

GUIDELINES FOR PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS CHECKLIST

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EXECUTIVE SUMMARY

Title of the Project:	Spring City (Housing scheme)
Location of the project	Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali
Proponent:	Mr. Ali Haider Noor Kahn Niazi S/O Muhammad Azeem Khan Niazi

INTRODUCTION

The proponent intends to install and develop a residential colony comprising of **1881.16 Kanals** for residential area, commercial shops, parks, open spaces, green belts, roads by the title “**Spring City Housing Scheme**” at Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali, over an area of 1881.16 Kanals. This project specific Environment Impact Assessment (EIA) presents a detailed account of the foreseeable environmental and social impacts likely to emanate from the development of the Housing Scheme in the area.

In this pre-feasibility study, all calculations have been based on a housing scheme of 1881.16 Kanals for residential colony. The Environment Impact Assessment (EIA) report is prepared to assess the potential impacts likely to occur from the project’s entire life cycle on the local environmental quality and communities. The assessment came up with a set of impact mitigation measures for the project to pursue to minimize the adverse impacts on the environment and nearby communities.

BRIEF OUTLINE OF THE PROJECT

Name of Project	Spring City (Housing Scheme)
Location of the of Project	1- Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali 2- 32.602111N, 71.565889E (Google map is attached A3 size with file)
Name & Address of Proponent/ Owner	Ali Haider Noor Kahn Niazi S/O Muhammad Azeem Khan Niazi R/O Executive Block, House# 50, Mohalla Paragon City, Barki Road, Lahore Cantt, District Lahore
Nature of Project	Housing Scheme
Total Area of Project	1881.16 Kanals
Surrounding land use North South West East	Agriculture Area Built Area Agriculture Area Agriculture Area
Project Cost:	2 billion
Nearby Emergency Services i.e., Hospital,	• Neonatal Intensive Care Hospital • Wazir Khanam Hospital

Police Station, Fire-Bridge, Rescue	Police Station Mianwali
Assessed Environmental issues	Solid and liquid waste will be environmental issues. So, these wastes should be disposed of as per guidelines mentioned in EIA report by consulting company.
Solid waste	During construction there is no solid waste. After construction it would be 1500 Kg
Water Availability	Ground water (100-150ft)
Total water usage after development.	35 m ³ / day
Total water usage during development	5-6 m ³ / day irrigation to lawn / parks and tree plantation.
Wastewater generation:	35 m ³ / day (Average) domestic wastewater.
Disposal of wastewater	TMA wastewater disposal is nearby from the east side of the proposed housing scheme, developer committed to install underground drainage line to dispose off wastewater.
Disposal of solid waste	Management committee of the resident will advise all community of resident to keep cleanliness and collected waste will be transported to TMA dump area by EPA certified vendor, after that TMA will manage as per standard guidelines. Recyclables will be recycled and sold to EPA certified vendor.
Consultant company opinion.	As information provided by the Client/Developer site seems feasible in the said area, management will follow all the guidelines mentioned in the IEE report.
Compliance	Punjab Environmental Quality Standard (PEQS 2016) and time to time guidelines by EPA and other enforcement Department / Agencies.

LEGAL AND ADMINISTRATIVE FRAMEWORK

The national guidelines and legislations relating to the environment considered for the project include, National Conservation Strategy (1992), National Environment Policy (2005), Pakistan Labor Policy (2010), Punjab Environmental Protection Act (PEPA 1997), amended PEPA, (2000), National Environmental Quality Standards (NEQS), Land Acquisition Act (1894), Cutting of Trees (Prohibition) Act (1975), Punjab Wildlife Act (1974), Punjab Plantation and Maintenance of Trees Act (1974), Antiquities Act (1975) etc.

Current national environmental policy as well as administrative and legal framework of PEPA, 2000 has been reviewed comprehensively which provides an overview of the national policies, laws, guidelines, and regulations related to the IEE study of the proposed project. Environment related documents have been reviewed including submission of environmental assessment study report to obtain environmental approval was made mandatory by the Pakistan Environmental Protection Ordinance (PEPO), 1983 and the Pakistan Environmental Protection Act (1997). Section 12(1) of the PEPA (1997) stipulates that no project involving construction or any change in the physical environment can be undertaken unless an IEE or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

This IEE report has been prepared with due consideration of PEPA, 1997, Punjab Environmental Protection (Amendments) Act, 2012 and all other legal requirements of Pakistan and Punjab Government Including LAA, 1894.

MAJOR IMPACTS

Since that, the project Spring City Housing Scheme, it is therefore likely to produce effects onto the aquatic environment, ecological environment, and most likely solid waste production unless appropriate mitigation measures are employed for balancing out the identified adverse impacts. Innumerable environmental and social impacts are expected during construction and operation, significant ones of which would be:

The major impacts resulting from the proposed activity during construction and operational phases are as follows:

Physical Environment

Geomorphology and Soils

Water Resources

Ambient air Quality

Noise Pollution

Biological Environment

Wildlife and Habitat

Flora and Fauna

Socio-economic Environment

Safety and Security

Mobility and Transportation

Project and Community Interface

Cultural and Religious Sites

Archaeological Sites

Local Economy and Employment

SUMMARY OF MAJOR ENVIRONMENTAL IMPACTS

Pollutant	Constructional phase	Operational phase
Particulate matter (PM)/dust	Particulate matter will be generated during the construction and transportation activities at the site at limited level.	During the operational phase dust will only be generated due to the transportation.
Gaseous emissions	Flue gases will be generated due to site generators and vehicles	Flue gases will be generated due to movement of vehicles of the residents of the scheme.
Noise	Noise will be generated due to construction machinery and vehicles transportation	Noise will be generated due to resident's vehicles and their horns.
Solid Waste	Solid waste will be generated due to construction activity	Solid waste will be generated due to domestic sources
Soil Contamination	Soil may be contaminated due to leaching of oil, fuel, any stored oil during construction phase.	Soil contamination is not foreseen during operation phase except mismanagement of solid waste collection and disposal.
Wastewater	Wastewater will be generated from constructional and domestic sources	Wastewater will be generated from domestic sources and from washing activities. Overflow of sewerage may create health and aesthetic problems.
Socioeconomic	Positive impact due to generation of Employment opportunity	Positive impact due to generation of Employment opportunity
Transport congestion	Trucks may create traffic hazard for the residents of Spring City	Addition of motor vehicles of houses may create traffic congestion in 30 feet wide access road in Spring City

Stress on existing infrastructure	The excess road may face additional load and may deteriorate.	The water supply pipelines and existing sewerage may face stress due to this Land subdivision

RECOMMENDATIONS FOR MITIGATION MEASURES

The intensity and severity of impacts, foreseen due to the operation of the Proposed Project vary with change in the nature and magnitude of the impacts as well as depend upon the baseline environmental conditions of the area. The mitigation measures during the operation phase will require implementation of EMMP in letter and spirit. Other mitigations to reduce the adverse environmental impact will be:

- The adverse environmental impacts significantly by adopting best management and monitoring practices as well as by implementation of EMMP effectively.
- It is also recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further into the operation activities.
- An adequate health and safety plan should be implemented.

PROPOSED MONITORING

It is small scale housing project, its impact is small and temporary however, to oversee the environmental performance of the project through its lifecycle enforcing the PEQS an Environmental Monitoring Program should be formulated which ensures effective surveillance of the environmental parameters at various stages of the project development and compliances with PEQS and legal obligations. Schedules and methodology for conducting monitoring is given in Chapter 6.

Monitoring for relevant Environmental Parameters is recommended:

Particulate Matter/Dust

Regular monitoring for particulate matter should be conducted during construction phase as per PEQS Rules 2001 and report should be submitted to EPA Punjab.

Noise

Regular monitoring for noise level should be recorded periodically during construction and operation phase, it should be conducted on quarterly basis and report should be submitted to EPA Punjab.

Water quality

Regular monitoring for water supply should be conducted on quarterly basis during operation as per prescribed in PEQS of drinking water and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption.

CONCLUSIONS AND RECOMMENDATIONS

As far as the instant project is concerned, most of the foreseeable environmental impacts are of low significance and controllable by implementing the proposed mitigation measures and by complying with environmental laws of the country. In this case, implementation of the environmental mitigation measures and the guidelines, as given in this document, are expected to bring down the negative environmental impacts of the project within the acceptable limits. Nevertheless, to ensure long-term environmental sustainability of the project, institutional arrangements must be put into place for controlling the adverse impacts all during the life of the project.

1 INTRODUCTION

1.1. General

Worldwide, the rate of urbanization as well as population growth is increasing tremendously with the passage of time. The present scenario has elevated the demands for the development projects especially in terms of residential buildings. As per population survey conducted by UNICEF during 2018 growth rate of Pakistan population is about 2.3% and standard housing is becoming an issue day after day.

This Section of the report provides an overview of the rational of the Project, objective of project, requirement of the project, purpose of the report and approach adopted to conduct the Environment Impact Assessment (EIA).

1.2. Features of the Project

Current Environment Impact Assessment study was conducted for the development of **Spring City**, a Housing Scheme project. The said project is a development of a residential scheme comprising of residential plots over **1881.16 kanals** for residential plots, commercial shops, parks, open spaces, green belts, roads, and all other necessities of life are easily available and approachable in said housing scheme. The division is as follows,

Table 1- Land Breakdown Details

Sr.#	Details	Kanals	%
1	Residential	699.91	37.21 %
2	Apartments	40.38	2.15 %
3	Commercial	149.67	7.96 %
4	Park/Opens paces Including 75% Green Area Under Hot Line	131.67	7.01 %
	Prohibited Area Under Hit Line	3.61	0.19 %
5	Public Buildings Sponser	28.25	1.5 %
	Public Buildings Mc	28.21	1.5 %
	Road And Parking, Sui Gas Row	741.22	39.40 %
6	Graveyard	37.80	2.01 %
	Mosques	9.95	0.53 %
7	Society Office	6.40	0.34 %
8	Disposal Station, Solid Waste & Overhead Tank	3.97	0.21 %
Total Area		1881.16	100% .00

Scheme will have a capacity to accommodate approx. **3500-3000** persons. GPS Coordinates of project site are **32.602111N, 71.565889E**. Site is approachable by one road.

During the commencement of the project the wastewater will be generated which will be mainly sewerage being generated from the water consumption at the household. The amount of the wastewater can be estimated as; the per capita consumption of water is 70 liters/day, and it is assumed that the average household size is 5 individuals per household. So, the amount of the consumption will be 75,600litres/day and it is considered that 80% of the consumed water will be turned into wastewater which will be 60m³/day. The wastewater will be disposed off in municipality sewerage lines. The wastewater after primary treatment will be disposed of in the drain after getting approval. To treat the generated wastewater being generated at the rate of 60m³/d activated sludge process has been designed, the area for the installation of the WWTP is marked on the submitted layout plan. The designing specification area: **Flow = 60m³/d**
Detention Time = 2.5h

1. The first step for the treatment of generated wastewater will screening through the bars to remove the coarse material from the wastewater.
2. The design specifications for the primary sedimentation tank will be as follows:

$$L= 3.0 \text{ m } W= 0.5 \text{ m}$$

3. The design specification of the aeration tank will be:

$$L=3.8 \text{ m } W=1.2 \text{ m}$$

4. The secondary sedimentation tank will be circular, and its diameter will be

$$2.45 \text{ m}$$

5. The generated wastewater will be ultimately led to the sludge drying beds and the dimensions will be as follow:

$$L=0.54 \text{ m } W=0.54 \text{ m}$$

6. A control room will be constructed to control the ASP Operations

1.3. Purpose of the Report

This report has been prepared to conform to the requirements of the Punjab Environmental Protection Act (Amendment) 2012, which states that.

“No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Environment Impact Assessment or where the project is likely to cause an adverse environmental effect, an

environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof.”

The primary objective of this IEE study is to identify, screen out and evaluate those of the significant adverse environmental and social impacts of the project, which are likely to cause adverse impacts on the local and the general environment, at and around the project site. Viewing from this perspective, the potential sources of environmental impacts would be various activities related to both environmental and the later inhabitation stages of the project. Such activities will include transportation of materials to the project site, generation of wastewater and solid wastes, air quality concerns. The degree and quantum of the environmental and social impacts will depend on several influencing factors. Therefore, the focus of the study is to discern the important environmental and social impacts of the project and to suggest the ways and means for countering these likely adverse environmental impacts.

1.4. Identification of the Project and Proponent

I. Proponent

Mr. Mr. Ali Haider Noor Kahn Niazi S/O Muhammad Azeem Khan Niazi

Developers of (Housing Scheme)

Proponent Name: -	Mr. Mr. Ali Haider Noor Kahn Niazi S/O Muhammad Azeem Khan Niazi
Designation-	Proponent
Address of the Proponent-	Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali

II. Nature and Size of Project

The development project is **Spring City Housing Scheme**, in which the land will be divided into residential plots, commercial plots, roads, park and recreational area, waste disposal. The project spreads over an area of 1881.16 kanals.

III. Location of Project

The project site is located at Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali. On Google map, it shows **32.602111N, 71.565889E**. The google map of the project site is attached.

