

DISCLAIMER

The data was based on the originality of project site shown by the project proponent/ stakeholders/ promoters, provided maps, verbal communications and all other related documents. The authenticity of supra-mentioned relies with the proponent/ stakeholders/ promoters, not with the environmental consultant. The IEE report can't be negotiated in any court of law.



For

Representative: IEE & EIA Team

GUIDELINES FOR PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS

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EXECUTIVE SUMMARY

The proponent intends to establish a gravel stone crushing facility by the title “A & H Crushing Plant” at Mouza Kot Tehsil Kahuta district Rawalpindi, over an area 3 Kanal. Category of this project falls in the category of a detailed account of the foreseeable environmental and social impacts likely to emanate from the establishment of the gravel stone crushing facility in the area are tried to be mentioned.

In this pre-feasibility study, all calculations have been based on total **3 Kanal** for gravel stone crushing facility. The 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.

Detailed introduction and expertise of the consulting firm are attached here as an **Annexure**.

Brief Description of the Project

Name of Project	A & H Crushing Plant
Location of the of Project	1- Mouza Kot Tehsil Kahuta, Tehsil & District Rawalpindi 2- 33.545528N, 73.370528E (Google map is attached A3 size with file)
Name & Address of Proponent/ Owner	Muhammad Iftikhar Ahamd S/o Muhammad Hussain R/O POBox Khas, Goi, Tehsil & District Kotli
Nature of Project	Gravel stone crushing facility Steps for process involves. Primary Crushing--Secondary Crushing
Total Area of Project	3 Kanal
Production capacity	30,000 Cb.Ft. per day for 8 hours working
Surrounding land use Front Back Right Left	Kot Road Open Land Sialkot-Kahuta Road Open Land
Project Cost:	Approximately 2.4 million
Nearby Emergency Services i.e. Hospital, Police Station, Fire-Bridge, Rescue	THQ Hospital Kahuta Azad Patan Police Station City Traffic Police Office
Assessed Environmental issues	Air pollution will be environmental issues. So, this will be maintained as per EPA guidelines
Solid waste	During crushing following types of waste will be generated

	Scrap and Discarded Equipment Packaging and Container Waste
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 EIA report.
Compliance	Punjab Environmental Quality Standard (PEQS 2016) and time to time guidelines by EPA and other enforcement Department / Agencies.
Consultant Company	Enviro Stewards Company (Pvt.) Ltd

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, 2022 has been reviewed comprehensively which provides an overview of the national policies, laws, guidelines, and regulations related to the EIA 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 EIA or an EIA is conducted, and approval (NOC) is received from the relevant provincial environmental agency.

This EIA 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 gravel stone crushing facility, it is therefore likely to produce effects onto the environment, ecological environment, and most likely dust emission and

particulate matter unless appropriate mitigation measures are employed for balancing out the identified adverse impacts. Innumerable environmental and social impacts are expected during crushing, significant ones of which would be:

The major impacts resulting from the proposed activity during gravel crushing phase 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	Crushing Phase
Particulate matter (PM)/dust	Particulate matter will be generated during the crushing at the site.
Gaseous emissions	Flue gases will be generated due to vehicles
Noise	Noise will be generated due to construction machinery and vehicles transportation
Solid Waste	Scrap and Discarded Equipment, Packaging and Container Waste will be generated due to crushing activity
Soil Contamination	Soil may be contaminated due to leaching of oil, fuel, any stored oil during crushing phase.
Wastewater	Wastewater will be generated from constructional and domestic sources
Socioeconomic	Positive impact due to generation of employment opportunity

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 crushing 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.

ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Mitigations for physical, biological, and socio-economic parameters will be measured to determine compliance with standards established in EMP. The monitoring plan will record the inputs provided by various participants in the environmental and social management process. The air quality is determined once before the commencement of the project development as well as to record the baseline environmental conditions and once after the end of the development phase. During the crushing phase solid waste management practices will be monitored by the concerned authority on the regular basis. Moreover, fire-fighting equipment will be installed as well as it will be maintained and monitored on the regular basis.

PROPOSED MONITORING

It is gravel stone crushing facility, its impact is small and temporary however, and 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.

Monitoring for relevant Environmental Parameters is recommended:

Particulate Matter/Dust

Regular monitoring for particulate matter should be conducted during crushing phase as per PEQS Rules 2016 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.

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.

The total estimated cost for the implementation of EMMP in proposed project area is approximately **PKR 01 million** it will include solid waste management, wastewater management, environmental monitoring.

INTRODUCTION

1.1. General

Stone Crushing Unit is one of the potential businesses nowadays due to the mounting construction sector in the country. This setup can be located at any rocky or barren type area distant from the urban settings like Hub, Superhighway, Manghopir, Jhampir or Nooriabad that are in near proximity of Karachi while other similar areas can be around Lahore, Multan, Faisalabad, Peshawar and Quetta where real estate development and construction projects are on peak.

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

1.2. Features of the gravel stone crushing facility

Current Environmental Impact Assessment study was conducted for the establishment of gravel stone crushing facility. The said project is establishment of a gravel stone crushing facility comprising of 3 kanal or where stones will be crushed into primary crushing and secondary crushing after excavation.

Proposed project will have a crushing capacity of 30,000Cb.Ft. Per day for 8 hours working. GPS Coordinates of project site are **33.545528N, 73.370528E**. Site is approachable by Kot road. Documents are attached with it.

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 Environmental 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 EIA 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 discuss 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

Proponent Name	Mr. Muhammad Iftikhar Ahmad S/O Muhammad Akram
Designation	Chief Executive Officer/Proponent
Address of the Proponent	PO Box Khas, Goi, Tehsil & District Kotli

II. Nature and Size of Project

The development project is **A & H Crushing Plant**, a gravel stone crushing facility in which the stone will be crushed in primary and secondary crushing after excavation from the soil. The project spreads over an area of 3 Kanal.

III. Location of Project

The project site is located at **Mouza Kot Tehsil Kahuta, Tehsil & District Rawalpindi**. On Google map, it shows, **33.545528N, 73.370528E**. The Google map of the project site is attached.



Figure 1-Location of the Project

1.5. Consultant Details

The proponent has engaged M/s Enviro stewards Company (Pvt.) Limited to conduct the EIA 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:

Table 1-Consultant Details

Sr No.	Consultant Details	
1	Consultant	Enviro Stewards Company (Pvt.) Limited
2	Address	Allied Bank, First Floor, Commercial market, Block A, canal View Housing Scheme, Lahore
3	Contact No.	+92-301-1199600
Team leader		
1	Name	Miss Sara Fatima
2	Designation	Senior Environmentalist
3	Contact No.	+92-301-1198600

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

This EIA 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 EIA 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 EIA study.

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

- Site preparation activities including the leveling and marking of project site.
- 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 2022. According to the above-mentioned list this project falls in the category of projects requiring EIA.

