate the employment opportunities for the population living in the surrounding areas. This will be a potential minor positive impact.

- **Mitigation** Not required

5.7.8 Sanitation and Solid Waste Disposal

There will be a health risk of sanitation to the workers. This will be minor negative impact.

- **Mitigation**

All the solid waste will be disposed of in accordance with the regulations of Tehsil Municipal Administration.

5.7.9 Workers' Safety and Hygienic Conditions

The construction activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working

conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

- **Mitigation**

Implementation of the following measures will ensure health and safety of the workers and the public during the construction phase:

- The Administrator will ensure that the construction workers/labours are trained in safety procedures for all relevant aspects of construction;
- Construction workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;
- Formal emergency procedures will be developed for construction site increase of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;
- The safety of the public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags; and

- Proper illumination will be provided at night.

5.8 IMPACTS OF OPERATIONAL PHASE

The anticipated impacts related to the project have been studied for operational stage and is discussed as follows:

5.8.1 PHYSICAL IMPACTS

- **Air Quality**

Increase in traffic volume during peak hours will also deteriorate the air quality. This will be a minor negative impact.

- **Mitigation**

In order to minimize air pollution, following mitigation measures are recommended:

- Plantation will be provided on the main entrance of the housing scheme and at roadsides. Which will generate fresh oxygen;

- **Noise**

During the operational stage, Noise will be generated mainly due to movement of vehicles on the roads, for which proper mitigation measures are required. This will be a moderate negative impact.

- **Mitigation**

World Bank's Pollution Prevention and Abatement Guidelines for ambient noise for the receptors are i.e. 55 and 45 dB (A) during daytime and nighttime respectively for residential, institutional and educational areas and the same shall be maintained.

- **Wastewater**

Wastewater generated from operational phase of housing scheme will be domestic wastewater and not harmful and after primary treatment will be discharged into nearby natural drain.

- **Mitigation**

Water supply and sewerage has historically been the responsibility of the municipal local bodies like Municipal Corporations and Municipal Committees. Most of these municipal bodies have now been made local government, which are responsible for providing water supply and sanitation services under the Punjab Local Guidelines Ordinance 2016.

The domestic wastewater will be discharged through main sewerage pipelines, which have sufficient size to cater all sewage and drainage of housing scheme into the nearby drain.

- **Solid Waste**

  There will be only domestic waste e.g. kitchen waste etc.

  This will be a minor negative impact.

  - **Mitigation**

  Small waste storage bins will be installed inside the boundary. The waste from these bins will be collected by the sanitary workers. The waste will be disposed of in accordance with the procedures of local Administration.

5.9 SOCIO-ECONOMIC IMPACT

When a development project is launched in a community, it helps in boosting up the socio-economic conditions by providing the people different economic opportunities. The construction of housing scheme would have a great impact on the commercial activities of the locals.

The socio-economic impacts like employment, education, life, style and cultural uplift are the direct benefits during this stage for the people of the Project Area. Local people will be hired for different jobs, i.e. gardening, housekeeping, cooking, tuitions, driving etc. Facilities like commodity market and medication will also generate working opportunities for the shopkeepers of nearby communities. All the Project related job opportunities will ultimately improve per capita income of the population in the area. This is a major positive impact.

- **Mitigation:** Not required

5.10 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

- **Tree Plantation**

Tree plantation and cropping within the premises have been planned by the proponent for environmental enhancement. The Proponent will also make arrangements for protection and maintenance of trees. More than 500 trees will be planted including amaltas, keekar Shisham, Rose and other ornamental plants for beauty having height of 6-7 ft.

5.11 SUMMARY OF SIGNIFICANT IMPACT IDENTIFICATION

The method of checklist has the advantage of being simple to understand and use good for site selection and priority setting but has the disadvantage of not to distinguish between direct and indirect impacts and they do not link actions and impacts.

A Checklist of environmental parameters for housing scheme been developed on experience basis to evaluate the impacts of various actions affecting the Environmental Resources and values with the recommended feasible protection measures.