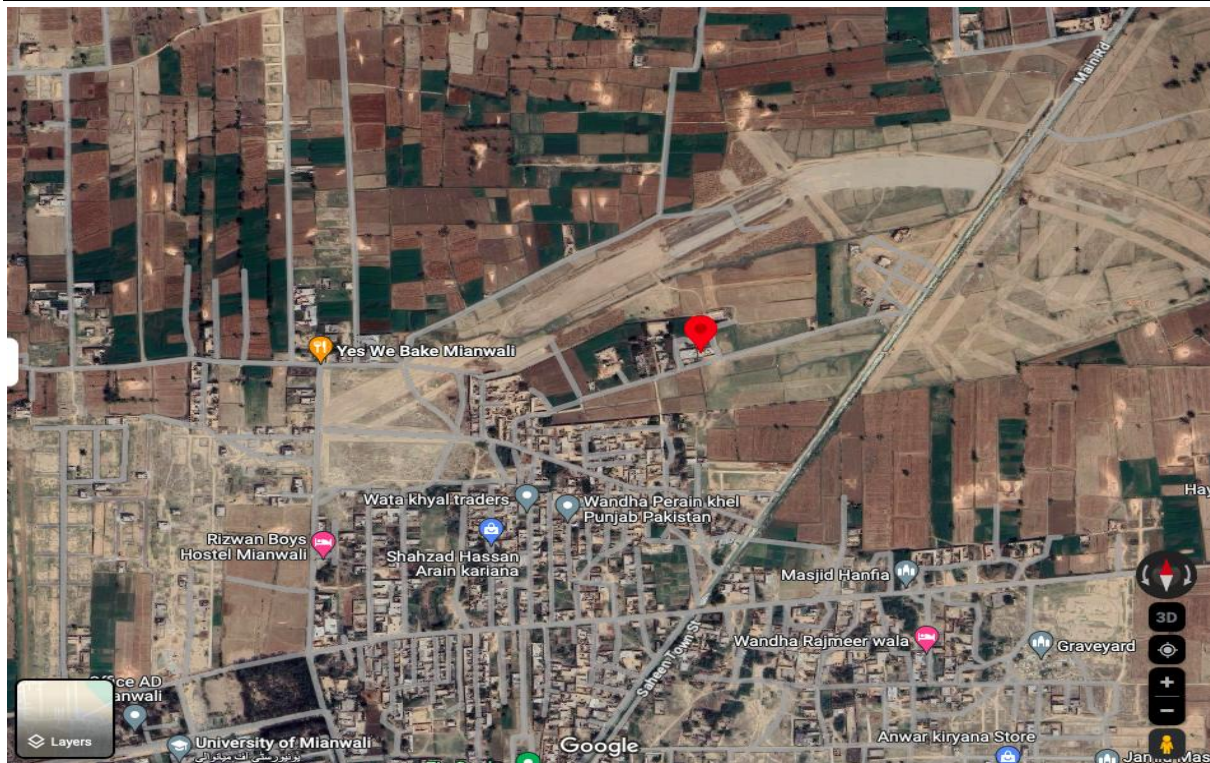


Figure 1-Location of the Project

1.5. Consultant's Details

The proponent has engaged M/s Enviro stewards Company (Pvt.) Limited to conduct the IEE Study of aforesaid project in accordance with guidelines issued by EPA, Punjab. For this purpose, M/s Enviro stewards Company (Pvt.) Limited has engaged the group of professionals which comprises of environmental specialists, environmental engineers, and chemical engineer. The details of the consultants are given below:

Sr#	Consultant Details	
1	Consultant	Enviro Stewards Company (Pvt) Limited
2	Address	40/8 New Civil Lines Regency Road Behind State Bank of Pakistan Faisalabad.
3	Contact No.	041-2619600
Team Leader		
1	Name	Miss Sara Fatima
2	Designation	Senior Environmentalist
3	Contact No.	+92-301-1198600

1.6. Extent of the IEE study, scope of the study, magnitude of the efforts

This IEE study has been accomplished following the requirements serial 2.3 of the "Guidelines for the preparation and review of Environmental Reports, October 1997". In compliance of PEPA, 1997(amended 2012) requirements, an IEE report has been prepared by the team of environmental experts. This document covers all environmental impacts, due to the proposed project, in and around the project area comprising the physical, ecological, and socio-economic aspects together with identification of the potential positive and negative impacts. Any developmental activities outside the project area like rehabilitation of the road and establishment of the other factories outside the project vicinity have not been covered under this IEE study.

The IEE report covers the examination of the physical, biological, and environmental socioeconomic impact of the following:

- Construction activities including the leveling and marking of land division.
- Relevant off-site construction activities like construction of access road.

2 POLICY, LEGISLATION, LEGAL AND ADMINISTRATIVE FRAMEWORK

The project proponent established contact with the Environmental Protection Agency (EPA), Government of Punjab for the grant of environmental approval before the start of the project.

This requirement is under the regulation of Review of IEE and EIA Regulation 2000. According to the above-mentioned list this project falls in the category of projects requiring IEE.

Screening

The project is development project of Housing Scheme, Tehsil District Mianwali. The capital cost of the project is around 2 billion. According to projects categorization for environmental assessment studies, the proposed project falls under **Schedule II (list of projects requiring EIA), Category H (Urban development and tourism)** and sub sector 1 (Housing schemes more than 300 kanals) of the IEE Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environment Impact Assessment for Residential Housing Scheme (EIA) is mandatory for getting Environmental Approval.

2.1. Existing Regulation and Framework

This IEE study has been carried out in the light of the policy guidelines of the preparation of IEE/EIA Reports under the procedure and practices formulated by the Provincial Environmental Protection Agency (EPA).

2.2. Relevant Regulation and Framework

I. National Conservation Strategy, 1992

On March 1, 1992, the Cabinet of Pakistan approved the National Conservation Strategy. It describes the stark reality of the country's deteriorating resource base and its implications for what is still largely a natural resource-based economy. It sets forth the beginnings of a plan to integrate environmental concerns into virtually every aspect of Pakistani economic life. The strategy has three overriding objectives: conservation of natural resources, sustainable development, and improved efficiency in the use and management of resources.

II. PEPO, 1983 and PEPA 1997 (Amended 2012)

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO), which was replaced by the Pakistan Environmental Protection Act (PEPA) 1997, through an Act of Parliament. Now the PEPA 1997 has been replaced by Punjab Environmental Protection Act 1997 (Amended 2012) on 18th April, 2012.

Under Sec. 8 of Environment Protection Ordinance (EPO) 1983, it was necessary to carry out IEE for all development projects, but there were no EIA /IEE regulations under that ordinance.

Under section 12 of the Punjab Environmental Protection Act, 1997 (Amended 2012) it is mandatory to take an Environmental Approval Environmental Protection Agency for commencement of any of the project.

III. National Environmental Policy 2005

The Government of Pakistan (GOP) has notified National Environmental Policy 2005, for different aspects in which guidelines have been given, to commence the projects having significant environmental impacts.

IV. Review of IEE and IEE Regulations, 2022

The GOP has issued Review of IEE for Layer Protein Farm Environmental Impact Assessment Regulations 2022, to review the Environment Impact Assessment for housing schemes.

V. Guidelines for the Preparation and Review of Environmental Reports, 1997

The GOP has also framed guidelines for the preparation and review of IEE of projects in various developmental sectors.

VI. National Environmental Quality Standards (NEQS)

According to Punjab Environmental Protection Act, 1997 (Amended 2012), National Environmental Quality Standards (NEQS) were established for municipal and industrial effluents and air emissions. The latest revision of NEQS carried out in 2001 is attached as annexure to this report.

VII. Guidelines for Sensitive and Critical Areas

GOP issued Guidelines for Sensitive and Critical Areas in October 1997. The objective of the guideline is to provide guidance to project proponents and other stakeholders in the

environmental assessment process, so that the proposed projects are planned and sited in a way that protects the values of sensitive and critical areas.

2.3. Policy and Procedures for the Filing, Review and Approval of Environmental Assessments, November-1997

Environmental Assessment is the Primary means of managing the approval of new development proposals in Pakistan. Environmental Assessment allows for the systematic examination of proposals, clear procedures which provide for the interests of relevant Government Departments and other stakeholders to carefully consider.

I. Punjab Wildlife Protection Act, 1974

This act was framed in 1974 by the province Punjab and is about the protection and conservation of wildlife.

II. Forest Act, 1927

This act was framed in 1927. The Forest Act, 1927 is still the basic charter for the forest departments in Pakistan. This law empowers provincial governments to manage forest areas.

III. Explosive Act, 1884

This act deals with explosives in prohibiting either absolutely or subject to conditions, the manufacture, possession or importation of any explosive which is so dangerous in character that, in the opinion of the appropriate Government, it is expedient for public safety to issue the notification.

2.4. Punjab Local Government Ordinance, 2001

Schedules 4 and 8 of this ordinances are to pertain to environmental pollution. Under the ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

2.5. Mines Act, 1923

Mines Act, 1923 is a federal legislative framework empowering the provincial governments to make rules and regulations for their respective provinces for different categories of mines. The act emanates from the constitution which provides for 'Regulation of Labor and Safety in Mines'. Mines Act is a law relating to safety of mines and safety of health and welfare of mine workers.

2.6. Consolidated Mine Rules, 1952

These are set of laws subordinate to Act concerning the condition of employment; health, sanitary and welfare aspects of personnel employed at mines. They are, therefore, common to all types of mines.

2.7. Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 268 to 291 are about offences affecting public health. The offences relating to public health safety and environment are as under.

1. Sec 268: Public Nuisance
2. Sec 269: Negligent act likely to spread infection of disease dangerous to life:
3. Sec 270: Malignant act likely to spread infection of disease dangerous to life:
4. Sec 278: Making atmosphere noxious to health:
5. Sec 284: Negligent conduct with respect to poisonous substance:
6. Sec. 290: Punishment for public nuisance in cases not otherwise provided for:
7. Sec. 291: Continuance of nuisance after injunction to discontinue.

2.8. Punjab Land Use Rules 2009

In January 2009 the Punjab government notified Punjab Land Use Rules 2009 for the clarification of Lahore Master Plan. In these rules permissible land use according to area type is defined.

2.9. Antiquities Act 1975

The law relates to protection of antiquities, monuments, national and international heritage. The compliance of this act is mandatory for the installation of generators. Under section 22 of the act, no development plan or scheme can be done within distance of 1500ft from the residence areas. There is no historical site or monuments in the proximity of the project.

2.9.1. Solid Waste Management Rules 2005

The solid waste management department, CDGL has notified these rules for proper waste management.

2.9.2. Labor Laws

The labor laws apply on child labor and measuring instruments.

2.9.3. Safety & Civil Defense Laws

The civil defense laws provide details about safety, fire protection and civil defense.

3. SCOPING

3.1. Spatial and temporal boundaries of Environmental Assessment

Due to development of current project land use will change from open land to residential area of M/s Spring City. Within radius of 5-km several residential areas can be seen in below figure, but current project will be installed by adopting proper mitigation measures to avoid disturbance to local community. In current project no significant emissions will be observed because in residential space will be done in controlled environment and wastewater will be treated before disposal to ensure PEQS. Natural gas connection has been used as backup source and waste heat generated from generators will be used in boilers to generate steam. No environmental sensitive area is present within safe distance that could be impacted due to current project installation.

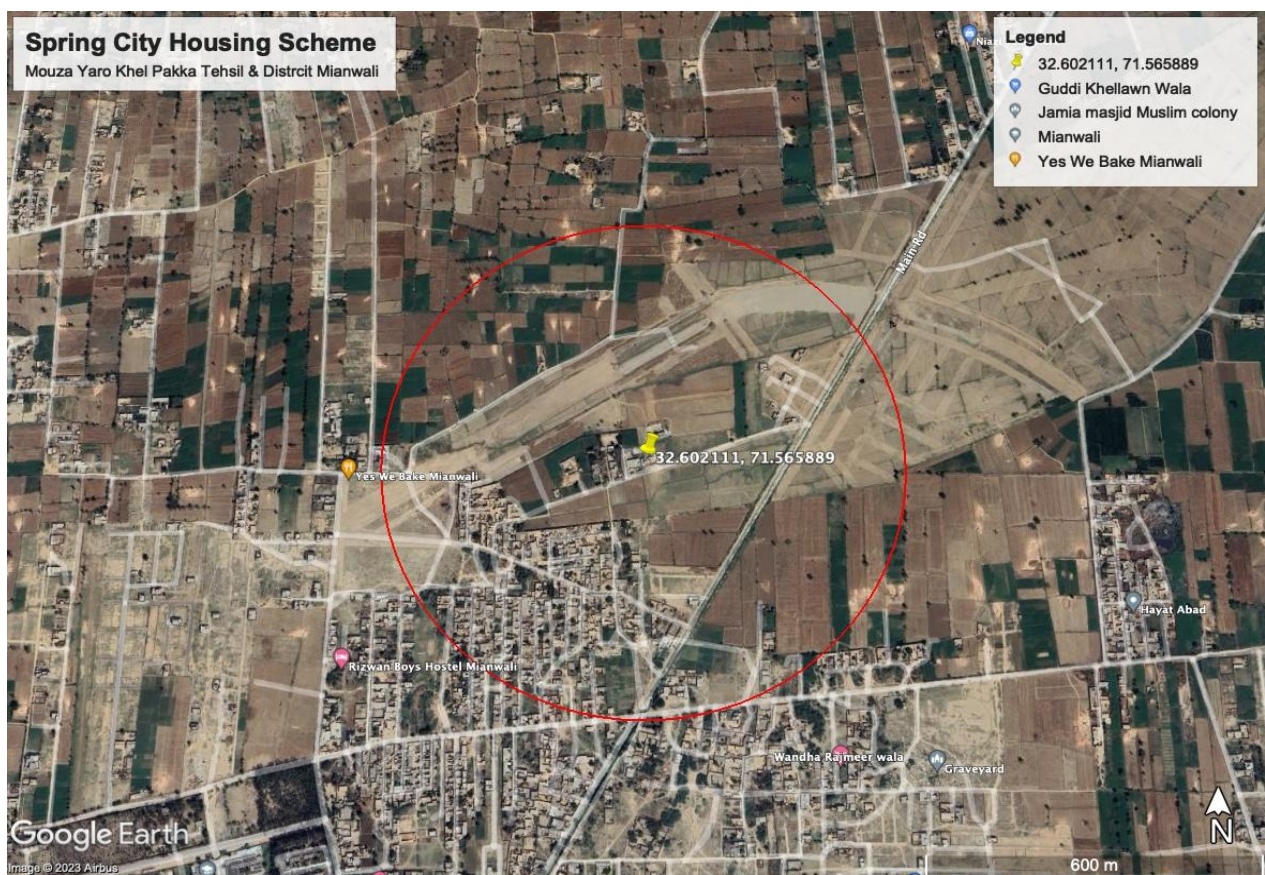


Figure 2-5KM Radius of Project Site

Important issues and concerns rose during consultation.