2.1. Screening

The project is establishment of gravel stone crushing facility named as A & H Crushing Plant at Mouza Kot Tehsil Kahuta, Tehsil & District Rawalpindi. The capital cost of the project is around 2.5 million. According to projects categorization for environmental assessment studies, the proposed project falls under Schedule I (list of projects requiring IEE), Category D (**Mining & mineral processing**) and sub sector 3 (**Crushing, grinding and separation processes including stone crushers**) of the IEE Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment for (EIA) is mandatory for getting Environmental Approval.

2.2. Existing Regulation and Framework

This EIA 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).

2.3. 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 EIA for all development projects, but there were no IEE/EIA 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 EIA and EIA Regulations, 2022

The GOP has issued Review of EIA for Environmental Impact Assessment Regulations 2022, to review the (EIA) / reports.

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

The GOP has also framed guidelines for the preparation and review of EIA 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.

2.4. 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.

2.5. Punjab Local Government Ordinance, 2022

Schedules 4 and 8 of these 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 proposed project for improving the environment.

2.6. 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.

2.7. 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.

2.8. 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.

2.9. 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.

2.10. 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 can be done within distance of 1500ft from the residence areas. There is no historical site or monuments in the proximity of the project.

2.10.1. Solid Waste Management Rules 2005

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

2.10.2. Labor Laws

The labor laws apply on child labor and measuring instruments.

2.10.3. 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

Within radius of 5-km industries and residential areas can be seen in below so project will be installed by adopting proper mitigation measures to avoid disturbance to local community. In current project significant emissions will be observed because in crushing a significant amount of PM particles will be observed. Solid waste will be managed properly. Environmental sensitive area is present within safe distance that could be impacted due to current project installation.

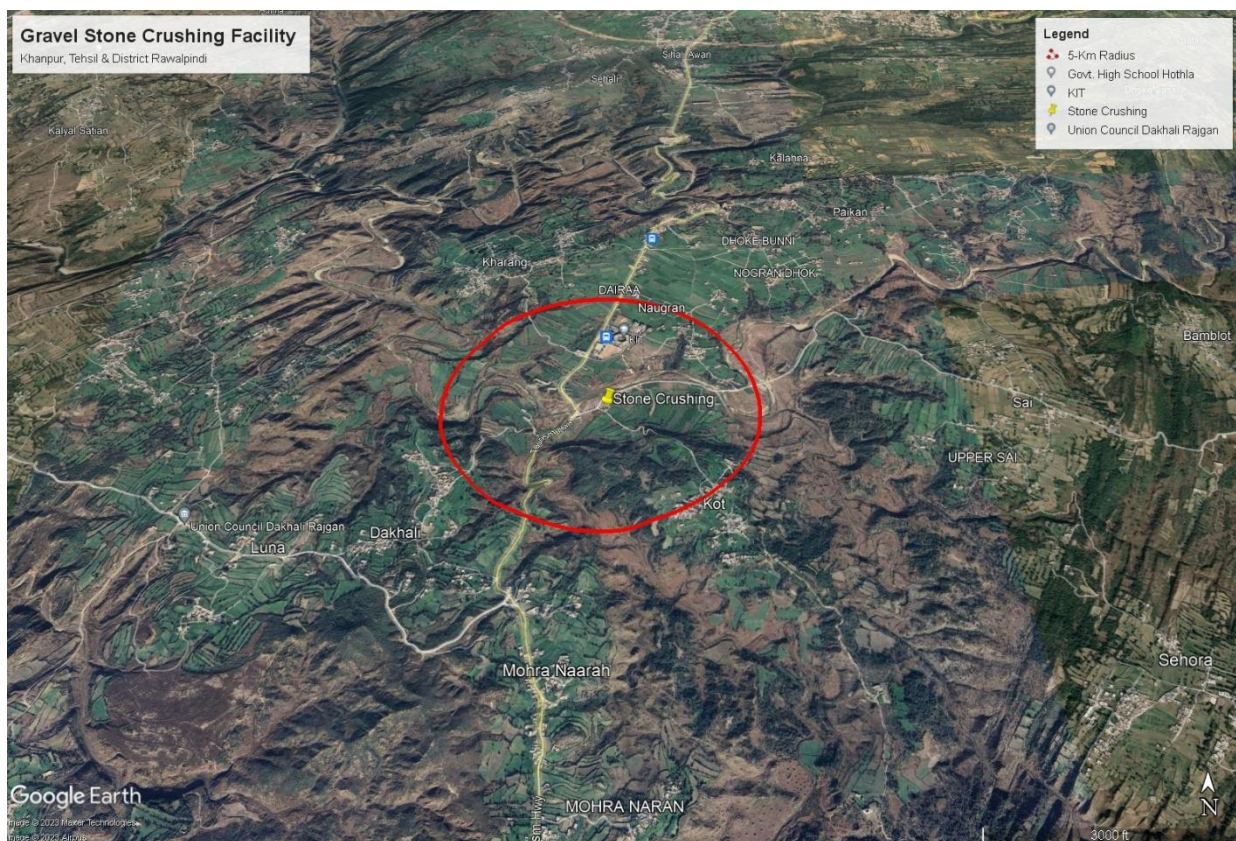


Figure 2 Project Site with 5 Km Radius

3.2. Important Issues and Concerns raised 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 10 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.
- Proper training should be given to workers.
- 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.

3.3. Significant impacts and factors to be determined

Main impacts and factors to be determined are:

- Control Air emissions
- Solid waste management
- Wastewater treatment
- Occupational Health and safety
- Site Security
- Traffic Management
- Hygiene management
- Community impacts
- 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. ALTERNATIVE CONSIDERATION

Alternatives are recommended and examined to determine the best method of achieving project objectives, while minimizing environmental impacts (WB December 1996). The discussion and analysis of alternatives in an Environmental Impact Assessment (EIA) study should consider other practicable strategies that will promote the elimination of negative environmental impacts identified.

This section covers the project alternatives which were examined for the proposed project of Gravel Stone Crushing Unit in Rawalpindi. An analysis of the available alternatives is necessary to establish that the most suitable management and technology options will be adopted for the project, while minimizing environmental impacts. This evaluation explains the selection of the most feasible alternative in terms of economics, environment and health & safety. It outlines the following options that were considered for this project:

- Site alternative, their selection and rejection criteria
- Design / technology alternative, their selection and rejection criteria
- Environmental alternative, their selection and rejection criteria
- Economic Alternatives, their selection and rejection criteria

4.1. Site Alternative their selection and rejection criteria

The selected project site is in commercial area but buildings are far away from project site. No project alternative was considered as the proposed location selected for the establishment of gravel stone crushing facility by the name of gravel stone crushing facility because the area is specified with stone excavation. The selected site is owned by the proponent (Land Ownership documents are attached at Annexure). So, no impact is envisaged due to proposed location of gravel stone crushing facility. Keeping in view these requirements and the availability, this site is best suited for stone crushing facility. There is no protected or environmentally sensitive area present in the vicinity of the selected site. The site is also spacious enough to accommodate the proposed facility and its infrastructure. Basic infrastructure like roads, water, power, telephone, internet etc. is available at the project site. The availability of good roads facilitates for the transport of product to the local market at cheaper cost. The other basic facilities are vitally important for the entire business to be run. These facilities also go in favor of the present site selection for the project sitting.