Environmental Aspects	Potential Impact	Project Phase	Nature of Impact	Duration of Impact	Reversibility of Impact	Significant of Impact
GEOLOGY, LANDSCAPE & SOIL	Soil contamination	Construction & Operational phase	Direct	Medium Term	Irreversible	Low
NOISE & VIBRATION	Annoying & Disturbance	Construction phase	Direct	Short term	Reversible	Low
AIR QUALITY	Dust & fugitive emission	Construction phase	Direct	short Term	Reversible	Low
WASTE GENERATION	**Liquid Waste:** contaminating aquifer, contaminating surface water	Construction Phase Only	Direct	Short term	Reversible	Low
	Solid Waste: Aesthetic issues	Construction phase	Direct	Medium Term	Reversible	Low
	Hazardous waste: soil, surface and ground water contamination	Construction phase	Direct	Short term	Reversible	Low
WATER RESOURCES						
	Contamination Of Ground Water	Construction & Operational phase	Direct	Long Term	Irreversible	Low
SOCIO ECONOMIC IMPACTS	Occupational & Communal Safety	Construction & Operational phase	Direct	Long Term	Reversible	Low
	Local Employment	Construction & Operational phase	Direct	Long Term	-	Positive impact

CHAPTER 6: ENVIRONMENTAL MANGEMENT AND MONITORING PLAN

This EIA provides the Environmental Management Plan (EMP) of the project for its construction and operation phases to keep its environment benign as well as the monitoring plan to ensure the compliance of the established EMP.

As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the Environmental Protection Agency to obtain confirmation for compliance and Environmental Approval for project operation.

Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring. This section also underlines the monitoring framework for both construction and operation phases to check compliance of the EMP and to take timely actions for correction in case any accidence of significant criteria, requirements or goals are found.

6.1 PURPOSE OF ENVIRONMENTAL MITIGATION

For the project to be running successfully and compliance with environmental regulations mitigation of impacts caused by the project is required. The purpose of the need of mitigation can be answered by various questions as follows:

1. **What is the problem?**

When the resources of environment are being used ruthlessly, it results in degradation of the environment to the extent that environment loses its resilience and the carrying capacity reduces the resources are found reduced and the recovery process is too slow or nearly no recovery is possible.

2. **When will the problem occur and when should it be addressed?**

The problems that would occur fall within the project premises, and near the boundaries of the project location. The impacts would range up to the distance

where project related activities are performed or up to the geographical zone where the effects spread.

Impacts would show their presence soon after the project development starts.

3. Where the problem should be addressed?

The problems should be addressed where they are originated. That is at the project location.

4. How the problem should be addressed?

Problems can be addressed by using environmentally friendly practices. Such practices can be followed by following mitigation plan.

6.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA.
- Define the responsibilities of the project proponent and contractor and provide a means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures.

Major negative impacts and their measures are given below:

Table 7: Environmental Management Plan for Construction and Operation Phase

Environmental Aspects	Mitigation Measures	Implementation
Construction Phase		
Water Quality	• Proper maintenance of construction machineries	Construction Crew

Environmental Aspects	Mitigation Measures	Implementation
	• Ensurance of Proper housekeeping at the construction site. • No waste disposal into water body	
Air pollution	• Watering of exposed surfaces and soil with adequate frequency to keep soil moist as much as 75%. • Covering the stockpiles, for example with tarpaulin or thick plastic sheet. • Provision of dust respirators to equipment operators.	Construction Crew
Soil Contamination	• Landscaping should be done after construction with indigenous tree species if possible. • Soil waste should be disposed of properly or cut and fill should be adopted. • Hazardous chemicals should be properly handled in order to avoid spillage.	Construction Crew
Noise and Vibrations	• Proper designing, and maintenance as well as repairing of construction machinery and equipment. • Generators and vehicles should properly equipped with silencers and mufflers. • Use of noise-abating devices • Provision of PPE's to the workers. • Planting of trees. • Noise barriers must be put in on and around the project boundary.	Construction Crew
Solid Waste	• Waste segregation should be done onsite. • Excavated soil should be reused onsite for backfilling. • If materials cannot be reused on- site, then the feasibility of reusing them off-site will be explored. • Recyclable waste could successfully be used by other businesses or operations presenting the potential for cost savings.	Construction Crew
Land contamination	• Preparing of plans and procedures to manage the contaminated media. • Management plan should be prepared to manage obsolete, hazardous materials or oil.	Construction Crew