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised. In chapter Stakeholder Consultation it is mentioned in detail

During survey following concerns of the local community, Government Departments and Environmental Practitioners and experts were noted:

- Air pollution should be controlled effectively.
- Locals should be preferred for the job opportunities.
- Wastewater should be treated prior to final disposal.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.
- Plantation should be carried out at extensive scale.
- Noisy activities should be confined.
- Indigenous trees around the facility should be planted to control air pollution.
- Tree cutting should be avoided to the extent possible

3.2. Significant impacts and factors to be determined.

Main impacts and factors to be determined are.

- Occupational Health and safety
- Site Security
- Traffic Management
- Hygiene management
- Community impacts
- Control Air emissions
- Job opportunities for locals
- Confined noisy activities.
- Resource conservation
- Avoid excessive water consumption.
- Energy efficient techniques must be adopted.
- Proper site restoration after construction
- Tree plantation at designated green areas
- Emergency preparedness

4. CONSIDERATION OF ALTERNATIVES

4.1. Site Alternative their selection and rejection criteria

The selected site for said project is located at agricultural cum residential area. The area is developed as agricultural area and many residential colonies are in project proximity. The selected project site is ideal from the point of view of compatibility with other land use of the area. The site is also spacious enough to accommodate the proposed facility and its infrastructure. Due to existing infrastructure and its strategic location, it is our considered view that the selected site is ideal and suitable for the proposed development. Additionally, the piece of land is owned by Proponent.

4.2. Design/technology alternatives, their selection and rejection criteria

For development of current project state of art technology will be selected to avoid long term environmental impact. Proponent is doing heavy investment for this project so latest/state of art technology will be preferred to ensure good quality products.

4.3. Environmental Alternatives, their selection and rejection criteria

After completion of construction, proper landscaping will be done. The proponent is going to install waste management facility and wastewater treatment facility. Moreover, the proponent is very concerned and conscious about the quality and equally about the environmental protection and resource conservation.

4.4. Economic Alternatives, their selection and rejection criteria

- Currently selected design is economically efficient.
- Tree plantation will be done that will reduce temperature of the area and act as noise barrier.
- Building design will be such that maximum use of day light and LED lights will be installed to minimize electricity consumption.

5. PROJECT DESCRIPTION

5.1. Type and Category of the Project

The project is development project of Housing Scheme, Tehsil District Mianwali. The capital cost of the project is around 2 billion. According to projects categorization for environmental assessment studies, the proposed project falls under **Schedule II (list of projects requiring EIA), Category H (Urban development and tourism)** and sub sector 1 (Housing schemes more than 300 kanals) of the IEE Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environment Impact Assessment for Residential Housing Scheme (EIA) is mandatory for getting Environmental Approval.

5.2. Objectives of the Project

The main objective of initiating this project is,

- To ensure comfortable environment for the residential areas.
- To ensure the supply of all the basic needs in a Residential area.
- To create job opportunities for locals
- To enhance the socio-economic environment of the area

5.3. Description of the Project Site

Project site is not located in any sensitive/negative area.

Cost and Magnitude of the Operation

The cost of the project will be **PKR 2 billion** approximately as per proponent and magnitude of operations will include:

Amenities	Cost in PKR
Land cost	500 million
Infrastructure development sewerage lines, water supply, boundary walls, electric supply, roads etc:	200 million
Solid waste management:	150 million
Green belt development:	50 million
WWTP:	100 million
Total Cost	2 billion

- Detailed site survey, planning and demarcation of the various regions during development of the housing scheme.

- Construction of public and social amenities such as road construction, infra-structure development/public areas, installation of street-lights, demarcation of residential plots, commercial plots, parks/green zones and parking spaces
- Plantation of various ecologically important herbs, shrubs, trees, and grasses on the designated green spaces
- Construction of the metaled road network

Land Use On-site

The land is agriculture in nature. Currently there is no activity going on in the land. Land use will be converted from agriculture to residential.

LANDUSE ONSITE





Location of Project

The project site is located at Mouza Yaro Khel Pakka Tehsil & District Mianwali. On Google map, it shows **32.602111N, 71.565889E**. The Google map of the project site is attached. The project site is surrounded by agricultural land, residential area, and road on one side. There are various residential projects nearby the proposed project etc.

Project Coordinates are,

Front: Road

Back: Agriculture Land

Left: Agriculture Land

Right: Agriculture Land

Figure 3- Google Earth Map



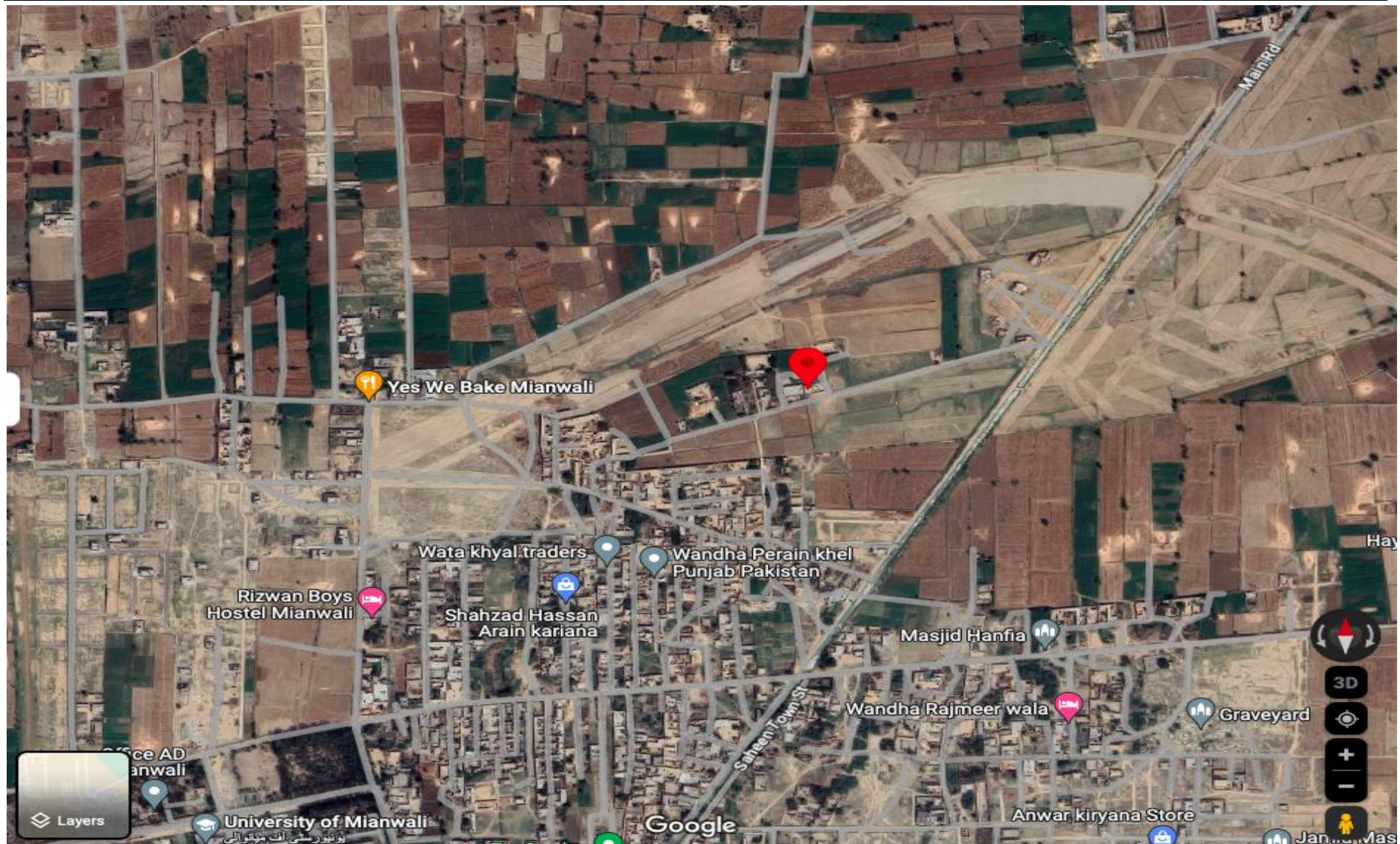


Figure 4-Location Map

Road Access

There is paved road access to the project site. The road access is by the Main Road. Due to this main road availability, the access to project site is easy. All the commercial activities and basic needs provision will be made easy by the road access.

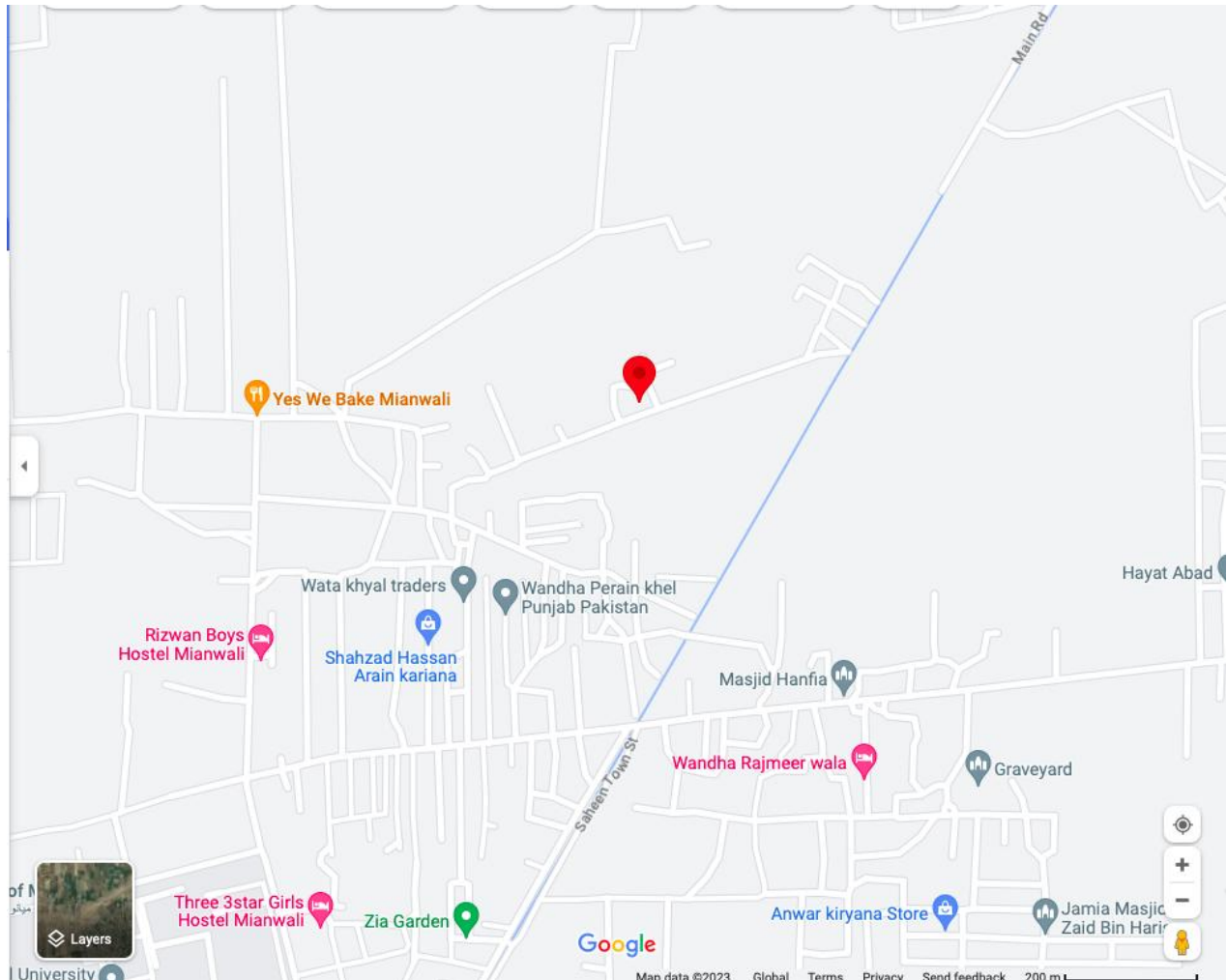


Figure 3-Road Access Map

5.5. Vegetation Features of the Site

Since land is agriculture in nature, there is no agricultural activity going on but there is jangli booti and some bushes are on the land.

5.6. Proposed Schedule for Implementation

Project schedule (tentative) is described hereunder.

Stage I: The clearing of land, preparation of land for construction activity.

Stage II: During this phase machinery will be brought to the site and installed.

Stage III: In this phase all the outstanding activities will be completed, construction activities will be initiated.

Stage IV: after completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Activities	Times Frame									
	Four Week		Four Week		Four Week		Four Week		Four Week	
Preliminary Phase (Land Acquiring etc)										
Design Phase										
Pre-Construction Activities Finalization										
Construction Phase										
Purchasing Phase										
Machinery Installation										
Commissioning Phase										
Recruiting Of Staff										
Operation Phase										

Figure 4-Schedule of Implementation

5.7. Process Description

The proposed project is scheme of residential facility named as Spring City, for the purpose of housing located at Mouza Yaro Khel Pakka Tehsil & Distrcit Mianwali. Total area of the project is 1881.16 Kanals. There will be residential plots, road area, shops solid waste a management; each plot consists of 1 Kanal, 15,10,7,6,5,4,3 marlas. The estimated cost for the subject proposed project will be about 8 million Pakistani Rupees.