4.2. Design/ technology, their selection and rejection criteria

For development of current project state of art technology will be selected to avoid long term environmental impact. Proponent will use updated technology and new machinery to run the process. This system emits less emissions and can work properly. Proponent is doing heavy investment for this project so latest/state of art technology will be preferred to ensure good quality products.

4.4. Economic alternative, 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. Job opportunities for the local person as well as for the skilled person. The economy rate of the project site will also increase.

4.3. Environmental alternative, their selection and rejection criteria

Environmental considerations are extremely important for project sitting. The project site is situated in the area where population centers i.e. commercial markets are not that near to each other. The proposed project is in commercial land so, there is no existence of environmental receptors.

Settings around the project area do not show any sensitivity of the environment. There is no worth mentioning forestry, biodiversity, fishery, flora, fauna and heritage. The project will be regulated according to Punjab Environmental Protection Act 1997 (Amended 2012) and in compliance with the National Environmental Quality Standards (NEQS). Even the Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMP) will be operational. Taking into consideration all the above described factors the selected site is most suited for installation of the project.

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.

5. PROJECT DESCRIPTION

5.1.Type and Category of the Project

The project is establishment of gravel stone crushing facility named as gravel stone crushing facilities at Khanpur, Tehsil & District Rawalpindi. The capital cost of the project is around 2.5 million. According to projects categorization for environmental assessment studies, the proposed project falls under Schedule II (list of projects requiring EIA), Category C (**Mining & mineral processing**) and **sub sector 3 (Crushing, grinding and separation processes including stone crushers)** of the EIA Regulations 2022 made under section 12 of Punjab Environment Protection Act 1997 (Amended 2012) under which the Environmental Impact Assessment for (EIA) is mandatory for getting Environmental Approval.

5.2.Objectives of the Project

The main objective of initiating this project is,

- Production of construction materials: Gravel stone crushing is primarily carried out to produce aggregates of various sizes, which are essential construction materials used in the building industry. These aggregates are used in the production of concrete, asphalt, road base, and other construction applications.
- Infrastructure development: Gravel stone crushing plays a crucial role in the development of infrastructure projects such as roads, highways, bridges, and buildings. By producing high-quality aggregates, it helps in constructing durable and reliable infrastructure that can withstand heavy loads and provide essential connectivity.
- Meeting demand for construction materials: With the rapid urbanization and population growth in Pakistan, there is a constant demand for construction materials. Gravel stone crushing helps in meeting this demand by producing enough aggregates required for ongoing and upcoming construction projects.
- Economic growth and employment generation: The gravel stone crushing industry contributes to the overall economic growth of Pakistan. It creates employment opportunities for local communities, both directly and indirectly. Quarrying and crushing operations require a workforce for various tasks, including extraction, processing, transportation, and maintenance.

- Environmental considerations: While the primary objective of gravel stone crushing is the production of construction materials, it is important to consider environmental sustainability. Proper environmental management practices, such as dust suppression, noise control, and reclamation of disturbed areas, should be implemented to minimize the impact on the surrounding environment.

5.3.Location of Project

The project site is located at Khanpur, Tehsil & District Rawalpindi. On Google map, the coordinates are 33.545528N, 73.370528E. The google map of the project site is attached. The project site is surrounded by open land and road on one side. The total area of the project is **20 Kanal 3 Marla**.

5.4.Land use On-Site

The land is commercial in nature. Currently there is no activity going on in the land. The proponent is ready to initiate construction as soon as NOC will be issued.

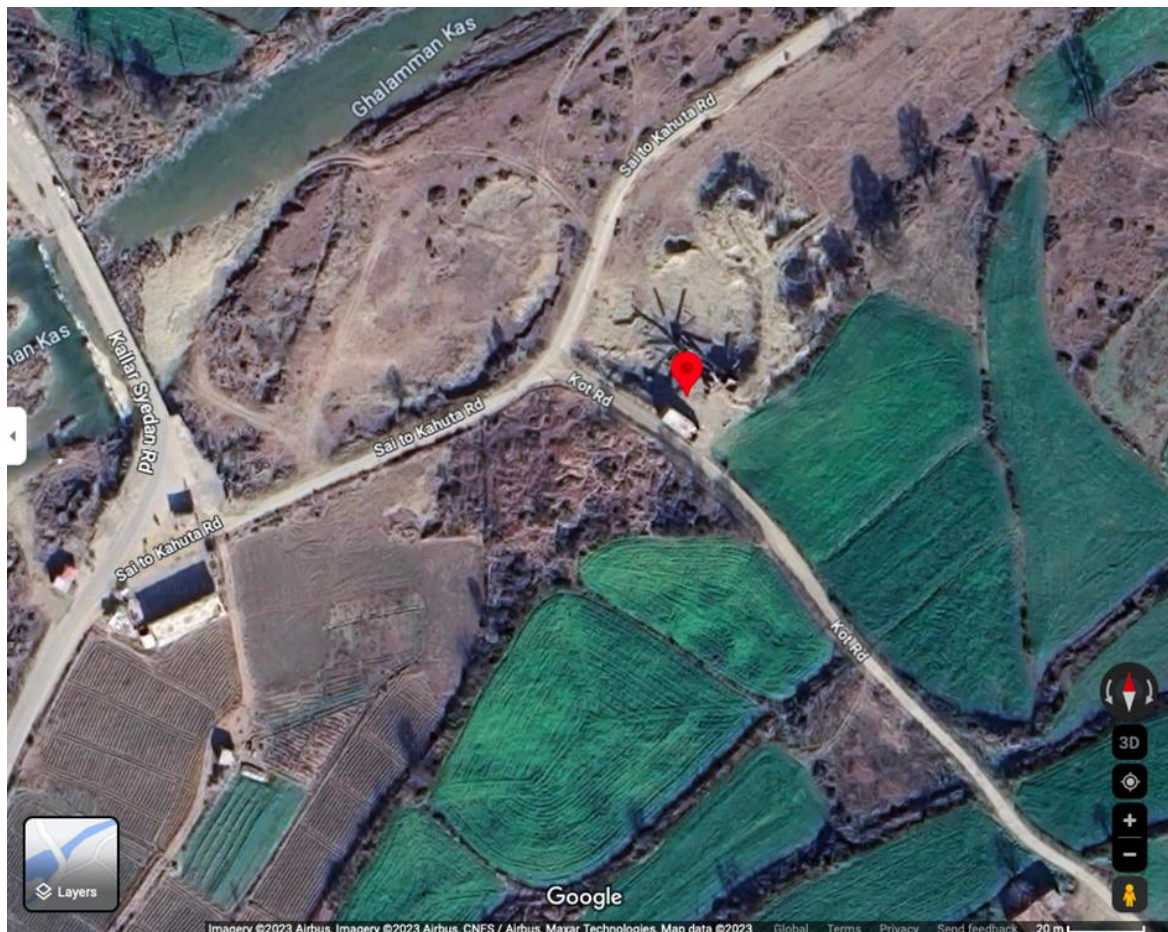


Figure 3 Land Use On-Site

5.5. Road Access

There is paved road access to the project site. The road access is by the Kot 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.