Environmental Aspects	Mitigation Measures	Implementation
Health & Safety Issues	• Availability of proper PPES (safety helmets, goggles) to the workers. • Availability of basic health care unit and first aid within the premises of project site. • Good quality food and water must be provided to the labor force. • Firefighting equipment must be present all the time.	Construction Crew
Operational Phase		
Noise	• Regular vehicle and equipment maintenance. • Installation of Acoustic barriers. • Speed control should be enforced.	Management and maintenance staff
Air quality	• Regular vehicle and equipment maintenance. • Use low sulfur fuel. • Enforcement of speed control. • Tree Plantation.	Management and maintenance staff
Liquid Waste	• Proper sewerage system for collection of waste water. • Treatment of domestic wastewater through septic tank. • Monitoring of effluents as per PEQs. • Water conservation measures should be adopted including installation of water saving devices • Use leak proof water supply pipes.	Management and maintenance staff
Solid Waste	• Adopt waste segregation system. • Provision of a numbers of bins with labels • Pavement of floor of temporary waste storage area. • Recycling of recyclable waste and reuse of reusable waste. • Collection of food wastes in enclosed bins • No open dumping or burning of waste. • Certified Contractor will be hired to handle process solid waste. • The installed bins will be covered in order to reduce the chances of the disease vector production.	Leased clients

Environmental Aspects	Mitigation Measures	Implementation
	• Regular training to the workers regarding identification, segregation and management of waste.	
Energy Management	• Installation of energy saving devices. • Installation of auto switching off electrical equipment.	Management and maintenance staff
Fire Hazards	• Provision of adequate fire extinguishers and firefighting equipment. • Development of firefighting plan and evacuation plan. • Organization of firefighting, evacuation and first aid trainings.	Management and maintenance staff
Health, Safety & Community Well-being	• Ensuring continuity of supply of the utilities and essentialities in scheme. • Ensure provision and functioning of street light system. • There should be a rescue team available all the time to cope up with any emergency or fire outburst.	Management and maintenance staff
Equipment Maintenance	• Prepare and keep the record of equipment maintenance log. • Prepare proper maintenance sheets for vehicles. • Use fully tuned vehicles and machinery.	Management and maintenance staff
Equipment Maintenance	• Prepare and keep the record of equipment maintenance log. • Prepare proper maintenance sheets for vehicles. • Use fully tuned vehicles and machinery.	Management and maintenance staff

6.3 ENVIRONMENTAL MONITORING PLAN

Environmental monitoring is a vital component of the 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 6.2: Environmental Monitoring

Env. Components	Project Stage	Parameters	Instrument	Standards	Monitoring			Institutional Responsibility
					Location	Frequency	Duration	
Air	Operation	Ambient Air (H_2S, NOx, Sox, CO)	Air Quality Monitors/ Gadgets	PEQs	Project Site	Quarterly	As per EPA approved testing method	Through EPA certified monitoring lab
Noise Levels	Operation	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Quarterly	As per EPA approved testing method	Through EPA certified monitoring lab
Health and Safety	Operation	Injuries and accidents	-------	-----	Project site	Daily basis	--------	Management of Housing Society Namely Al Qaswa Orchard

Waste disposal, procedure for waste collection, storage, and disposal	Operation	collection, storage, and disposal will be undertaken at each site of the project activity	Visually	-----	Project site	Daily basis	--------	Management of Housing Society Namely Al Qaswa Orchard
Waste disposal, procedure for waste collection, storage, and disposal	Operation	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of	Visually	-----	Project site	Daily basis	--------	Management of Housing Society Namely Al Qaswa Orchard

6.4 INSTITUTIONAL CAPACITY OF THE UNIT

The organizational structure for the Environment Management Plan is outlined below:

- **PRIMARY RESPONSIBILITIES**

The primary responsibility for implementing EMP lies with the owner of Housing scheme.