The project will also have positive aspect that the area has been converted into residencies instead of agriculture; therefore, socially there will not be any problem in development of this scheme. Project is in residential area and functioning of the project would not be the reason of nuisance for the nearby community. Moreover, the project will pose the positive impacts in terms of employment opportunities, will create jobs during construction and operation and will contribute to the nation economy by meeting the housing demands.

Project Process description:

The subject project will not be involved in any kind of manufacturing or production. It's the only housing project for plotting of land for residential purpose.

Activities relating to project.

Some aspects relevant to the project are listed below:

- Transportation and parking of mechanical instruments during construction phase
- Storage and handling of construction materials during construction
- Maintenance of records for safe handling, safe work methods, control PPEs etc.
- Measures for environmental management of the site including handling of materials, air & noise emissions.
- Proper placement of safety signs at the working area

Salient Features of the Project

The salient feature of the project is as under:

Table 2-Salient Features of Project

Total land area	1881.16 Kanals
Cost of the project	2 billion
Total water usage during operation:	35 m ³ / day (0.014 cusec)
Total water usage during construction:	4-5 m ³ / day
Wastewater generation:	60 m ³ / day (AVERAGE)
Power requirement	400 KVA (fulfill by MEPCO)
Number of transformers	4x 200 (400 KVA)
Status of the project	Proposed
No. of workers during construction phase	35-40
No. of workers during operational phase	25-30

Waste Products of Project Process

Waste products and emissions during the project are following.

Wastewater

In construction phase, 4-5 m³/ day water will be used for domestic & constructional activities and water source will be ground water.

During the commencement of the project the wastewater will be generated which will be mainly sewerage being generated from the water consumption at the household. The amount of the wastewater can be estimated as; the per capita consumption of water is 70 liters/day, and it is

assumed that the average household size is 5 individuals per household. So, the amount of the consumption will be 75,600litres/day and it is considered that 80% of the consumed water will be turned into wastewater which will be 60m³/day. The wastewater after primary treatment will be disposed off in the TMA drain after getting approval. To treat the generated wastewater being generated at the rate of 60m³/d activated sludge process has been designed, the area for the installation of the WWTP is marked on the submitted layout plan. The designing specification area: **Flow = 60m³/d Detention Time = 2.5h**

1. The first step for the treatment of generated wastewater will screening through the bars to remove the coarse material from the wastewater.
2. The design specifications for the primary sedimentation tank will be as follows:

$$L= 3.0 \text{ m } W= 0.5 \text{ m}$$

3. The design specification of the aeration tank will be:

$$L=3.8 \text{ m } W=1.2 \text{ m}$$

4. The secondary sedimentation tank will be circular, and its diameter will be

$$2.45 \text{ m}$$

5. The generated wastewater will be ultimately led to the sludge drying beds and the dimensions will be as follow:

$$L=0.54 \text{ m } W=0.54 \text{ m}$$

6. A control room will be constructed to control the ASP Operations

Solid Waste

All raw materials will be recycled during the construction activities as road filling and maintenance purposes. Solid waste of about 30-35 kg by domestic sources will be generated during Construction phase which will be placed in separate bins and about 120-130 kg per day solid waste will be generated during functioning of the project from domestic sources. Domestic waste will be placed in solid waste bins which will be placed at designated places within subject scheme. This domestic waste will be collected and transported to the Municipality Dump Area nearest through EPA certified vendor.

Management of the society will depute an official who will manage the solid waste on regular basis, ensure the good housekeeping throughout the scheme. Reuse and recycling will be promoted among the residents of the scheme. Three colour bins will be placed outside each house where biodegradable, non-biodegradable and recyclable will be handled separately.

Re-cycleables will be sold to the EPA certified vendors.



Figure 5.3 Bin System

Sludge:

Sludge from sewerage lines will be removed by the permission of Municipality who will clean the sewerage lines. They will be contracted for this sludge removal.

Infrastructure of Project:

Piped water from the Municipal water supply is not available to the project site. Water demand will be fulfilled by ground water. Proper sewage system is absent in the surroundings. Sewage system of Municipality passing in front of the society will be used which is ultimately connected to sewer line passing along road. Electricity will be supplied by the MEPCO. Two generators of 200 KVA each have been got approved from MEPCO. The electric poles will be fixed after granting of NOC from the EPA.

Power sources and transmission:

The power requirements of 272 KW will be fulfilled by MEPCO through two 200 x 4 KVA transformers. No emission from the power sources is likely to emit.

Parking Area

Parking area will be provided within each house by the plot owners.

Disaster Management

A complete disaster management plan has been made. The project site will be walled from all sides yet emergency exits will be constructed to cope any emergency.

Rainwater Harvesting

Rainwater will be stored in the underground pits. All the stored rainwater will be used for watering plants and trees inside the project site.

Available Facilities

Available facilities in the area are given below:

- Electric supply from MEPCO.
- Solid Waste Management (SWM) implemented by Management.
- Water supply line at doorstep of the scheme.
- Labor force will be available for construction phase.

5.8. Restoration and Rehabilitation

All possible precaution will be taken to prevent an untoward incident in terms of life and property losses. On completion of the project, solid waste will be removed from the site to maintain aesthetics of the area. All measures will be undertaken for ensuring occupational safety, security, and clean environment during the working hours. Vegetation and landscaping will be done by the proponent after the construction of project.

5.9. Government Approvals

With reference to section 12 of PEPA 1997 (amended 2012), the environmental approval from EPA is required prior to approvals from other relevant government departments. NOCs from other relevant departments will be shared with EPA after environmental approval.

5.10. Health, Safety & Hygiene

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.

Safety Trainings

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

Use of Drugs and Narcotics

Drugs and narcotics are strictly prohibited during working hours in working area. Smoking will be only allowed in rest timings at properly isolated places.

Fire Protection System

No fire plan is there. Rescue 1122 will be relied upon in this case.

Emergency Exits:

There will be three exit points from the society in case of any emergency. Each house will be provided with emergency exit door/ route.

Safety Features for Exit Routes

- Keep exit routes free of explosives or highly flammable furnishings and other decorations.
- Provide lighting for exit routes adequate for employees with normal vision.
- Keep exit route doors free of decorations or signs that obscure their visibility of exit route doors.
- Post signs along the exit access indicating the direction of travel to the nearest exit and exit discharge if that direction is not immediately apparent.
- Mark doors or passages along an exit access that could be mistaken for an exit “Not an Exit” or with a sign identifying its use (such as “Closet”).
- Renew fire-retardant paints or solutions when needed.
- Maintain exit routes during construction, repairs, or alterations.

5.11. Security:

The present site will be secured by means of boundary wall along with the presence of security guards round the clock which improves the security of the project site and in its vicinity.

5.12. Safety signs/Safety boards

At any workplace Safety signs and symbols are very important to avoid many accidents. They must be in easy and understandable language to all the workers. Workers should have the knowledge of sign wordings and they must be trained and aware about them. Safety signs, symbols and boards must be provided by every department to protect the workers and employees from the risks of hazards that has not been controlled by other means. Safety signs and boards give safety message, and they must be of different colors that workers could understand their

meanings easily. At the subject project, safety signs and boards are placed to avoid the workers and staff from any risk.



Figure 6 Safety Signs

6. DESCRIPTION OF THE ENVIRONMENT

An environmental baseline study is intended to establish a database against which potential impacts can be predicted and managed subsequently. The IEE of the proposed project covers a comprehensive description of the project area, including regional resources which are expected to be affected by the project, as well as those which are not expected to be directly affected by the construction and operation of the project.

A site visit was conducted to survey the field area for collection of relevant data. Interviews were conducted with the public and stakeholders of the project area to seek the public opinion on the implementation of the proposed project. Various Governmental and Non-Governmental Organizations (NGOs) were also visited for the collection of relevant data and their views on the proposed project were recorded for incorporation into the IEE report. The environmental impacts of any activity or process will be assessed based on deviation from the baseline or normal situation. The following components form part of the baseline:

- Physical Environment
- Ecological Environment
- Socioeconomic Environment

6.1. Physical Environment

District Mian wali is bounded by district Attock on North-East, Chakwal and Khushab districts on East and Bhakkar on South and NWFP on its West and North-West. River Indus flows across the district from North to South. Three branches of the Thal Canal Emerging from Jinnah Barrage on river Indus near Kalabagh irrigate the vast areas. Another canal called Chashma Link Canal connects river Indus with river Jhelum through Chashma Barrage.

District Mian wali is spread over an area of 5,840 square kilometers comprising of following three tehsils: -

1. Mian wali
2. Isakhel
3. Piplan

6.1. Seismicity

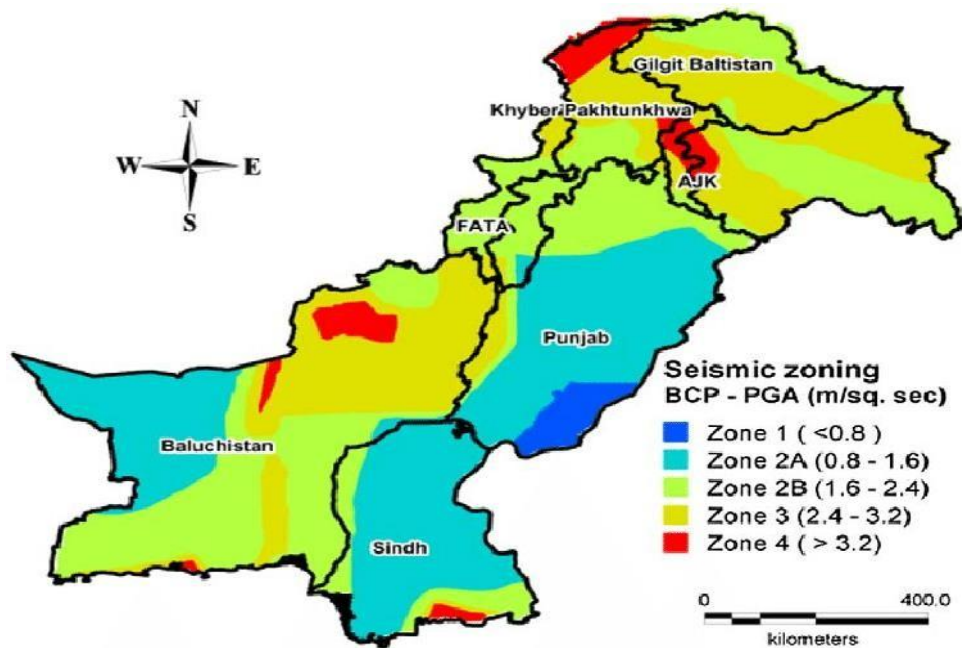


Figure 7-Figure 5- Seismic Zoning Map of Pakistan

Pakistan lies on an active seismic belt of earth. Seismic observations indicate that hundreds of shocks originate every year. Mostly, these seismic waves are of low intensity and do not have significant effect. According to seismic zones of UN- Habitat the project area falls under Zone 2A. The seismic zoning is shown in the figure.

6.1.1. Climate

The district has extreme hot and cold climate. The maximum temperature during the summer shoots up to 51°C while the minimum temperature recorded in winter is as low as 2°C. The average rainfall in the district is about 250 mm. Mian wali District has an extreme climate, with a long, hot summer season and cold, dry winters. June is the hottest month with average temperature of 42°C (highest recorded temperature 52°C); in winter, monthly average temperatures of December and January can be as low as 3°C/4°C.

7. Table 3- Climate of Mianwali

Month	Mean temperature. Max	Mean temperature min	Precipitation	Relative humidity
January	19.7	5.0	33.8	66.2
February	21.6	7.7	50.0	60.0
March	26.0	12.5	60.5	53.8
April	33.0	17.7	36.5	41.8
May	38.1	22.0	31.8	32.5
June	40.5	25.8	51.6	37.8
July	35.7	25.8	23.3	67.8
August	34.4	25.3	22.2	70.8
September	35.0	23.0	77.7	65.5
October	33.1	16.6	12.2	55.6
November	27.8	9.9	9.9	62.7
December	21.5	5.7	30.4	68.9
Annual mean	30.6	16.4	36.6	56.4

6.2. Seasons and Rainfall

The rainy period of the year lasts for 9.0 months, from January 14 to October 12, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Miānwāli is July, with an average rainfall of 2.9 inches.

The rainless period of the year lasts for 3.0 months, from October 12 to January 14. The month with the least rain in Miānwāli is November, with an average rainfall of 0.2 inches.

6.2.1. Soils

Mian wali district falls in arid and semi-arid zone of Pakistan. The land is of multiple type and can be classified as loamy with clay soil, which is suitable for wheat and maize, sandy soil, cultivated mainly for the rain-fed gram, Mong and Guara, and the irrigated areas which are mostly under wheat, cotton, and sugarcane crops. Citrus plantation is also being carried out successfully in the area.

6.2.2. Temperature

There are 2 weather stations near enough to contribute to our estimation of the temperature and dew point in Mian wali.

For each station, the records are corrected for the elevation difference between that station and Mian wali according to the International Standard Atmosphere , and by the relative change present in the MERRA-2 satellite-era reanalysis between the two locations.

The estimated value at Mian wali is computed as the weighted average of the individual contributions from each station, with weights proportional to the inverse of the distance between Mian wali and a given station.

The stations contributing to this reconstruction are:

- Dera Ismail Khan Airport (OPDI, 59%, 59 mi, southwest, -75 ft elevation change)
- PAF Base Mushaf (OPSR, 41%, 76 mi, southeast, -52 ft elevation change)

6.2.3. Water Resources

Water resources of the area are discussed under two broad headings, surface water resources and groundwater resources.

6.2.4. Surface Water

River Indus flows across the district from North to South. Three branches of the Thal Canal Emerging from Jinnah Barrage on river Indus near Karabagh irrigate the vast areas. Another canal called Chashma Link Canal connects river Indus with river Jhelum through Chashma Barrage.