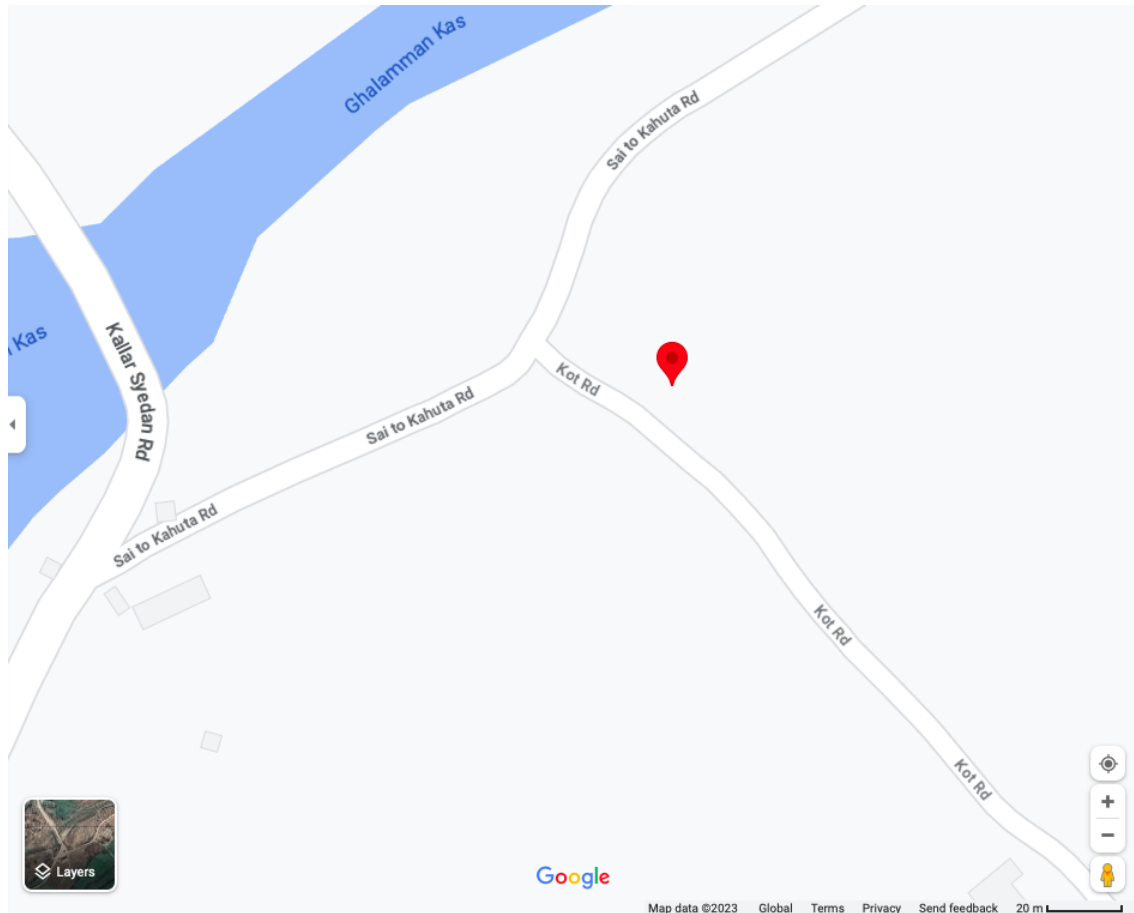


Figure 4 Road Access

5.6. Vegetative Feature of 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.

5.7. Cost and Magnitude of Operation

The cost of the project will be PKR 2.5 million approximately as per proponent and magnitude of operations will include:

Table 2-Cost Breakup

Amenities	Cost in PKR
Land lease cost	0.5 million
Infrastructure development, machinery	0.5 million
Solid waste management:	01 million
Landscaping & tree plantations	0.5 million
Total Cost	2.5 million

- Detailed site survey, planning and demarcation of the various regions during installation of the gravel stone crushing facility.
- Plantation of various ecologically important herbs, shrubs, trees and grasses on the designated green spaces
- Construction of the metaled road network

5.8.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	
Preliminary Phase (Land Acquiring etc)											
Design Phase											
Pre-Construction Activities Finalization											
Purchasing Phase											
Machinery Installation											
Commissioning Phase											
Recruiting Of Staff											
Operation/Crushing Phase											

5.9.Process Description

The proposed project is installation of gravel stone crushing facility named as Gravel stone crushing facility, for the purpose of crushing of stones located at Khanpur, Tehsil & District Rawalpindi. Total area of the project is 20 kanal 3 Marla. The estimated cost for the subject proposed project will be about 2.5 million Pakistani Rupees. The crushing capacity of the project is 30,000 Cb.Ft.

The project will also have positive aspect therefore, socially there will not be any problem in development of this project. 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 construction material demand.

Project Process description:

Raw Materials

Gravel Stone: The primary raw material for a gravel stone crushing facility is gravel stone itself. Gravel is a naturally occurring aggregate composed of small rock fragments. It is sourced from gravel pits, quarries, or obtained through excavation from natural deposits.

Process Details

Site Preparation: Before the crushing process can begin, the site needs to be prepared. This may involve clearing vegetation, removing any existing structures or debris, and leveling the ground to create a suitable working area.

Primary Crushing: The extracted gravel stones are transported to the primary crusher, which is usually a jaw crusher. The primary crusher breaks the large rocks into smaller pieces that are more manageable for further processing. It uses a compressive force to crush the stones against a fixed plate.

Secondary Crushing: The crushed stones from the primary crusher are then fed into a secondary crusher, such as a cone crusher or impact crusher. The secondary crusher further reduces the size of the stones into more specific aggregate sizes. The choice of secondary crusher depends on the desired end product specifications.

Screening: After the secondary crushing stage, the crushed stones are screened to separate them into different sizes. This is done using a vibrating screen or a series of screens with

different mesh sizes. The screens allow smaller particles to pass through while larger particles are retained for further crushing or used as the final product.

Washing (optional): In some cases, the crushed stone may undergo a washing process to remove any impurities or fines. This is particularly important when producing high-quality aggregates for specific applications. Washing can be done using water and specialized equipment to achieve the desired cleanliness of the aggregates.

Stockpiling and Storage: Once the stone gravel has been processed and screened, it is often stockpiled for storage or transported to its final destination. Stockpiling allows for easy retrieval and distribution of the aggregates as per project requirements.

Quality Control: Throughout the crushing process, quality control measures are implemented to ensure that the produced aggregates meet the desired specifications and standards. This may involve regular sampling and testing of the aggregates for size, shape, strength, and other properties.

