ioEXECUTIVE SUMMARY

This report presents the findings of the Environmental Impact Assessment study conducted by Pro Green Environmental Services on behalf of M/S Amin & Sons., located at Godown 145/7, Near Abdul Rehman Mushterka Adhat, Modern Kanta 4, Deen Road, Misri Shah, Lahore.

Shabir Ahmad S/o Muhammad Amin R/o St. No. 2, Sitara Colony No.2 Chungi Amer Sidhu, Lahore Cant. Lahore, Proponent of M/s Amin & Sons Located At Godown 145/7, Near Abdul Rehman Mushterka Adhat, Modern Kanta 4, Deen Road, Misri Shah, Lahore

Coordinates: 31.599171, 74.332405

The proposed project is scrapyard by M/s Amin & Sons which will be involved in the collection, transportation, handling, segregation, storage and sale of batterywaste and hazardous substances, will be collected and sale to relevant dealer through the following process:

Collection: The process of gathering waste/batteries from industires, ensuring proper methods will be used to collect each material efficiently from the production site.

Segregation: Waste/batterires will be sorted segregated. The segregation process ensures that recyclable materials will be separated from those that need to be disposed of, optimizing the recycling potential of the waste.

Storage: After segregation, different waste materials will be stored in specific containers or designated areas. This temporary storage will be necessary before the materials will be sent for recycling or other purpose/disposal. Proper storage helps prevent environmental hazards and maintains the quality of recyclable materials.

Sale: Once the waste will be processed or prepared, it will be sold to authorized dealers. These entities buy specific types of waste, such as metals and plastics, which will be then further refined or repurposed into new products, generating value from waste.

The total area of project is 16349 Sqft. The estimated Storage capacity is 10 tons.

The estimated cost is 08 million.

The proposed project fall in the **Schedule-II of EIA & IEE Regulation 2022 under Category G(3)**

TITLE AND LOCATION OF PROJECT

"Amin & Sons., located at Godown 145/7, Near Abdul Rehman Mushterka Adhat, Modern Kanta 4, Deen Road, Misri Shah, Lahore"

NAME OF PROPONENT

The proponent of this unit is Shabir Ahmad S/o Muhammad Amin.

AME OF ORGANIZATION PREPARING THE REPORT

This Environmental Impact Assessment report has been prepared by Firm Pro Green Environmental Services.

OUTLINE OF PROPOSAL

1.	**Project Title**	M/s Amin & Sons.
2.	**Proponent**	Shabir Ahmad S/o Muhammad Amin
3.	**Project Location**	Godown 145/7, Near Abdul Rehman Mushterka Adhat, Modern Kanta 4, Deen Road, Misri Shah, Lahore.
4.	**Coordinates**	**31.599171, 74.332405**
5.	**Land Use in Surrounding of Proposed area** **North:** **South:** **East** **West:**	Surrounding area of the project is Building Building Road Building
6.	**Consultant**	Pro Green Environmental Services
7.	**Cost of Project**	08 million
8.	**Total Area**	16349
9.	**Water Source**	WASA
10.	**Nature of Area**	Open Area

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11.	**Source of Power**	WAPDA
WAPDA= Water and Power Development Authority		

MAJOR IMPACTS

The proposed project of Amin & Sons. was reviewed with the aim to determine the likely impacts of the project on the environmental and socio-economic conditions of the area. All the necessary elements of the project were reviewed and compared with the existing conditions in the vicinity of the Project Area. The EIA report identifies the adverse environmental impacts due to the construction and operational activities of the project and also suggests proper measures for their mitigation, as described in Environmental Management Plan (EMP).

The impacts by this unit on the surrounding environment are as follows:

Aspects	**Potential Impacts/ Risks**
Construction Phase	
Traffic Congestion due to construction phase	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.
Air Quality degradation due to construction phase	Dust produced due to construction activity can affect the health of employees and resident in the surrounding areas.
Disposal of Construction Waste/Excavated Material produced in construction phase	Dumping of construction wastes / excavated material in the surrounding area may limit use of land
Noise and Vibration due to machinery being used for construction	Noise pollution due to increased construction machinery operation
Sanitation and Waste disposal facilities At Project site	Health risks to construction workers