6.2.5. Ground Water

The ground water resources are available in abundance in the Project Area. Ground Water Table (GWT) exists at a depth of about 40 to 60 ft below Natural Ground Level (NGL). To meet the agriculture and drinking requirements, 7 tube-wells were installed in the Project area. Which are not in use now because of the termination of agricultural activities. Boring points and Hand Pumps are obvious in and around.

6.2.6. Noise Levels

Noise is described as an unwanted sound emitted from un-avoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is sensory.

The perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude aero plane flying etc. The noise pollution in the project area is source of pollution and nuisance. Among eight noise measurement locations in the cities, the study says, on average, the noise level ranged from 57-60 dB (A) in and around the project site.

6.2.7. Ambient Air Quality

Atmospheric pollution means the imbalance in the normal air chemistry. It can occur due to the addition of a new chemical into atmosphere or by the change in concentration of the chemicals already existing in the atmosphere. Atmospheric pollution particularly in urban area has a strong impact upon daily life. The reasons of such changes can both be natural as well as anthropogenic. Ambient air quality is a key to measure the concentration of the various chemicals in atmosphere; especially of the chemicals which pose detrimental effects on health, safety, and environment, to have a comparison with their safe concentrations, as established in WHO Standards and NAAQS.

6.2.8. Surface Water and Ground Water

There are no surface water resources like canal or ponds, near the project area. The area surrounding the project site is poorly drained.

Ground water is the principal source of municipal water supply District Mian wali. 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 60-65 ft feet and is generally good for direct consumption.

6.3. Biological Environment

In this section, the baseline environmental conditions pertaining to biological environment are described. These conditions have subsequently been used to identify the potential impacts on the biological environment that are likely to arise from the project activities.

6.3.1. Forestry

Mian wali Forest Division is a prosperous husbandman of irrigated compact plantation as well as the linear plantation in the district. Kundian plantation, Hernoli plantation, Chak plantation, Shelter belts, Chak Sarkar plantation and resumed lands, scrub forest are spread over an area measuring 49,732 acres, whereas the linear plantation alongside roads and railway tracks measure about 566 kilometers.

An area of 40,019 acres is under forest in the district. There is also linear plantation of 1080 Km alongside the roads/rails/canals in the district. Trees grown in the area are Millbury, Bakain, Eucalyptus, Simbal, Popular, Sirin, Acacia, etc.

6.3.2. Wildlife

Snakes, mammals, lizards, siisies, doves are seen in this area.

6.3.3. Fauna

Wildlife wolves, foxes, and wild cats are found in the district. Hare is common while chukor grey and black partridge are also found in the parts of the district. Migratory ducks like teal pintail and mallard and some geese visit during winter.

Table 6- Type of Fauna in the Project Site

English Name	Scientific Name
Mammals	
Asiatic Jackal	<i>Canis aurius</i>
Five Stripped Palm Squirrel	<i>Funambulus pennanti</i>
Indian Crested Porcupine	<i>Hystrix indica</i>
Indian Desert Jird	<i>Meriones hurrionae</i>
Reptiles	

Brilliant Agama	<i>Trapelus (Agama) agilis isolepis</i>
Indian Cobra	<i>Naja naja naja</i>
Pakistan Ribbon Snake	<i>Psammophis leithii</i>
Saw scaled Viper	<i>Echis carinatus</i>

6.3.4. Flora

Based upon observations during the field visit many species of plants were directly observed in the project area. List of the floral species in the project area are given in the following.

Table 7-Type of Flora in the Project Area

Types of trees	Species name
<i>Kikar.</i>	<i>Acacia nilotica</i>
<i>Talhi.</i>	<i>Alhaji maurorum</i>
<i>Neem.</i>	<i>Dalbergia sissoo Roxb</i>
<i>Gaah</i>	<i>Albizzia lebbek</i>
<i>Jawar.</i>	<i>Calotropis procera</i>
<i>Gandum.</i>	<i>Azadirachta indica (L.) Adelb.</i>
<i>Makae.</i>	<i>Triticum aestivum</i>
<i>Kahi.</i>	<i>Veazea nays</i>
<i>Lawo.</i>	<i>Tamarix indica</i>
<i>Jhangoori Ber.</i>	<i>Tamarix aphylla</i>

6.4. 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. Community, with special reference to environment and conservation of natural resources

6.5. Demographic Profile

According to 1998 Population and Housing Census, total population of Mian wali district is 1057 thousand persons out of which 530 thousand are males and 527 thousand are females. Density of population in the district is 181 persons per square kilometer. Percentage break-up of the Rural and Urban population is 79.2 and 20.8 respectively.

6.5.1. Languages and Major Casts

The principal tribes of the district are Pathans including Niazis, Khattak, and Balouch along them with are Syed, Qureshi, Jat, Rajput, Khawaja and Sheikh. Besides, there are working classes, the professionals like, Tarkhans, Mochis and Pawlis etc. Of late, the professionals have asserted themselves to equal respect and honor and are no longer looked upon as menials. All the tribes are Muslims, very staunch in their faith.

A few hundred Christians are also living in the towns. They too enjoy perfect peace and freedom and are at liberty to profess their faith.

6.5.2. Religion

The population of District Mian wali is over 99% Muslim.

6.5.3. Dress

The natives are gracefully dressed. Although a few elderly gents and ladies still put on Chola and Manjhla and Patks, the greater majority has taken to the Shalwar-Qameez. The headgear has disappeared altogether although Dhoti, Kukar (in winter) and Sindhi Ajrak over the shoulder are still very much in vogue. Khairee made of Tilla (called as Tillay walee khairee) is very popular over here.

6.6. Quality of Life Values

6.6.1. Health Facilities

Hospitals exist in the project area. People also access to private hospitals in city and sometimes to nearby private dispensaries. Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed.

The list of hospitals in Mian wali District is following.

- DHQ Hospital, Mian wali
- THQ Hospital, Isakhel
- THQ Hospital, Piplan
- THQ Hospital, Kalabagh
- Obaid Noor Hospital
- P.A.E.C Hospital, Chashma Barrage
- P.A.F. Hospital, Mian wali

6.6.2. Customs

The peoples are very much concerned about castes and beliefs, visiting shrines is very common among them.

6.6.3. Electric Supply

Power supply line goes all along the project area, and approximately 90% of the community can acquire electricity. Gas supply has been provided to the area, but few of the houses cannot afford to avail the service, so these houses depend upon fuel wood. But majority of the people belong to business communities, government sectors and having small jobs in district Mian wali.

6.6.4. Telephone Facilities

PTCL telephone facility is available in all parts of the project area. Similarly mobile service is also available and is being used efficiently as mode of communication in the project area.

6.6.5. Educational Facilities

The Namal Institute is a private university about 20 min drive from the city of Mian wali. The institute is located on 30 km, Tala gang Mian wali Road near Namal Lake. Initially it was established as an affiliate college of the University of Bradford, UK. Later in 2019 Namal College acquired a DAI (Degree Awarding Institute) status and thus became Namal Institute. There are further plans to turn the small campus into an education city, construction is already under way.

In the 1998 census Literacy was defined as the “ability of a person to read a newspaper or write a simple letter in any language”. The Literacy is also measured in terms of literacy ratio and computed as percentage of literate persons among the population aged 10 years and above. The literacy ratio of the district Mian wali. District is 60%, with a split of 60% for males and 56% for females. There are sharp differences in the literacy ratios by sex and areas. There are different government and private sector school near the vicinity of project area.

6.6.6. Agriculture

Mian wali district falls in arid and semi-arid zone of Pakistan. The land is of multiple type and can be classified as loamy with clay soil, which is suitable for wheat and maize, sandy soil, cultivated mainly for the rain-fed gram, Mong and Guara, and the irrigated areas which are mostly under wheat, cotton and sugarcane crops. Citrus plantation is also being carried out successfully in the area.

6.6.7. Site of Physical, Cultural Heritage

There are no documented or protected sites of archaeological, cultural, historical & religious significance in the project area. No visible signs were observed of such sites while conducting the field work.

6.7. Site Suitability

As the site is surrounded by some other relevant excavation and exploration projects and no relocation is required for establishment of current project. The site does not fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not impact by the prospecting activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation is required for the development of above-said project.

6.8. Project Response

90% of the respondents believed this project should be implemented. In their opinion, prospecting of the project will create labor opportunities for locals, and it will help to improve economic conditions of area. Prospecting of the Flour processing mill will also provide better living facilities to the people. The respondents also provided the mitigation measures like certified contractor must be hired, proper plantation should be done, proper procedures should be followed etc. They said, if mitigation measures will be implemented, they would have no objection.

7. ANTICIPATED IMPACTS AND MITIGATION MEASURES

This section provides the analysis of the potential impacts during development and operational phases of the proposed project on the physical, biological, and socio-economic environment of the project area. Environmental sensitivity of the project area is described through a thorough review of the project activities and the evaluation of significance of impacts is carried out through Environmental Matrices. This chapter then suggests effective mitigation strategies to help combat the adverse nature of these impacts and delivers a monitoring scheme to manage them.

7.1. Anticipated Environmental Impacts related to Project Location

Since the project aims at development of residential area so it may affect the water body, air quality of the project location. Solid waste products may affect the aesthetics of the area.

I. Mitigation

Plantation will be done around the project location to minimize the effect of vegetation removal. Proper waste management will be done to avoid any solid waste pollution.

7.2. Anticipated Environmental Impacts related to Project Design

All the process will be fully controlled so impact due to design will be negligible.

7.3. Anticipated Environmental Impacts during Construction Phase

Environmental impacts due to project construction are as under:

I. Air quality:

Impacts

Due to the construction activities like excavation, clearing, leveling, compaction, etc., dust will be raised and due to slightly increased traffic, slightly emissions of SO₂, NO_x, CO and SPM are inevitable.

Uncovered vehicles for transportation of building materials as well as their storage, especially gravel, sand and cement on the construction site can lead to chance dispersal of materials during heavy rains or high winds during dry periods. This could have a negative impact on the workers of the nearby industries and the passers away. Also, the mixing of raw materials and blistering will generate solid waste composting of chemicals and when exposed to air can affect the environment and air as well.

Mitigations

Spray by water trucks to minimize the dust of construction areas and exposed terrain should be done regularly. The construction machinery and equipment must be kept maintained on a regular basis. Tuning of vehicles should be made mandatory to reduce emissions of SO₂, NO_x, CO and PM₁₀.

Vehicles or trucks carrying cement, sand, aggregate and other materials shall be kept covered with sheets to help contain construction materials being transported within the body of each carrier.

II. Noise:

Impact

During construction process compaction, blistering and mixing of raw material machinery granulation Process, use of heavy machinery for clearing of the site and trolleys and trucks used for the transportation of construction materials will create some noise and vibration as well.

Mitigations

Engines of vehicles visiting the project site should be properly tuned-up. Truck/tractor drivers should be instructed not to play loud music and stop use of horn. Noise control measures should be taken such as provision of silencers on the heavy construction vehicles. The green zone of plants will also help decrease sound levels.

III. Health and safety:

Impacts

Possibility of health and safety hazard of workers is always present during construction phases like laying of pipes, installation of scaffolding and machines installations. To avoid cuts and damages to the skin during sterilization, packaging of the medicines certain medical facilities must be present at the site during construction.

Mitigations

To handle emergency medical situations, first aid facilities have already been made available for the workers at the site. Avoid all possible injuries during construction of the project. The contractor will ensure the availability of transport and driver to handle any emergency condition during construction activities at the project site. Safety equipment like belts, gloves and helmets should be strictly used by the labor at the work site. Implement training programs that support the

achievement of the scheme's staff and personnel's competency in relation to health, safety and environment. Introduce methodology of motivating good safety and environmental performance. Wearing of personal protective equipment should be made mandatory. The supervisory staff and workers to the extent possible must.

Follow the messages and instructions displayed on HSE notice boards installed in the premises of the site.

- Be aware of emergency escape routes.
- Promptly report all accidents to the concerned environmental manager.
- Not smoke or produce flame in No Smoking Areas.

IV. Construction waste disposal:

Impacts

Disposal of construction debris produce shall be properly disposing of otherwise it would have negative impacts on the site and surrounding area. Material including concrete waste, wood, steel, plastics sheets, etc., may result in the drainage blockage.

Mitigation

A site waste management plan should be made the responsibility of the building contractor to provide for the designation of appropriate waste storage area on the site and a schedule for the timely collection and removal of construction debris to an approved dump site. The wastes should be properly segregated and separated to encourage recycling of some useful waste materials.

V. Change in drainage pattern:

Impacts

Excavation activities required for infrastructure installation (lying of water/sewage pipes, electrical cables, etc.) may adversely impact the existing drainage patterns in the area. Loss of topsoil due to soil erosion may remain a problem during clearing and construction phases of the project.

Mitigation

Site clearing activities should be conducted in stages to minimize the area of exposed soil at any given time.

VI. Flora & fauna:

Impacts

Previously, no plants or trees existed on the project site. Hence, no negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.

Mitigation

To reduce construction impacts on surroundings and workers, a tree plantation program has been designed by the project proponent as it would help in cleaning the environment during operational life of the project too. The landscape plan would assure that designated trees are planted and that areas suitable for planting are identified and landscaped using majorly local trees and shrub species used for feeding by local bird species.

VII. Socio-economic environment

Impacts

Several categories of employees will be required during the construction phase. This will include skilled and unskilled laborers, engineers, contractors, and a small number of other professionals. These levels of short-term employment would have a positive impact on the local economy and on regional unemployment.

Mitigation

Strong and comprehensive plantation plans also lessen the fear of the local people towards environmental issues. Sustainable development approaches through conservation of natural resources would be the best strategy to compensate for negative socio-environmental impacts. Environmental aspects of the project should be well taken care of through the implementation of the Environmental Management and Monitoring Plan (EMMP) as recommended in this report. Socially responsible attitude of the project management towards local people and resources can make project people friendly.