List of Machinery

Hammer Crusher, Vibrators, Rotor, Conveyers and Support Structure. The process involved is to feed the stone in to the Hammer Crushers to make it further smaller in size as required by the customer. In the hammer crusher, the stone is crushed. The crushed stone is screened to separate the produce in different sizes by the separator. The crushed stone is conveyed by the conveyors to trucks for transport to the market place or storage area.

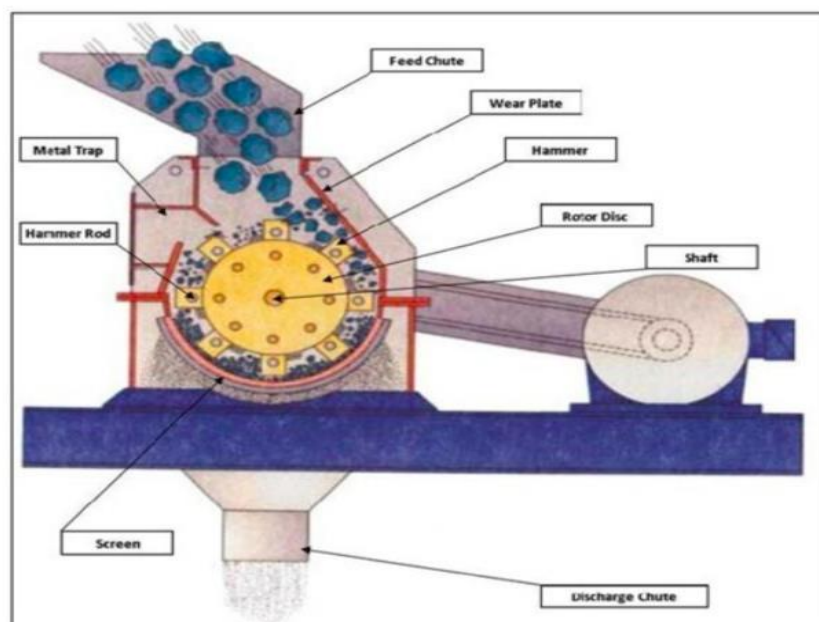


Figure 5 Crushing Machine

5.10. 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.

5.11. 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.

5.12. 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 Fighting System

A complete planned firefighting system/plan will be installed in the unit to deal any emergency.

Emergency Exits:

There will be three exit points from the society in case of any emergency.

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.

5.13. 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.

5.14. 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 Measures

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 EIA 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 EIA 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

Rawalpindi district is in the north of the Punjab province. The highest elevation is 9,210 ft. close to Dunga Gali and in the south it is as low as 1,100 feet. It lies on the Potwar Plateau 9 miles (14 km) southwest of Islamabad, the national capital. The district has an area of 5,286 sq. km. (2,041 sq. mi). Originally, its area was 6,192 km² (2,391 sq. mi) until the 1960s when Islamabad Capital Territory was carved out of the district, giving away an area of 906 sq. km. (350 sq mi). It is situated on the southern slopes of the north-western extremities of the Himalayas, including large mountain tracts with rich valleys traversed by mountain and rivers. The chief rivers are the Indus and the Jhelum, it is noted for its milder climate and abundant rainfall due to its proximity to the foothills.

Rawalpindi is on the Pothohar Plateau, and remained a small town of less importance up until 18th century. The Potohar region was known for its ancient Hindu and Buddhist heritage, especially in the neighbouring town of Taxila, a UNESCO World Heritage Site. In 1765, the ruling Gakhars were defeated and the city came under Sikh rule, Rawalpindi from a small regional town became an important city within the Sikh Empire based at Lahore.

6.1.1. Seismicity

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 2B. The seismic zoning is shown in the figure.

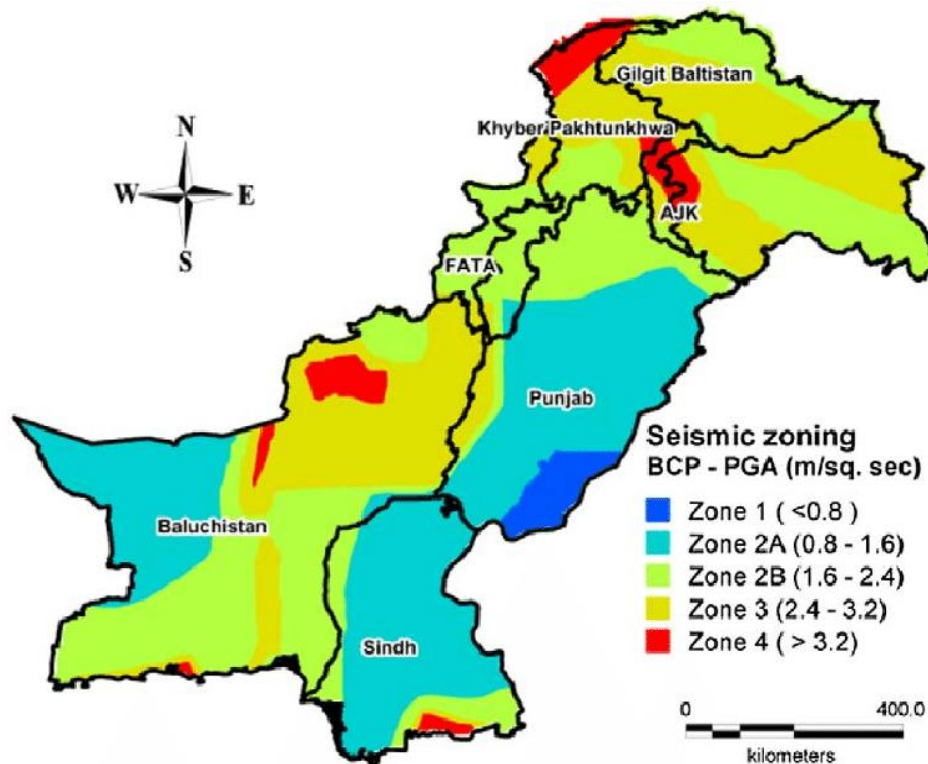


Figure-7 Seismic Zone Map

6.1.2. Climate

The climate here is mild, and generally warm and temperate. The summers here have a good deal of rainfall, while the winters have very little. The average annual temperature in Kotli is 21.9 °C. The average annual rainfall is 976 mm.

Table 3-Mean Temperature, Precipitation, Humidity

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

6.1.3. Seasons and Rainfall

Precipitation is the lowest in November, with an average of 19 mm. Most of the precipitation here falls in July, averaging 201 mm.

6.1.4. Soils and Hydrology

Soils are Stream-channel alluvium and rich in gravels, sand, some brick clay, farm- ing soil.

The Soan and Kurang Rivers are the main streams drain- ing the area. Their primary tributaries are the Ling River, draining northwestward into the Soan; Gumreh Kas, draining

westward into the Kurang from the area between the Kurang and Soan; and Lei Nala, draining southward into the Soan from the mountain front and urban areas. The Kurang and Soan Rivers are dammed at Rawal and Sambli Lakes, respectively, to supply water for the urban area. Extensive forest reserves in the headwaters of the Kurang and Soan Rivers benefit the quality and quantity of supply.