- **OPERATION MANAGEMENT & CONTROL**

Conducting the operational activities in environmentally sound manner will be the responsibility of the concerned Manager; for which he will be trained.

- **SUPERVISION & MONITORING**

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

6.5 TRAINING SCHEDULES

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

Training Program

Target audience	Trainers	Contents	Schedule
Selected management staff	Environmental Consultant	Key finding of mitigation measure	After every five months
All personnel	Owner	Mitigation measures	Monthly

Technical Staff	Environmental Consultant	Waste disposal status, vehicle movement restriction and other mitigation measures	After every three months

6.6 SUMMARY OF IMAPCTS AND THEIR MITIGATION MEASURES

Environmental monitoring is a vital component of the 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. The main objectives of the environmental monitoring are:

• To provide a mechanism to determine whether the project construction contractors are carrying out the project in conformity with the EMP.

• To identify areas where the impacts of the project are exceeding the criteria of significance and, therefore, require corrective actions.

• To document the actual project impacts on physical, biological, and socio-economic receptors, quantitatively where possible, in order to design better and more effective mitigation measures.

6.7 EQUIPMENT MAINTENANCE DETAILS

As the Project is a housing scheme, so different machinery will be used at operational and construction level and periodic maintenance of machinery is required.

6.8 ENVIRONMENTAL BUDGET

The environmental cost has been worked out in Table 6.4:

Table 6.4: Environmental Budget

Sr. #	EMP Parameters	Unit Cost	Before Construction		During Construction		After Construction		Total (m PKR)
			Times	Cost	Times	Cost	Times	Cost	
1	Environmental Monitoring	0.050	0	0	1	0.050	2	0.050	0.15
2	Social Cost (meeting, visit, tour etc.)	0.03	1	0.03	1	0.03	1	0.03	0.09
3	Environmental Training	0.1	1	0.1	0	0	1	0.1	0.2
4	Tree Plantation Plan	0.0010	0	0	0	0	500	0.0010	0.5
5	Environmental reporting & review	0.3	1	0.3	1	0.3	0	0	0.6
Total									1.54
Contingencies (10%)									0.154
Grand Total									**1.694**

6.9 CHANGE MANAGEMENT PLAN

The EIA/IEE recognizes that changes in the operations or the EMP may be required during the operation and therefore a Change Management Plan has been provided to manage such changes. The management of changes is discussed under two separate headings, changes to the EMP and changes to the Operation.

6.10 CHANGING IN PLANNING AND DESIGN

The change management system recognizes three orders of changes.

I. First Order Change

A first order change is one that leads to a significant departure from the project described or the impacts assessed in the EIA/IEE and consequently require a reassessment of the environmental impacts associated with the change. Examples of such change include change in location of the proposed plan.

In such an instance, the environmental impacts of the proposed change will be reassessed, and the results sent to the Punjab EPA for approval.

II. Second Order Change

A second-order change is one that entails project activities not significantly different from those described in the EIA/IEE, and which may result in project impacts whose overall magnitude would be similar to the assessment made in this report.

In case of such changes, the environmental impact of the activity will be reassessed, additional mitigation measures specified if necessary, and the changes reported to the Punjab EPA.

III. Third Order Change

A third-order change is one that is of little consequence to the EIA/IEE findings. This type of change does not result in impact levels exceeding those already assessed in the EIA/IEE; rather these may be made onsite to minimize the impact of an activity. The only action required in this case will be to record the change in the change record register.

6.11 CHANGING IN MONITORING AND MANAGEMENT PRACTICES

The EIA/IEE and the EMP have been developed based on the best possible information available at the time of the EIA/IEE study. However, it is possible that during the construction and operation phase some aspects of the EMP may need to be changed owing to their non-applicability in a certain area of operation or the need for additional mitigation measures based on the findings of environmental monitoring during the construction and operation phase. In such cases following actions shall be taken.