7.4. Anticipated Environmental Impacts during Development Phase

Major impact associated with the development of the project is the transportation. There are two areas of concern in this respect – one while importing the machinery to the project site and second installing the equipment on the site. The impact during transportation may include traffic congestion. Impacts during the installation phase may include disturbance to the nearby residents, aquatic ecosystem, flora, and fauna in the project area.

Mitigation

The machinery would be shipped in the time when local transport load is minimum. Moreover, all the transported feed will be covered with tarpauline sheet to avoid disturbance. Also, special care would be taken to avoid disturbance to flora and fauna of the area.

7.5. Anticipated Environmental Impacts during Operational Phase

I. Potential Positive Impacts:

The project is envisaged to have followed major positive impacts,

Employment opportunities:

Construction of Spring City for housing purpose will help in generating new jobs for the local population. The requirement of Managers, Engineers, Workers, technicians, skilled and unskilled labor etc. will generate employment opportunities. It is estimated about 30-35 persons will be employed during operations phase and about 20-25 persons will work during construction phase.

Increase in Business:

With the influx of laborers for the proposed project, there will be more opportunities for small scale business such as small food cafes etc.

Improved Infrastructure:

Construction of Spring City will improve the infrastructure of the area as proponent has incorporated aesthetic values and regeneration of site in its planning stage.

Economic benefits:

Spring City will positively impact not only the local population. The shopkeepers in the town told that they will have a greater number of customers due to increase in population as no market is proposed in the Spring City.

II. Potential Negative Impacts:

Land Acquisition Resettlement:

One of the major impacts includes acquisition of land from the landowners and the resulting displacement of their families and disturbances in the livelihood of the affected persons (AP) in the project area. But present project land is ownership of proponents of Spring City and do not involve any type of land acquisition and resettlement activity.

Solid waste/ sludge management:

Proper solid waste management system is necessary for the prompt, timely and efficient disposal of solid waste & sludge for the reduction of its impacts. Impacts due to solid waste are expected to be temporary and minor in nature. EPA certified vendors will de-silt the drains and pick the sludge from the site for appropriate disposal.

Air Quality Potential Impact:

Air emissions from project-related activities are likely to include:

- o Dust raised on dirt tracks by project-related vehicles.
- o Vehicular Exhaust (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide, and volatile organic compounds) from vehicles used for project-related activities and residents of the area.

7.6. Potential Environmental Enhancement Measures

The proposed project will be installed with all precautionary measures to enhance and safe the environment. Following necessary measures will be adopted during construction and operation:

- Sprinkling of water will be done on dusty road and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Proper SOPs will be followed with proper schedule along with the HSE conditions.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and agreement will be made.

- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during working.
- Safety signs will be placed at all locations where required.
- First aid facilities will be made available.
- Any possible measure will be adopted to make the project safe and environmentally friendly.

8. ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

A comprehensive management plan is necessary to implement the recommendations and suggestions for environmental protection are included.

The objective of the Environmental Management and Monitoring Plan (EMMP) is to address all the major environmental issues and provide a framework for the implementation of the proposed mitigation measures during the construction and operational phases of the project. The proper implementation of the EMP will ensure that all the adverse environmental impacts identified in the IEE report are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully adopted by the concerned institutions or regulatory agencies.

The implementation of EMMP should be carefully coordinated with the design and construction program of the project to ensure that relevant mitigation measures are implemented at the appropriate stage and that adequate resources are properly allocated to achieve the desired results. This EMMP has been prepared to satisfy the requirements of the Pakistan Environment Impact Assessment (EIA) and Environmental Impact Assessment (EIA) Review Procedures, 2022.

For effective environmental management, the management of the project should assign the necessary responsibilities to its Health, Safety and Environment team, which should be responsible for environmental monitoring of the project.

8.1. Objectives of Environment Management Program

The EMMP provides a delivery mechanism to address potential impacts of the project activities, to enhance project benefits and to introduce standards of good practice to be adopted for all project works. The EMMP has been prepared with the objectives of:

- Defining roles and responsibilities of the project proponent for the implementation of EMMP and identifying areas where these roles and responsibilities can be shared with other parties involved in the execution and monitoring of the project.
- Outlining mitigation measures required for avoiding or minimizing potential impacts assessed in the EIA report.
- Developing a monitoring mechanism and identifying requisite monitoring parameters to confirm effectiveness of the mitigation measures recommended in the EIA report.
- Defining the requirements for communication, documentation, training and monitoring, management, and implementation of the mitigation measures.

8.2. Components of EMMP

Components of EMP are as follows.

- Management plan
- Monitoring Plan
- Communication and documentation
- Institutional capacity
- Environmental

8.3. Proposed Management & Mitigation actions

ENVIRONMENT MANAGEMENT AND MONITORING PLAN FOR SPRING CITY				
S. #.	IMPACT	MITIGATION MEASURE	RESPONSIBILITY	
			IMPLEMENTATION	MONITORING
A.	CONSTRUCTION STAGE			
1.	AIR QUALITY			
	Dust, SO ₂ , NO _x & CO emissions from trucks, cause health issues to workers.	Spray by water trucks to minimize the dust. Maintenance of construction machinery should be made mandatory to reduce emissions. Haul-trucks carrying earth, sand, aggregate and other materials will be kept covered with tarpaulin to reduce dust pollution.	Contractor	Proponent through Consultant
2.	NOISE			
	The impact of noise generated during construction.	Engines of vehicles visiting project site should be properly tuned-up. The green zone of plants will also help decrease sound levels.	Contractor	Proponent through Consultant
3.	OCCUPATION, HEALTH, AND SAFETY			

	There will always be the possibility regarding hazard to health and safety of workers to occur during construction stage, lying of piles, and machines installation.	First aid facilities should be readily available for the workers at the site. The contractor will ensure the availability of transport and driver to handle any misshape which may occur. Relevant safety devices like belts, gloves and testers should be strictly used by the Labor force at the work site. Implement training programs that support the achievement of the staff and personnel's competency in relation to HSE.	Contractor	Proponent through Consultant
4.	DISPOSAL OF CONSTRUCTION DEBRIS			
	Each phase of the development shall produce solid waste, disposal of which, if not managed properly could have negative impacts on the site and surrounding area.	A site waste management plan should be made the responsibility of the contractor. The wastes should be properly segregated and separated to encourage recycling of some useful waste materials. Train or educate the involved stakeholders on the importance and means of waste management and handling.	Contractor	Proponent through Consultant
5.	GROUND WATER QUALITY			
	No appreciable impacts on the ground water quality are anticipated.	Avoid extra usage of ground water for cleaning of roads, and garages	Contractor	Proponent through Consultant

6.	SOIL CONTAMINATION			
	Any improper storage or handling of materials including paints, fuels, solvents, oil, cement, etc. would result in soil contamination.	The contractor should be required to impart proper training to their workforce in the storage and handling of materials.	Contractor	Proponent through Consultant
7.	FLORA & FAUNA			
	No negative impact on the ecological environment will take place on account of cutting of any trees in the project area and clearing of vegetation from the site.	Trees and ornamental plants shall be planted along the project boundary which increase the aesthetic value of the site and will combat pollution. Landscaping is deemed to be a powerful mitigation activity with a positive impact.	Contractor	Proponent through Consultant
8.	SOCIO-ECONOMIC ENVIRONMENT			
	Several categories of employees will be required during the construction phase. This would have a positive impact on the local economy and on regional unemployment.	Socially responsible attitude of the project management towards local people and resources can make project people friendly. Awareness and educational programs introduced by the project management or e area can reduce the fear among the people regarding non-local people.	Contractor & Proponent	SIE
B.	OPERATIONAL STAGE			
9.	AIR QUALITY			

	The slightly increased traffic because of project operation will not result in the significant increase in concentrations of emissions of flue gases as the number of visiting vehicles shall be limited for transportation of materials and 4 vehicles for staff per day.	Proper maintenance and tuning of the vehicles done by the proponent.	Proponent	EPA
10.	NOISE QUALITY			
	Noise due to movement of vehicles, during traffic of materials.	No Mitigations required except for keeping maintenance of vehicles. Plantation along with roads will make buffer zone to avoid noise.	Proponent	EPA
11.	OCCUPATION, HEALTH, AND SAFETY			

	There will always be the possibility regarding hazards to health and safety of workers to occur during the operational phase of the project.	Plantation of trees along the boundary walls will help in reducing the noise levels to sufficient extent. Noise absorbing paint should be used on indoor walls to minimize its impacts on the outer environment. All the vehicles should be properly tuned up and regular maintenance and periodic monitoring must be done. Strict rules should be made by the project administration to control speeds of vehicles in residential area	Proponent	EPA
12.	SOLID WASTE			
	The solid/chemical waste may negatively impact the site, the workers, the visitors, and the factory surrounding in different ways including aesthetically, occupationally as well as from health, safety and environment point of view.	Solid waste will be collected by three bin system, which will be managed by Spring City management. Collection and recycling of material will be done by EPA certified vendors for final disposal	Proponent	EPA
13.	WASTEWATER QUALITY			
	The sewage effluents shall be discharged after primary treatment into the main sewerage tank.	The system for the primary treatment of the sewage effluent should be appropriately installed and maintained.	Proponent	EPA

14.	FLORA & FAUNA			
	Excessive plantation shall be done on the walls. This will act as a buffer zone and bring healthy change in the environment during the operational phase of the project.	The process of plantation should be kept sustainable throughout project life. Green belts will be made along the roads and landscaping will be done for aesthetic point of view.	Proponent	EPA
15.	SOCIO-ECONOMIC ENVIRONMENT			
	Several employees will be required in the operational phase, and this would have a positive impact on the local economy and on regional unemployment.	The management of the project can capitalize the positive attitude of people of the study area towards this project by offering them maximum employment opportunities. Measurements and steps should be taken to keep undisturbed the privacy of adjoining workplaces.	Proponent	EPA

8.4. Schedule of Implementation

Stage I: The clearing of land, preparation of land for construction activity.

Stage II: During this development phase, green belts and landscaping will be done.

Stage III: In this phase all the outstanding activities will be completed, construction activities will be initiated.

Stage IV: after completing construction, employees will be hired, and staff will be assigned their respective work. The operation activities will be initiated.

Table 4- Schedule of Implementation

Activities	Times Frame											
	Four Week			Four Week			Four Week	Four Week			Four Week	
Preliminary Phase (Land Acquiring etc)												
Design Phase												
Pre-Construction Activities Finalization												
Construction Phase												
Purchasing Phase												
Development Phase												
Commissioning Phase												
Recruiting Of Staff												
Operation Phase												

8.5. Environmental Budget

Table 5- Environmental Budget

Environmental Component	Quantity	Amount Pak Rs.	Details/Basis
Tree Plantation/Green Belt Development	5k-10k	10 million	Cost includes plantation and maintenance up to three years
Wastewater treatment (WWT)	1	10 million	Cost includes maintenance up to three years
Solid waste management	L.S	30 million	Cost includes maintenance up to three years
Health & Safety Measures PPEs	L.S	25,000	Lump sum
Miscellaneous Cost	L.S	12,000	Lump sum
Air Quality Monitoring	2	15,000	2 samples @ 7500/sample
Water Quality Monitoring	2	10,000	2 samples @ 6000/sample
Noise Level Monitoring	2	10,000	2 samples @ 5000/sample
Soil Tests	2	10,000	2 samples @ 5000/sample
Training		10,000	Lump sum
External Monitoring			50,000
Total Environmental and Social Management Cost			50.5 million approximately

8.6. Environment Management Team

A complete team has been designed by the proponent for the management of the environment.

Proponents will higher management staff purely for various actions of environment.

Proponent's management team

Sr.#	Managers	Responsibilities
1.	Contract Manager	- Implementation of EMP - Environmental issues identification during pre-construction phase. - Communication EMP to all employees.

2.	Contractor	• Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit. • Ensure that the project management team is notified of any non-conformance of control measures or environmental incident where the environment has been put at risk.
3.	Site Manager	• Controlled access arrangement to avoid hazards. • Emergency egress arrangements to avoid any unfortunate incident. • First aid facilities/services should be readily available on-site.
4.	Site HSE Advisor	• Ensure good standards of workmanship. • Engaged health and safety to devise site waste management plan to be followed and implemented. • Daily checks & weekly checks. • Regular consultation with workers.
5.	Site Environment Advisor	• According to legislation and consent develop EMP. • Ensure application of EMP. • Carry out regular site inspection.
6.	Public Contact Officer	• First point of contact for members of the public. • Arrange and manage public forums. • Maintain relation with stakeholders. • Door to door surveys as appropriate. • Coordination with work.

8.7. Proposed Environmental Monitoring

Environmental monitoring can be categorized into two types:

- Compliance Monitoring
- Effects Monitoring

The environmental monitoring will be conducted according to SMART rules and EPA regulation.

8.7.1. Compliance Monitoring

Compliance monitoring will be carried out to ensure compliance with the requirements of the EIA and EMMP. The project staff and contractors will carry out the inspections on a routine basis. This will also include the routine monitoring at the project site as specified in EMMP.

8.7.2. Effects Monitoring

To monitor actual impacts of the project on selected sensitive receptors so that impacts not anticipated in the IEE report or impacts which exceed the levels anticipated in the IEE report can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring.

8.7.3. Monitoring components

Baseline environmental monitoring will be carried out for the following essential parameters.