6.1.5. Temperature

At an average temperature of 31.8 °C, June is the hottest month of the year. January is the coldest month, with temperatures averaging 10.6 °C. Between the driest and wettest months, the difference in precipitation is 182 mm. Throughout the year, temperatures vary by 21.2 °C.

6.2. Ecological 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.

6.2.1. Fauna

The main fauna of the project comprises of mammals, birds, and reptiles.

Table 4- Type of Fauna at the Project Site

English Name	Scientific Name
Mammals	
Leopard	<i>Panthera pardus</i>
Dear	<i>Cervidae</i>
Monkey	<i>Rhesus macaque</i>
Sheep	<i>Ovis aries</i>

Reptiles During the study several types of burros and droppings were found which indicate the presence of respected reptiles. None of the reptiles and mammalian species found here are listed under any category of the IUCN Red List.

Reptiles		
Sr. No.	Common Name	Zoological Name
1	Snake	Serpentes
2	Lizard	Lacertilia
3	Frog	Anura

6.2.2. Endangered Species

There is no floral or faunal species inhabiting the project area that are included in the Red Data Book of IUCN. The populations of birds are reported to be reduced over time due to excessive pesticide sprays in agricultural crops and loss of habitat.

6.2.3. Flora

As there is no significant flora present site project site. While the study area is rich in variety of its flora.

Common Trees & Plants		
Sr#	Scientific Name	Common Name
1.	Olia Europeaa	Kao
2.	Acacia Modesta	Phulai
3.	Deodonia Viscose	Sanatha
4.	Dalbergia Sissoo	Sheesham
5.	Carissa Spinarium	Granda
6.	Bombax Cieba	Simal
7.	Pinus Logifolia	Cheel

6.3. Socio Economic Assessment

This section provides collective information about the existing socio-economic and environmental condition of the Project Area within the COI. The different types of socio-economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of EMMP of the crushing unit. The study also helped to assess the positive or adverse impacts on local community. Detail of crops that are being sown in the respective area, is given below:

6.3.1. Demographic Profile

The population of the district Rawalpindi is 3,258,547 by 2017.96.8% of Rawalpindi's population is Muslim, 2.47% is Christian, 0.73% belong to other religious groups. The city's Kohaati Bazaar is site of large Shia mourning-processions for Ashura. The neighbourhoods of Waris Shah Mohallah and Pir Harra Mohallah form the core of Muslim settlement in Rawalpindi's old city.

Table 5-Demographic Profile of Rawalpindi

Sr#	Parameters	Rural	Urban	Total
1	Population	377344	429236	806580
2	Population Growth Rate	3.98%	4.69%	3.40%

6.3.2. Religion

Rawalpindi was a majority Hindu and Sikh city prior to the Partition of India in 1947, combined composing 51.05 percent of the total population according to the 1941 census. The same census detailed Muslims made up 43.79 percent of the total population. The Baba Dyal Singh Gurdwara in Rawalpindi was where the reformist Nirankari movement of Sikhism originated. The city still has a small Sikh population, but has been bolstered by the arrival of Sikhs fleeing political instability in Khyber Pakhtunkhwa

6.3.3. Dress

Majority of the people wear Qameez and Shalwar. English dress, shirt and Trousers are also common in Rawalpindi as well like other big cities of Pakistan.

6.4. Quality of Life Values

People of the proposed area have non-nomadic life style and are living here from times of their ancestors, possess all basic needs to survive. Both Family Systems (Joint and Nuclear Family System) are sound in the proposed area. The major occupation of the people, residing in the proposed area, is agriculture, business and labor (skilled and unskilled).

6.4.1. Site Suitability

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 construction activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of above-said project.

6.4.2. Favor of the Project

Almost 87% of the people of the area and vicinity are in the favor of the project. Most people think that will uplift the socio-economic value of the project site.

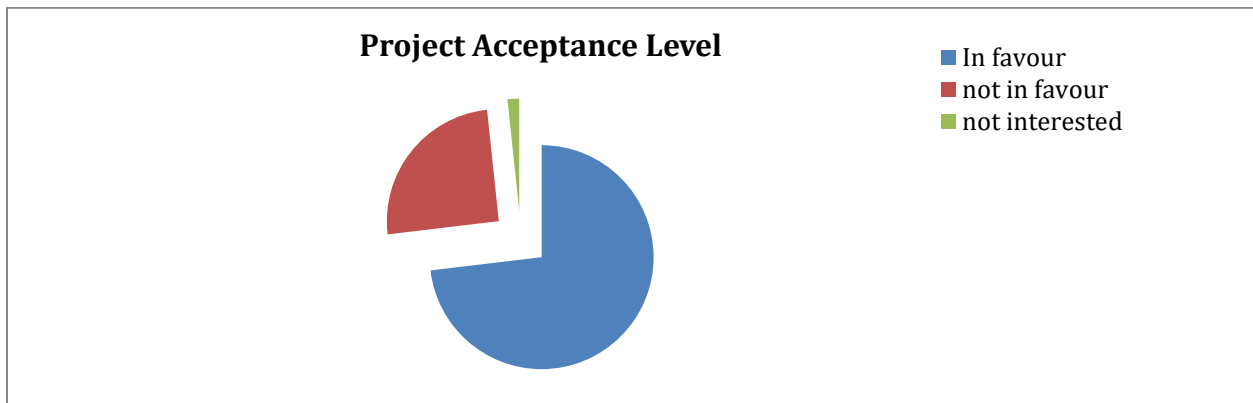


Figure 8 Project Acceptance Level

6.5. Environmental Baseline Monitoring

Laboratory analysis of baseline for soil, air & ground water has been attached as annexure.

The name of laboratory is SEAL (Solution Environmental & Analytical Laboratory) which include:

- Ground Water Analysis report
- Tap water
- Noise level monitoring
- Ambient Air monitoring report

7. ANTICIPATED IMPACTS AND MITIGATION MEASURES

This section provides the analysis of the potential impacts during crushing phases of the proposed project of gravel stones 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 impact. This chapter then suggests effective mitigation strategies to help combat the adverse nature of these impacts and delivers a monitoring gravel stone crushing facility to manage them.

Method used for Impact Analysis

The method used in this EIA report is **descriptive checklist method**. The nature of impact, its significance or duration is described in this method.

Impact	Criteria
No Impact	When the proposed activity will have no impact
Long Term	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium
Moderate Term	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low
Short Term	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
Insignificant	When the impact is of low intensity, low spread and low duration
Adverse	When the impact is of large intensity, spread easily and long-term
Beneficial	When the impacts are positive and improve the environmental

7.1. Anticipated Environmental Impacts related to Project Location

The location is well linked to the other parts of the city through a metaled road and the major roads connected to the site are main Road. There will be no enduring, high and adverse impact predicted due to the establishment of the proposed gravel stone crushing facility at this location. The selected site is not owned by the client but rented by the owner and rent agreement is attached as Annexure. The operation of the proposed project will not change the nature of the area as it is being constructed at the outskirts of densely populated residential areas. Moreover, the area is not inhabited by any ecologically important or protected flora and fauna specie as well as within 5.0 km vicinity of the project area no archaeology and historically important site is located.