1. A meeting will be held between management and the concerned contractor. During the meeting the proposed deviation from the EMP, planning and designing will be discussed and agreed upon by all parties

2. Based on the discussion during the meeting, a change report will be produced collectively, which will include the original EMP clause/plan or design, the change that has been agreed upon, and the reasons for the change
3. The report will be signed by all the parties and will be filled at the site office. A copy of the report will be sent to Housing Scheme and contractor head offices
4. All relevant project personnel will be informed of the change.

6.12 COMPENSATION IN TERMS OF MONEY

Changes in the EMP can be done up to 5% of the total development cost in case the Mitigation and Monitoring of the environment according to the prescribed plan does not render useful.

CHAPTER 7: STAKEHOLDER CONSULTATION

7.1 GENERAL

Any person, group or organization with an interest in the project or who can be affected directly or indirectly, negatively or positively by the project activities is a project stakeholder. Because of their interests and concerns, it is very important to take stakeholders into confidence regarding the project need and impacts, and their management. Stakeholder consultation is a mean of involving the entire primary and secondary stakeholders in the project decision making process in order to address their concern, improve project design and give the project legitimacy. Stakeholder consultation, if conducted in a participatory and objective manner, is a mean of enhancing the project stability.

Community input (both of knowledge and values) on socioeconomic and environmental issues can greatly enhance the quality of decision making. Stakeholder consultation was therefore conducted in the project area, not only to satisfy legal requirement of EIA in Punjab but also to improve and enhance the social and environmental design of the project.

7.2 OBJECTIVE OF THE STAKEHOLDER CONSULTATION

Role of the public participation is very important in the design making process to achieve the goal of sustainable development. The major objectives of public consultation are as follows:

- Promote better understanding of the project, its objectives and its likely impacts and their management.
- Identify and address the concerns of all interested and affected parties of the project.

- Provide a mean to Identify and resolve issues before plans are finalized and development commences, thus avoiding public anger, resentment and potentially costly delays.
- Encourage transparency, and inculcate trust among various stakeholders to promote cooperation and partnership with the communities and local leadership.

7.3 PROJECT STAKEHOLDERS

7.3.1 PROPONENT

Mr. Shamsher Ali is the proponent of project. 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.

7.3.2 PROPONENT'S ENVIRONMENT MANAGEMENT TEAM

The proponent has acquired the services of M/S EHS Services Private Limited, who have their representatives in Lahore, to take care of all the environment related issues and tasks.

7.3.3 THE RESPONSIBLE AUTHORITY

EPA Punjab is the responsible authority to enforce the implementation of environmental mitigation and conservation measures suggested in this report by proper inspection by its field department. In this regard a representative from EPA, Sheikhupura has been consulted.

7.3.4 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.

7.3.5 ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Team of EHS Services Private Limited visited the project site, had discussion with stakeholders and consulted with the local people of nearby areas to evaluate the project environmental & socio-economic impacts. Our environment team identified and analyzed all the environmental issues that may arise from construction/ operation of the project and suggested the mitigation measures accordingly as described in this EIA report. Moreover, all the environmental legislation, laws, regulations are being considered while preparing this EIA report that has been provided to project proponent and contractor. Our environment team has also discusses the environmental issues and their mitigations in a meeting to all the project members/ stakeholders involved in construction.

7.3.6 AFFECTED AND WIDER COMMUNITY

In general, following points was discussed while consultation with community, however specific comments by people are given in table 7.1.

Project Approval

The community consultations demonstrated that goodwill towards the project proponents indeed exists; approval for project activities by the communities was evident. The consultations were considered a good gesture and appreciated, especially by the men and women. This project will provide employments to the local as well as non-local poor community in its construction as well as in operational stages.

Resettlement/ Relocation

The proposed site is located on the land already owned by proponents of the project. Therefore, no issue of the resettlements is there.

Local Employment

Communities in the project area emphasized that local poor community should be given priority when employing people for various project-related works and activities according to their skills.