- Noise Levels
- Ambient Particulate Matter
- Ambient Air Gases
- Ground Water
- Wastewater
- Soil Contamination
- Solid Waste
- Stack Emissions
- Vehicular Monitoring
- Flora & Fauna
- Health & Safety
- Machinery Maintenance

Environment Monitoring Plan

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Construction and Operation Phases					
Land Resource	Solid Waste	Implementation of SW* Management System	Record keeping and timely transfer of SW from bins to the disposal. site for composting	Daily	Manager HSE / Project Proponent
	Soil Contamination	Implementation of Management Plans	Visual monitoring and complete soil analysis	Daily and annually	
Air Resource	Air Emission	Dust emissions during construction and operation.	Monitoring of the emissions as per applicable standards Water sprinkling will be done regularly to avoid. dust emissions	Once before start of operation and after that as when required during operation	
	Dust				
Ecological	Flora	Uprooting of trees	Inventory of uprooted	During Baseline	
Resource		during construction phase and maintenance of photographic record	trees and vegetation during operation phase	Survey, once in a year and after the completion of the Project	
Noise		Development/operational material transportation	As per applicable standards	Fortnightly	
*SW= Solid Waste, **EA= Executive Agency					

8.8. Training of Workers:

One of the most important mechanisms for the enhancement of the project's overall environmental performance will be the implementation of a program of environmental training for the project personnel and the Contractor's team. Environmental training will form part of the ongoing environmental management of the project. It will help to ensure that Proponent's environmental policies and principles are followed. The Contractor will be expected to implement a formalized training program as to the extent feasible, building on the recommendations supplied in the EIA.

Suggested components of an environmental training program may be as follows:

- Promotion of environmental protection measures in company literature, broadsheets, posters, project updates, etc.
- Provision of guidance notes on environmental protection to contractors.
- Clear signs at worksites highlighting prohibited activities (discarding of wastes, smoking).
- Clear signs indicating sanitary disposal areas, safe drinking water sources, etc.

Adoption of these measures should help Proponent and the Contractor to achieve a high level of environmental awareness in the project team, which should, in turn, promote sound environmental management during project lifespan.

8.8.1. Training schedule:

A training log will be maintained by the management of the project and contractors. The training log will include:

- Topic
- Date, time, and location
- Trainer
- Participants

Important training under the spectrum needs to include:

- Training on fire fighting and safety management.
- Training on environmental safeguards and compliance.
- Staff training on environmental monitoring and reporting.
- Training on occupational health and safety measures.

Table 6-Training Schedule

Participants	Date, Time & Location	Training Topics	Schedule	Responsible Authority
Staff of Spring City and the contractor	As specified	✓ Introduction to project IEE and EMMP ✓ EMMP communication, documentation, monitoring, and reporting requirements	Every month	Project Manager
All site personnel	As specified	✓ Site induction training on HSE system and requirements ✓ Environmental sensitivities of the project area ✓ Communication of environmental problems to corresponding officials ✓ Waste disposal	After every week	Project Manager
Drivers	As specified	✓ Road safety ✓ Road restrictions ✓ Vehicle restrictions ✓ Waste disposal ✓ Defensive driving	After every 3 months	Project Manager
Camp Staff	As specified	✓ Camp operations ✓ Waste disposal ✓ Good housekeeping	Monthly	Project Manager

Project schedule (tentative) is described hereunder.

8.9. Equipment Maintenance Details

The proposed project is the development of Spring City. Actions necessary for retaining or restoring environment or system to the specified operable condition to achieve its maximum useful life.

All tools, equipment and vehicles must be properly maintained so that workers are not endangered. Construction regulations require inspections of vehicles, tools, machines and equipment before use. We must always be aware that maintenance tasks themselves are potentially hazardous and can result in injury.

The successful maintenance program is:

- well organized and scheduled,
- controls hazards,
- defines operational procedures, and

- Trains key personnel.

The degree of detail to include in your company's program regarding equipment maintenance will depend on the kinds of tools/equipment used. Some construction equipment (cranes) has very specific inspection and maintenance requirements. Passenger Vehicles (company trucks, cars and vans) may require only basic maintenance. Power Tools should be maintained in good working order. This may be limited to ensuring that blades/bits are replaced when needed and that guard or other safety devices are operable, and any damaged electrical cords/plugs are repaired or replaced. Damaged or defective equipment/tools should be tagged and removed from service.

9. STAKEHOLDER CONSULTATION

Stakeholder's consultation is a tool used for communication with a diverse group of stakeholders having multifarious aims such as information dissemination, exchanging views, soliciting feedback and suggestions on issues pertaining to the project, plan future actions. This practice initiates a need assessment and identify areas of concern for all the parties that maybe affected by the project activities.

Stakeholders are all those people and institutions who have an interest in the successful design, implementation, and sustainability of the project. This includes those positively and negatively affected by the project.

Project can actively participate in decisions on planning and management. The stakeholders including regulators, government representatives and NGOs were met to appraise and discuss the environmental and social perspective of project activities related to the construction and operation of incineration unit. Their valuable concerns and suggestions were noted and thereafter incorporated in the IEE process and study.

During the field survey for this IEE study, meetings were held with the communities residing within the project area. The objective of these meetings was to solicit and record their views and concerns for inclusion in project design at the planning phase. In the same vein, meetings were held with the members of local and provincial government, NGOs, and district government representatives.

All the stakeholders were briefed about the project verbally. Their feedback was noted, and all the concerns voiced in the discussion were relayed to the management team of the project.

9.1. Benefits and Objectives of Stakeholders Consultation

Consultation with stakeholders leads to an overall better understanding of the project on the part of the communities and gives the proponent a clearer understanding of the stakeholders' perspective. Effective public consultation can add substantial value to the IEE process. The information gained through public consultation on the stakeholders' concerns, interests, and their ability to influence decision-making helps identify key cause of environmental problems.

This can be used to evaluate direct and indirect environmental impacts and assess short term and long-term resource use implications. The input from local communities and NGOs can help evaluate alternatives and strengthen the management planning by incorporating local input and know-how.

An informed public will better understand the tradeoffs between project benefits and disadvantages; be able to contribute meaningfully to the project design; and have greater trust with the project proponent and support for the project, says the Asian Development Bank. These factors contribute towards improved project implementation sensitized to the human environment of the area. The objectives of stakeholders' consultation are to:

- Promote better understanding of the proposed operation through explaining its objectives and its potential positive and negative impacts.
- Identify and address concerns of all interested and affected stakeholders.
- Provide a mechanism to resolve issues identified by communities, before project plans are finalized and development begins, thereby, avoiding public outcry and resentment.
- Instill trust between various stakeholders and the proponent to promote cooperation.

9.2. Identification and Classification of Stakeholders

During the field survey, significant efforts were made to identify the possible categories of stakeholders and their stakes. Identification of stakeholders is important for the sustainability of a developmental project and helps to evaluate and envisage the role of stakeholders. The influence or impact of the project on stakeholders can be elaborated in the form of a matrix and the mitigation measures are proposed accordingly.

All the stakeholders had different types of stakes according to their professions. The stakeholders that are likely to be influenced by the project activities or would like to participate in the project include:

- **Industries surrounding the project area.**

Stakeholders can be classified depending on the influence of the project activities on them. The stakeholders for the project are classified as follows:

- Industries: Industries, groups or institutions directly affected by the project and can influence the project outcome.
- Local communities: Residential areas around the project site.

9.3. Views, Concerns and Suggestions of Various Stakeholders

The major socio-economic concerns and problems of the affected persons of various communities have been given in tabulated form along with their main concerns and remarks. Community showed a lot of concerns; a few are being mentioned here:

- Removal of shrubs and trees should be avoided to the extent possible in the case of clearance green zones should be established within the facility.
- Indigenous trees around the facility should be planted to control air pollution and as the compensation of construction activity.
- The project will become the source of income for locals to earn their livelihood easily and honorably, so locals should be preferred.
- For the solid waste management and waste disposal, proper disposal techniques should be adopted.
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions.
- Employment opportunities will be generated, and locals should be hired on the priority basis.
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.

9.4. Methodology for Consultation

Stakeholder consultation is a two-way flow of information and dialogue between the project proponent and stakeholders, specifically aimed at developing ideas that can help shape project design, resolve conflicts at an early stage assist in implementing solutions and monitor ongoing activities. Various techniques are used worldwide to carry out the stakeholder consultation that

includes discussions, meetings, and field visits. A series of scoping sessions and informal focus group discussions were carried out with local communities and local government representatives. The meetings were held at various locations.

9.5. Environment Management team

Proponent has planned to hire a complete Environment Management Team. It's as follows with designations and responsibilities.

Proponent's Management Team

Sr.#	Managers	Responsibilities
1.	Contract Manager	• Implementation of EMP • Environmental issues identification during pre-construction phase. • Communication EMP to all employees.
2.	Contractor	• Ensure that the control measures identified during environmental surveys are implemented as they are relevant to their work/visit. • Ensure that the project management team is notified of any non-conformance of control measures or environmental incident where the environment has been put at risk.
3.	Site Manager	• Ensure site material and safe handling of hazardous waste. • Controlled access arrangement to avoid hazards. • Emergency egress arrangements to avoid any unfortunate incident. • First aid facilities/services should be readily available on-site.
4.	Site HSE Advisor	• Ensure good standards of workmanship. • Engaged health and safety to devise site waste management plan to be followed and implemented. • Daily checks & weekly checks. • Regular consultation with workers.
5.	Site Environment Advisor	• According to legislation and consent develop EMP. • Ensure application of EMP. • Carry out regular site inspection.
6.	Public Contact Officer	• First point of contact for members of the public. • Arrange and manage public forums. • Maintain relation with stakeholders. • Door to door surveys as appropriate. • Coordination with work.

9.6. The responsible authority

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint a HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage all HSE condition at the PEQS.

9.7. Other department and agencies

Following officers of government departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance.

Pictorial evidence of survey





9.8. Consultation with Affected and wider community

In addition, to the use of direct methods to evince the response of the various stakeholders in targeted population residing in study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to creation of possible impacts, adverse impacts, and beneficial impacts, including employment opportunities, income generation activities, change in living standards and provision of the basic amenity.

Personal views of the respondents on the establishment of residential Facility by M/S Spring City, possible disturbance to the residents near the AOI and infringement of their privacy were also recorded. The various rounds of public meetings and consultations were arranged in project and study area. The objectives of consultation with the affected persons are given in the table below:

Disclose the proponent plan for the construction/operation of said facility.

- To share information on the design and specifications of project works.
- To analyze the expected impact on the socio-economic environment.
- To understand their concerns regarding various aspects of project commencement.

Table 7- List of People Consulted

Sr.#	Name	CNIC #	Concerns
1	M. Tehseen Raza	38301-9947730-1	During the survey in the study area following concerns of the local community were noted: • Wastewater should be treated properly before disposal. • Locals should be preferred for the job opportunities. • Wastewater should be treated prior to final disposal in nearby drain. • Solid waste should be managed effectively by
2	Badar Naeem	38301-4710602-3	
3	M. Ishaq	38301-2012259-7	
4	M. Akmal	38302-3021883-9	
5	M. Shareef	38302-9510594-5	
6	Waseem Shehzad	38302-1727393-9	
7	Sardar Khan	38302-3223583-1	

8	Haider Ali Khan	37405-6636683-3	adopting the standard practices of the area. • Cleanliness of the area should be ensured. • An effective EMMP should be designed and enforced with true spirit. • Health of the workers should be ensured. • Planation should be carried out at extensive scale. • Construction activity should be carried out during day hours. • Noisy activities should be confined.
9	Jahan Khan	38302-8983740-3	
10	Amer Haseeb	38302-2066625-9	
11	Atif Hameed Khan	38302-1960080-3	
12	M. Arshad	38302-4675909-1	
13	M. Dilawar Khan	38302-763032-9	
14	Tariq Abbas Khan	38302-5504904-3	
15	Ajmal Khan	38302-4531980-3	

9.8.1. Study area:

The area of Mouza Yaro Khel Pakka Tehsil & District Mianwali was the part of our study boundaries but specifically, it included. The land for proposed unit is situated at Mouza Yaro Khel Pakka Tehsil & District Mianwali.

9.8.2. Study schedule:

The composition and schedule to conduct the group discussions and interviews and impact location profile was prepared using the attached Performa in annexure.

9.8.3. Local community

Concerns of the locals of the project were solicited and collected in the following manner:

- A field visit was arranged to contact the communities within 5km of the project area.
- The team was completely aware of the processes and environmental issues related to the project.
- A brief description of the project was provided verbally to the local community, and they were asked to express their concerns regarding the project.
- Concerns, complaints, and suggestions were recorded in written form.

9.8.4. Local Communities Concerns

The issues and suggestions raised were recorded in field notes for analysis, and interpretation, by reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, and focus group discussions. The findings of the Community consultations have been addressed in various sections of the EIA report, and the mitigation plans have been incorporated into the EMMP.

9.9. Key Findings of Study:

The study findings depict that people perceive overall positive social impacts by development of proposed project. Their attitude towards project development is highly positive with the expectation that locals are provided with jobs especially where unskilled labor is required. Majority of the people is convinced for positive sign for development in area and they correlate this change with the pace of their upward social mobility and progress. However, they want wastewater treatment plants to be installed.

9.10. Results of Survey

Following are the results of the survey with the local stakeholders:

9.10.1. Occupation of Respondents

Majority of the respondents (38%) belongs to the labor class, 16% associated with their own business, 13% were daily wagers, 13% of respondents were associated with agriculture, 7% were shopkeepers and remaining 7% were the private employees. During survey, efforts were made to interact with local stakeholders representing all walks of life. The detailed graphic representation of occupational status is given below,

9.10.2. Personal Income

Based on the sample survey results, as the figure shows that 5% of the respondents were earning less than 20,000 rupees, 24% of respondents fall within the income range of 20,000–25,000, 41% respondents earn 30,001–40,000 while only 16% of the respondents earn within the range of 40,001–45,000 and 14% of respondents were earning more than 45,000 rupees.

9.10.3. Facilities Available

Basic facilities available in the study area are depicted here. It shows that electricity, telecommunication, gas supply water supply, sewerage system and every other routine facility is available in study area.

9.10.4. Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. Most respondents (94%) were in favor of aforesaid project. They expect that establishment of aforesaid project will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities.

10. CONCLUSION

The project is aiming at development of housing scheme & residential plot. The project falls under the category of the projects requiring Environment Impact Assessment for housing scheme.