7.2. Anticipated Environmental Impacts related to Project Design

The project design will follow the sustainability and energy conservation to reduce its impact. All technical standards will be kept in mind while crushing. Solid waste management area has been reserved. It will ensure the effective management by solid waste by solid waste collection system. Dust collector cyclones will be installed to control the emissions of dust.

7.3. Anticipated Environmental Impacts during Crushing Phase

Environmental impacts due to proposed project of gravel stone crushing facility during development phase are as under:

I. Air quality:

Impacts

Particulate matter will be generated during the crushing at the site. Due to the crushing activities, 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.

Nature of Impact

The impact is short term, temporary, medium and significant.

Mitigations

- Dust prone activities will be carried out at non windy days.
- Traupline will be used to cover loose material.
- Water sprinkling will be done to avoid dust emission.
- Cyclones/Dust collectors will be installed at halls before operation.

II. Noise:

Impact

During crushing 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.

Acceptable level of sound is 40 dB (A) during night and 50 dB (A) during day.

Nature of Impact

The nature of impact is short term, low and significant.

Mitigations

- Noise related activities will be done during daytime only.
- 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 crushing phases like laying of pipes, installation of scaffolding and machines installations.

Nature of Impact

The impact will be temporary, significant, and high.

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 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. Crushed waste disposal:

Impacts

Disposal of crushing debris produce shall be properly disposed 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.

Nature of Impact

The impact will be medium, short term, temporary, significant.

Mitigation

- A site waste management plan should be made the responsibility of the contractor to provide for the designation of appropriate waste storage area on the site
- 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. 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.

Nature of Impact

The impact will be low, short term, in-significant, and permanent.

Mitigation

- In order 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.

VI. 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.

Nature of Impact

The impact will be positive, short term, significant.

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 Operational Phase

I. Potential Positive Impacts:

The project is envisaged to have followed major positive impacts,

Employment opportunities:

Gravel stone crushing facility 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 50-70 persons will be employed during operations phase and about 35-40 persons will work during crushing phase.

Increase in Business:

With the influx of laborers for the proposed project, there will be more opportunities for small scale business.

Economic benefits:

Gravel stone crushing facility will positively impact not only the local population.

I. 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 rented by the proponents of Gravel stone crushing facility with rent agreement attached and do not involve any type of land acquisition and resettlement activity.

Solid waste 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. No long-term impacts are solid waste are seen.

Waste during operation

Scrap and Discarded Equipment, Packaging and Container Waste will be generated due to crushing activity.

Air Quality Potential Impact:

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

- Dust due to crushing.
- Dust raised on dirt tracks by project-related vehicles.
- 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.

7.5. 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.
- Solid 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 EIA 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 Environmental Impact Assessment (EIA) and 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) Environmental Impact Assessment report.
- Developing a monitoring mechanism and identifying requisite monitoring parameters to confirm effectiveness of the mitigation measures recommended in the (EIA) Environmental Impact Assessment 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 GRAVEL STONE CRUSHING FACILITY				
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. Particulate matter will be generated during the crushing at the site.	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 accidental spills through good work practice.	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/CRUSHING 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. Dust pollution will be generated due to crushing activities.	Proper maintenance and tuning of the vehicles done by the proponent. Cyclones/dust collectors will be installed at designated points to control dust.	Proponent	EPA
10.	NOISE QUALITY			
	Noise due to crushing activity, movement of vehicles, during traffic of materials.	Plantation along with boundary 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.	All the workers involved in transport of the materials will be suggested to wear boots, gloves, safety cap to avoid injury Plantation of trees along the boundary walls will help in reducing the noise levels to enough 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.	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 generated will be mostly old machinery parts, scrap, bulbs, and packaging	Domestic solid waste will be collected by the contractor, which will be managed by Gravel stone crushing facility management. Recyclable material will be recycled mostly packaging materials. Scrap, bulbs, machinery parts will be recycled or sold to contractor.	Proponent	EPA

	material.			
13.	WASTEWATER QUALITY			
	No wastewater will be produced.	No mitigation required	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.	Proponent	EPA
15.	SOCIO-ECONOMIC ENVIRONMENT			
	A few 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, 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 6- 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												
Machinery Installation												
Commissioning Phase												
Recruiting Of Staff												
Operation Phase												

8.5. Environmental Budget

Table 7- Environmental Budget

Environmental Component	Quantity	Amount Pak Rs.	Details/Basis
Solid waste management	L.S	0.5 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		1 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	- 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.

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 Environmental Impact Assessment 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 EIA (Initial Environmental Examination) report or impacts which exceed the levels anticipated in the EIA (Initial Environmental Examination) 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

Environment Monitoring Plan

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Operation/Crushing Phase					
Land Resource	Solid Waste	Implementation of SW* Management System	Record keeping and timely transfer of SW from bins to the disposal site	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 crushing phase.	- Monitoring of the emissions as per applicable standards - Water sprinkling will be done regularly to avoid dust emissions. - Cyclones/Dust Collectors will be installed	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 gravel stone crushing 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) Initial Environmental Examination.

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 Contractor/s.
- 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.

The Table 7-14 provides a summary of various aspects of the environmental and social training.

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 8-Training Schedule

Participants	Date, Time & Location	Training Topics	Schedule	Responsible Authority
Staff of Gravel stone crushing facility and the contractor	As specified	✓ Introduction to project EIA 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

8.9. Equipment Maintenance Details

The proposed project is the installation of Gravel stone crushing facility. Actions necessary for retaining or restoring a piece of equipment, machine, 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 Environmental Impact Assessment (EIA) process and study.

During the field survey for this (EIA) Environmental Impact Assessment 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 (EIA) Environmental Impact Assessment 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 local 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.
- The air pollution is one of the major impacts from which Punjab is being affected at the large scale. So, ambient air quality should be monitored regularly, and air pollution expected to generate from the operation should be mitigated.
- 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.
- Noise generated activities should be carried out during day hours.

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 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.

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, see **Table** below.