Interaction with Local Community

Non-Local work force coming in the project area that will not be aware of the local customs and norms, may result in conflicts with the local community, keeping in mind the sensitive law and order situation and culture of the area.

7.4 Stakeholder Concerns and Recommendations

The finding of the community consultation has been addressed in various sections of EIA. Mitigation plan has been incorporated into EMP. The community consultations demonstrated that goodwill towards the project proponent indeed exists. Approval for project activities by communities was evident. The consultations were considered a good gesture and were appreciated; especially by men and women. The summary of consultation with various stakeholders is given below:

- **Area of Consultation:** Construction of Housing Scheme namely "Housing Society Namely Al Qaswa Orchard" is majorly concerned.
- **Sample size /Number of peoples consulted:** Almost 15-20 persons included in the consultation.

Table 7.1: Detail of Public Consultation with Stakeholders

Sr. #	Name of Respondent	Category/ Department	Comments
1	Muhammad Nawaz	Proponent/Owner of project	He said that the project will adhere standard practices in order to save environment and natural resources. All the concerns of local and affected community are being addressed and compensated accordingly.

2	Ijazz	Environmental Management Team Member	This project will be beneficial for the environment as well as for the public community. All the impacts will be mitigated according to the EMP.
3	Amna Shahzadi	Environmental practitioner	The environmental friendly technology will be used for the treatment of wastewater and they are also implemented according to the EMP.
4	Hafiz Tahir	EHS Team Member	Safety of the worker will be make sure and all safety practice will be implemented.
5	Farwa Batool	Environmental practitioner	She was of view that the project is good for development and will improve the living standards of people of the area but environmental laws, regulation must be fulfilled by proponent in true spirit.
6	Sehar	Govt. Job	He said that all construction work will be done according to standard procedures keeping in view the safety of environment. He also said that the project will reflects environmental sensitivities and meets the social needs of the beneficiaries especially the people living in the surroundings.
7	Yasir	Govt. Job	He said that availability of good residence area will be beneficial for society.
8	Zain	Community	He was of the view that these kind of projects are crucial for the development of the city and will upraise the economic status of the city.
9	Sufyan	Community	He said that many local people are getting employment opportunities by the project.
10	Wahaj	Community	He was in favor of the Project and showed no negative concern about the Project.
11	Zohan	Community	He was also in favor of the Project and showed positive response related to project.

12	Hassan	Community	He said that availability of parks and other sports areas will be beneficial for society.
13	Asfan	Local	He was of the view that these kind of projects are good for community.
14	Ramzan	Local	The project will reflects environmental sensitivities and meets the social needs of the peoples.
15	Khuram	Local	He said that the project will be look good after the construction work.
16	Ashraf	Local	All the concerns of local publics also considered in this project like jobs etc.
17	Ali	Local	Show the positive response in favour of the project.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the Establishment of **"Al Qaswa Orchard Housing Scheme".** Its main objective is to provide people quality housing facilities and employment to local people.

EIA of Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study.

The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study shall reduce, if not eliminate, these impacts so that these are within acceptable limits. Moreover, no deterioration, depletion or exploitation of local natural resources is expected to be caused by this project.

Based on overall assessment of the environmental impact of the project, it is concluded that the project is not likely to cause any significant adverse impact on the social, physical and biological environment of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

8.2 RECOMMENDATIONS

The Initial Environmental Examination study and survey results are finally evaluated to recommend the following:

- Implementation of EMP must be given top priority.
- Proper PPEs including ear plugs, ear muffs, mufflers, goggles, gloves

and shoes etc. should be provided to workers .

- Strictly following standard operating procedures and proper use of personal protective equipment (PPE).
- Installation of fire extinguishers in the premises and their monitoring must be ensured.
- Equipment maintenance and efficiency must be checked.
- No compromise on public health and environment should be allowed.
- Proper tree plantation plan should also be developed in order to make the project site environment friendly.
- Small waste storage bins should be installed at different corner for proper waste collection and discharge.
- The proposed Environmental Management & Monitoring Plan should be implemented.
- It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.