At the end of this study, it has been found that:

1. There are no sensitive elements/segments of environment around the project site.
2. EMP -as recommended in this IEE Report, are to be put in place during all stages of the project.
3. Environmental monitoring by the project proponent and a third party will also ensure that the project runs in accordance with the legal requirements.
4. Availability of water for the project will be ensured without affecting the needs of the people around the project area.
5. Based on these findings of the IEE Report, the project merits the issuing of Environmental Approval by the Environmental Protection Agency, Government of Punjab, and Lahore.
6. Construction activities will be managed on the maximum possible ways to avoid any disturbance to the environment. Solid waste will be managed. Water retention will be minimized at all levels.
7. The noise levels will be kept within the required limiting values of the NEQS Pakistan
8. Proper engineering controls e.g. bag houses will be applied for dust suppression. Also, water will be sprinkled periodically.



SOURCES OF DATA

- Punjab Environmental Protection (Amendment) Act 2012 (PEPA)
- Guidelines for the preparation and review of Environmental Reports, October 1997
- Review of IEE/ EIA Regulation, 2000
- The 2004 Baseline Survey on Millennium Development Goals in AACs, Pakistan
- World Weather Online.com
- Water and Sanitation Agency (WASA), Lahore.
- RED Data Book of IUCN
- [/www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA-Water_Efficiency_on_the_Farm_Booklet_WEB.pdf](http://www.wsask.ca/Global/Water%20Programs/Water%20Conservation/SWA-Water_Efficiency_on_the_Farm_Booklet_WEB.pdf)
- <http://www.madehow.com/Volume-2/Lead.html>
- http://www.ijirset.com/upload/2013/november/18_Disposal.pdf

GLOSSARY

EIA (Environmental Impact Assessment): It is the process of identifying, predicting, evaluating and mitigating the effects of biophysical, social and other relevant proposed projects and physical activities prior to major decisions and commitments being made.

EMP (Environmental Management Plan): An EMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented to protect the environment and comply with environmental legislation.

ESIA (Environmental Social Impact Assessment): It is to identify the impacts of the project on social and environmental conditions.

FAUNA: Word used for combination of all the species of animals.

FLORA: Word used for combination of all the species of plants.

IEE (Initial Environmental Examination): Initial examination of projects for identification of hazards of project.

NCS (National Conservation Strategy): Three objectives of the National Conservation Strategy (NCS) are: (i) conservation of natural resources; (ii) sustainable development; and (iii) improved efficiency in the use and management of resources.

NOC (No Objection Certificate): It is a kind of clearance issued by EPA necessary for any project to be constructed.

PEPA (Pakistan Environmental Protection Act 1997): An act to provide the protection, conservation, rehabilitation, and improvement of environment, for the prevention and control of pollution and promotion of sustainable development.

Topography: Physical features of any area including soil, water and air are called topography.

LIST OF ABBREVIATIONS

AA	Ambient Air
APHA	American Public Health Association
AOI	Area Of Influence
BOD ₅	Biological Oxygen Demand
CMS	Convention On Migratory Species
COD	Chemical Oxygen Demand
dB(A)	Decibel
EA	Environmental Assessment
EHS	Environmental Health Safety
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department
PEPA	Pakistan Environmental Protection Act
EPA	Environmental Protection Agency
ESIA	Environmental And Social Impact Assessment
ESA	Environmental And Social Assessment
ESMP	Environmental/Social Management Plan
EMP	Environmental Management Plan
EC	Electrical Conductivity
GIS	Geographical Information System
GOP	Government Of Pakistan
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HSE	Health Safety & Environment
HWMS	Hazardous Waste Management System
IEE	Initial Environmental Examination
I & D	Irrigation And Drainage
IAIA	International Association For Impact Assessment
IWM	Industrial Waste Management
IUCN	International Union For Conservation Of Nature
KM	Kilometers
LGO	Local Government Ordinance
MW	Mega Watt
MEAS	Multilateral Environmental Agreements
MSDS	Material Safety Data Sheets

NEQS	National Environmental Quality Standards
PMD	Pakistan Meteorological Department
PPE	Personal Protective Equipment
PEQS	Punjab Environmental Quality Standards
NEAP	National Environmental Assessment Plan
NWFP	North West Frontier Province
Q&EHS	Quality, Environment, Health & Safety
O & M	Operation And Maintenance
PKR	Pak Rupees
PPM	Parts Per Millions
PAP	Project Affected People
PEPC	Pakistan Environmental Protection Council/Punjab
PSC	Project Steering Committee
QA/QC	Quality Assurance/Quality Control
RAP	Resettlement Action Plan
ROG	Reactive Organic Gas
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TT	Technology Transfer
UNFCCC	United Nation Frame Work Convention On Climate Change
UNCC	United Nation Convention To Combat Desertification
UNEP	United Nations Environmental Programs
GOP	Government Of Pakistan
WHO	World Health Organization
R&R	Rehabilitation And Resettlement
WWTP	Waste Water Treatment Plant

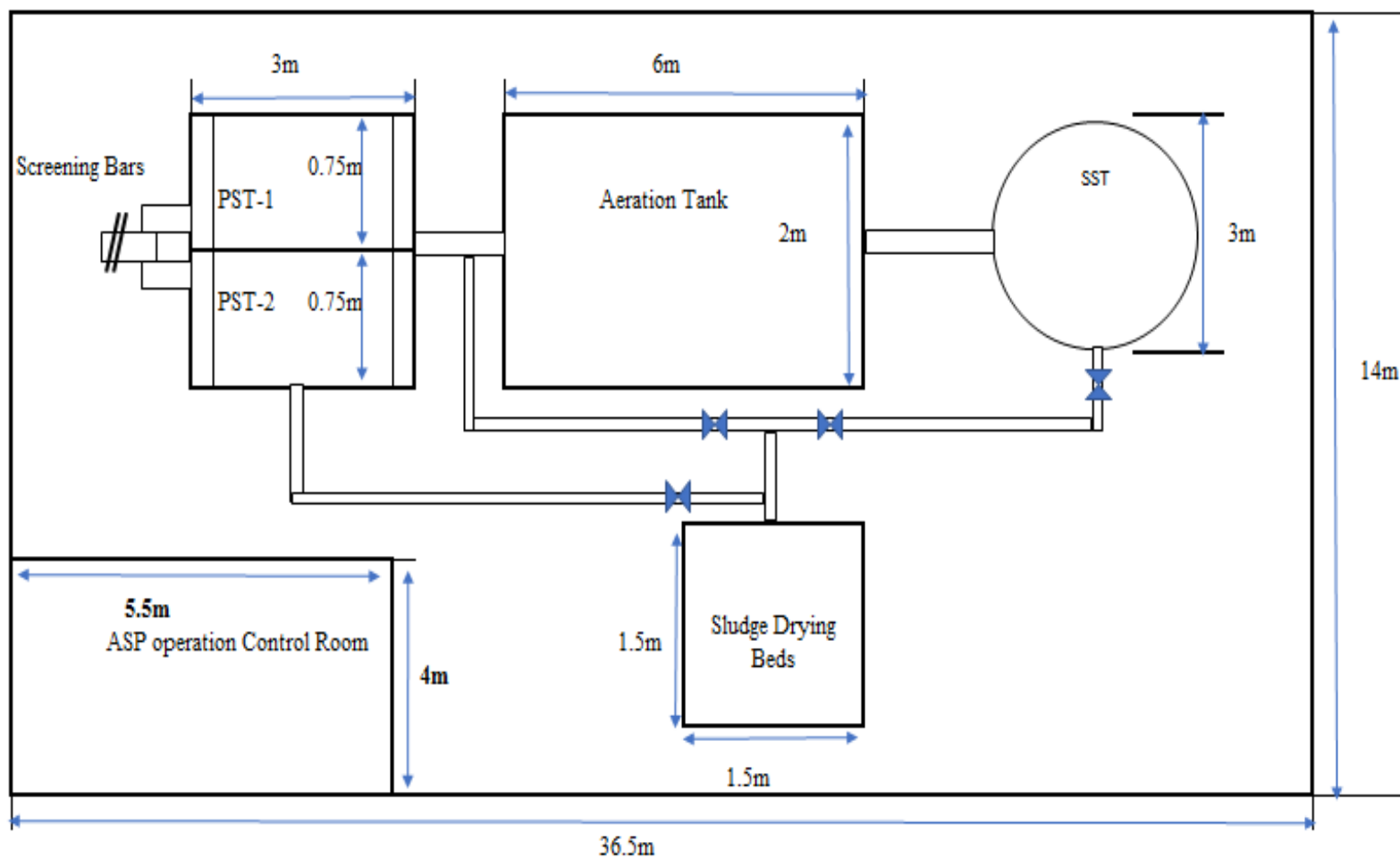
LIST OF INDIVIDUALS CONSULTED

Sr.#	Name	CNIC #	Concerns
1	M. Tehseen Raza	38301-9947730-1	During the survey in the study area following concerns of the local community were noted: - Wastewater should be treated properly before disposal. - Locals should be preferred for the job opportunities. - Wastewater should be treated prior to final disposal in nearby drain. - Solid waste should be managed effectively by adopting the standard practices of the area. - Cleanliness of the area should be ensured. - An effective EMMP should be designed and enforced with true spirit. - Health of the workers should be ensured. - Planation should be carried out at extensive scale. - Construction activity should be carried out during day hours. - Noisy activities should be confined.
2	Badar Naeem	38301-4710602-3	
3	M. Ishaq	38301-2012259-7	
4	M.Akmal	38302-3021883-9	
5	M. Shareef	38302-9510594-5	
6	Waseem Shehzad	38302-1727393-9	
7	Sardar Khan	38302-3223583-1	
8	Haider Ali Khan	37405-6636683-3	
9	Jahan Khan	38302-8983740-3	
10	Amer Haseeb	38302-2066625-9	
11	Atif Hameed Khan	38302-1960080-3	
12	M. Arshad	38302-4675909-1	
13	M. Dilawar Khan	38302-763032-9	
14	Tariq Abbas Khan	38302-5504904-3	
15	Ajmal Khan	38302-4531980-3	

**List of names, qualifications and roles of team members
carrying out the IEE/EIA study**

Sr. #	Name	Qualification
Team Leader		
1	Miss. Sara Fatima	M.Phil. Environmental Sciences
Environmental Scientist		
3	Mr. Zia ur Rehman Farooqi	Ph.D. Environmental Sciences (Scholar)
4	Hafiz Zeeshan Safder	M.Sc. Analytical Chemistry
5	Mr. Saffi Ahmed	M.Phil. Environmental Sciences
Environmental Engineers		
7	Miss Misbah Ali	B.Sc. Environmental Engineering
8	Engr. Muhammad Bilal	B.Sc. Environmental Engineering
Sociologist		
9	Qazi Muhammad Ahmed Raza	M.Phil Sociology

Activated Sludge Process Design for Housing Scheme



Solid Waste Management

- **Waste hierarchy**

The waste hierarchy refers to the "3 Rs" Reduce, Reuse and Recycle, which classifies waste management strategies according to their desirability in terms of waste minimization. The waste hierarchy is the cornerstone of most waste minimization strategies. The aim of the waste hierarchy is to extract the maximum practical benefits from products and to generate the minimum amount of end waste.

- **Collection at doorstep**

Wastewater will be collected from house to house by three bin system. Reuse and recycling will be promoted among the residents of the scheme. Residents will be directed to throw all their household waste the bins based on their nature and type of waste. Three colour bins will be placed outside each house where biodegradable, non-biodegradable and recyclable will be handled separately.

- **Transfer to Dump Site**

This domestic waste will be collected and transported to the Municipality Dump Area nearest through EPA certified vendor. At regularity of daily the waste will be collected from the houses will be transported to the main Municipality dump site area. At the dump site it will be stored for 1-2 days maximum. Re-cycleables will be sold to the recycling market while other will be handed over to Municipality. It will be collected and then moved to Municipality Dump site.

- **Final Disposing**

All raw materials will be recycled during the construction activities as road filling and maintenance purposes. Solid waste of about 30-35 kg by domestic sources will be generated during Construction phase which will be placed in separate bins and about 120-130 kg per day solid waste will be generated during functioning of the project from domestic sources. Management of the society will depute an official who will manage the solid waste on regular basis, ensure the good housekeeping throughout the scheme. All the collected waste will be disposed off in municipality designated landfill site.



Figure -Bin System

Wastewater Management

Generated wastewater may impact the surface & ground water quality of area, if not treated. In addition, its spillage may deteriorate water quality.

- The domestic wastewater will be treated through septic tank prior to disposing off in nearby wastewater drain.
- For the treatment of wastewater, WWTP of adequate capacity and technology will be installed. It will consist of.
 - Screening
 - Grid Removal
 - Primary Sedimentation
 - Aeration
 - Secondary Sedimentation
 - Aeration
 - Sludge drying bed
- Water conservation activities will be adopted for the preservation of water.
- Water conserving methods will be applied by placing taps and toilets.
- All faults will be monitored and fixed.
- Freshwater conservation techniques should be adopted to ensure sustainable development such as; wastewater recycling plant.
- It will be ensured that no solid waste will be entered in the wastewater.

Terms of References

- * According to regulation 7 of Review of IEE and EIA regulations, 20220, proponent shall pay, at the time of submission of IEE/EIA, a nonrefundable review fee to EPA, in accordance with rates specified in schedule-III.
- * Provide all documents/details required for completion of IEA report
- * Proponent shall be responsible for paying any fines/ penalties levied by the EPA Punjab or Environment Tribunal.
- * Proponent shall be responsible correctness and validity of all information and documents provided to the consultant for onward submission to EPA Punjab and consultants will bear no responsibility.

In M/S Spring City

For Enviro Stewards Co. Pvt. Ltd.

Ms. Sara Fatima

Mr. Zia ur Rehman