Table 9- Views of Participants of Public Sector Stakeholders

Sr.#	CNIC/Designation	Concerns
Environmental Protection Department		
1.	Chairman (Municipal Committee)	Following comments area summarized to control the pollution: - Scrap and Discarded Equipment, Packaging and Container Waste Management - Solid waste should be managed in environmentally friendly manner. - HSE* at the site should be managed effectively. - No impact is being foreseen due to the selected location. - Locals should be given job opportunity.
2.	Environmental Inspector	
Social Welfare Department		
3.	Deputy Director Officer	Following comments are suggested by the Deputy Director on the behalf of Social Welfare Department: - Final goods should be affordable for the locals. - Job opportunities should be given to the locals. - Wages should be given according to the work assign to them. - Life insurance of the workers should be given as well as all the facilities should be given as per labor laws.
Irrigation Department		
4.	Subdivision	Following comments were suggested:

	Executive Engineer	• Untreated wastewater should not be disposed off in the nearby drains without proper treatment. • Beneficial as job opportunities will be available to the residents.
Forest Department		
5.	District Forest Officer	Following recommendation were suggested by the forest department: • Planation and landscape activities Should be carried out on broader scale. • Indigenous species such as; Arjarn, Barna, Neem, Suharjna, Amaltas and Jaman should be planted.

9.10. Environmental Practitioners and Experts

Sr.no.	Name	Designation	Comments/Suggestion
1	Sara Fatima	Environmentalism	- She said that the formulation of Chemicals will have positive impact on economy but its construction should be done in environmental Friendly way. - During construction and operation emissions must be controlled properly. - Basic facilities should be provided to local community
2	Hafiz Zeeshan Safder		- Wastewater should not mix with surface water channels it must be properly dispose of after meeting PEQS. - Avoid groundwater contamination
3	Mr. Saffi Ahmed	Environmentalism	- He said that locals should be preferred for employment. - Value addition of area. - Proper mitigation measures must be adopted while construction and operation of this project
4	Zia ur Rehman Farooqi	Ph.D. Scholar Environmental Sciences	- Tree plantation in designated green zones should be carried out. - Proper disposal of the solid waste. - HSE management measures should be adopted and implemented effectively.
5	Kanza Fatima	Environmental Engineer	- Waste must be collected and dispose of properly - Ensure the use of PPE's during the operational activities. - Latest technology must be installed
6	Aleeza Kanwal	Environmental Engineer	- Health and safety department and trained people should be there in case of any emergency - Periodic monitoring of every fire extinguisher (expiry date, type)



Figure 9-Consultation with Vicinity

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 gravel stone crushing facility by M/s Gravel stone crushing facility, 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.

9.8.1. Pictorial View of Consultation



Figure 10- Consultation with Nearby Community



Figure 11-Consultation with nearby Industries

9.8.2. Study area:

The area of Khanpur, Tehsil & District Rawalpindi was the part of our study boundaries but specifically, it included. The land for proposed unit is situated at Khanpur, Tehsil & District Rawalpindi.

9.8.3. 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.

9.8.4. 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.

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.

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 30,000–35,000, 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%**) of 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.

9.11. Summary of Impacts and Mitigation Measures

The major positive impacts of the project include job opportunities and new business opportunities. The project will raise the people's income, enhance social infrastructure, and improve socioeconomic conditions in the area. The project is expected to stimulate the local economies around the Project area to a greater extent and to benefit people who have a low standard of living.

With reference to the activities being conducted such as excavation, major impacts will be related to noise, vibrations, increased rates of sediment deposition and minor dust pollution. To minimize these impacts, the mitigation measures for the stated issues that have been mentioned in the impacts and mitigation measures during the operation phase may be followed.

Negligible to low negative impacts can be foreseen during project implementation including Air Quality, Noise, Landscape and Visual Impact of Installation, Wastewater Generation and Disposal, Biodiversity, Odor, Dust, Water Supply and Land Spreading. Mitigation measures will be implemented to minimize environmental impacts. All the impacts can be managed cost effectively. Careful mitigation and monitoring, specific selection criteria and assessment procedures for subprojects have been specified to ensure that minimal impacts take place.

10. CONCLUSION

The project is aiming at development of gravel stone crushing facility. The project falls under the category of the projects requiring Initial Environmental Examination.

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 EIA Report, are to be put in place during all stages of the project.
3. To mitigate the adverse effect of construction/ population proponent will plant 2000 plants of shady/Fruit tree initial 500 will be plant within one month of EPA approval and the remaining 1500 will planted inn each subsequent planting season.
4. Environmental monitoring by the project proponent and a third party will also ensure that the project runs in accordance with the legal requirements.
5. Availability of water for the project will be ensured without affecting the needs of the people around the project area.
6. Based on these findings of the EIA Report, the project merits the issuing of Environmental Approval by the Environmental Protection Agency, Government of Punjab, and Lahore.
7. 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.
8. The noise levels will be kept within the required limiting values of the NEQS Pakistan
9. 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 EIA/ 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
- Material Safety Data Sheet (MSDS) of chemicals
- [/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.

EIA (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
EIA	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 FrameWork 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	Solid waste Treatment Plant

List of Individuals

Sr.#	Name	Concerns
1	Kamran Ali Khan	- During the survey in the study area following concerns of the local community were noted: - Air pollution should be controlled effectively such as emissions generated from power generating activities. - Chemicals should be stored and handled properly only authorized persons should be allowed near the chemical storage area. - 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	Muhammad Waqass	
3	Qaiser Farooq	
4	Ghulam Mujtaba	
5	Mehboob Alam Shahid	
6	Muhammad Latif	
7	Mazhar Hussain	
8	Shahbaz Khan	
9	Waseem Ahmed	
10	Rab Nawaz	
11	ALLAH Yar	
12	Ahmed Saeed	
13	Muhammad Jabbar	
14	Muhammad Ramzan	
15	Kamran Ali Khan	

Terms of References

- * According to regulation 7 of Review of EIA and EIA regulations, 2000, proponent shall pay, at the time of submission of EIA/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 Gravel stone crushing facility

For Enviro Stewards Co. Pvt. Ltd.

Ms. Sara Fatima

Mr. Zia ur Rehman

Table Project Team and Responsibility

NAME	DESIGNATION	QUALIFICATION	TERM OF REFERENCES
Miss. Sara Fatima	Environmental Reporting Expert	M.Sc Environmental Science	Miss. Sara Fatima was responsible for: - EIA report writing - EIA report writing - Assessment of physical and socioeconomic baseline conditions at the Project Site. - Impacts assessment and proposed their mitigation measures.
Ms. Mehwish Akbar	Environmental Engineer	B.Sc. Environmental Engineering	Ms. Mehwish Akbar was responsible for: - EIA report writing - Biodiversity assessment - Detailed flora and fauna survey of project site - Identification of threat to endangered species - Project impacts on flora and fauna
Mr. Zia Ur Rehman Farooqi	Technical Head	Ph.D. Scholar	Mr. Zia Ur Rehman Farooqi was responsible for: Capacity building & training

			• Conducting and monitoring of health assessment surveys • Environment health risk assessment and management
Ms. Misbah Ali	Environmental Engineer	B.Sc. Environmental Engineering	Ms. Misbah Ali was responsible for: • Collection of baseline data. • Public consultation. • Preparation of survey tools including socio-economic survey tool and environmental checklist.
Mr. Muhammad Ahmad Raza	Sociologist	M.Phil Sociology	Mr. Muhammad Ahmad Raza • Public Consultation • Public Hearing • Site Visit