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Workers' Safety and Hygienic conditions	Health risks in case of unsafe and/or unfavorable work conditions
Operational Phase	
Solid waste produced in the shape of remaining of Metals pieces and waste packaging material	The produced solid waste can become harmful for environment if not managed properly.
Domestic and process waste water	It can impact surface water and underground water. If wastewater is not properly treated, then the environment, flora, fauna and human health can be negatively impacted.
Solid waste	A significant impact will be interpreted if the waste management is not carried out properly; which may affect health of workers and can be a source of pollution of soil, surface or groundwater.
Groundwater Depletion	Prolonged water consumption may in the long run lower/deplete the underground water table.
Air Quality	It comes from Vehicles and generators with excessive smoke can pollute the air quality.
Noise & Vibration	Noise will be generated from transportation, generator and operation of the project. It may affect the health of the workers.
Workers' Safety and Hygienic conditions	Health risks in case of Unsafe and/or unfavorable work conditions
Emergency Response	There are always chances of earthquakes and manmade disasters, fire, road accidents etc.
Traffic Congestion	Movement of vehicles may result in traffic disruption if proper

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	parking facilities are not provided.

RECOMMENDATIONS FOR MITIGATION MEASURES

The potential negative impacts during construction and operational stage of the project will be mitigated to an acceptable level. Necessary mitigation measures are recommended in the report to make the proposed project Environment Friendly. Environmental Management Plan identifies monitoring needs and implementation on Environmental Management Plan is also recommended.

The following measures are recommended for the project:

Aspects	**Proposed Mitigation Measures**
CONSTRUCTION PHASE	
Traffic Congestion due to construction phase	Adequate parking facilities will be provided for the construction machinery and tractor-trolleys bringing the material into the Project Area
Air Quality degradation due to construction phase	Use of dust suppression techniques like water sprinkling etc. will be made to minimize the effect of dust. Construction workers will be provided with masks for protection against the inhalation of dust. Regular monitoring of all vehicles, equipment, and machinery used for construction. All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.
Disposal of Construction Waste/Excavated Material produced in construction phase	Management of Construction activities in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site approved by LWMC.
Noise and Vibration due to machinery being used for construction	Selection of up-to-date equipment and machinery with reduced noise levels ensured by suitable in-built damping techniques; Regular checkups and maintenance of the construction equipment; and use of appropriate muffling devices.

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Sanitation and Waste disposal facilities at Project site	All the solid waste will be properly collected and disposed of in accordance with the procedures of LWMC.
Workers' Safety and Hygienic conditions	Enforcement of work safety measures such as wearing safety goggles, helmets, protective masks and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
Damage to Flora due to construction	Plantation of different trees will make project area environment friendly
OPERATIONAL PHASE	
Packaging Material, and metal Waste Pieces.	All the waste material will be collected into the specified placed inside the project site. After the short interval of time the waste material from that place will be collected and sold out to contractor.
Domestic as well as process waste water	The domestic waste water will be treated through septic tank than will be drained into sewerage system of estate
Degradation of Air Quality	The vehicles will be maintained time to time to reduce the air emissions and vehicles with excessive smoke emissions will not be allowed to enter. Plantation will be provided which will generate fresh oxygen. An air quality monitoring and improvement plan will be developed to reduce air pollution and to remain it within the limits of Punjab Environmental Quality Standards (PEQS); Level of air pollution will be monitored on regular basis.
Noise	Plantation around the gate and entrance and at the specified areas in this site will reduce the noise level at much extent.

Groundwater	Labor of this unit will be trained in water conservation measures such as use of water efficient/ economy appurtenances and reuse of wastewater for gardening.
Workers' Safety and Hygienic conditions	Enforcement of work safety measures such as wearing safety goggles, protective masks, helmets and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
Emergency Response	• Emergency evacuation plan will be developed to evacuate the area in case of accidental fire • Emergency response and plan along with safety charts showing symbols and other necessary information will be displayed at various places for the awareness of workers • An Emergency Response Plan for earthquakes and manmade disasters will be developed by the Management. • Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics • Firefighting equipment's should be installed in the unit.
Traffic Congestion	Adequate parking facilities will be provided for the vehicles bringing the material into and out of the Project Area.

PROPOSED MONITORING

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

Regular monitoring will be required to check that the construction and operation is not going to cause any adverse environmental impacts; hence monitoring visit will be done once in a

month during construction phase. During these visits samples will also be taken to check the quality of air, water and soil etc.

Environmental Monitoring Program

Parameter/ Receptor	Location	Monitoring	Mechanism Monitoring and Reporting Frequency
Water Quality	• Ground Water • Surface Water	Discrete grab sampling and laboratory testing of water samples.	• Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. • Discharges from the construction sites should be tested for temperature, PH and turbidity. • Treated effluent discharges from the worker's camp to be tested for PH, TSS and BOD.
Dust Emissions	• Tracks along the roads during construction period.	Ambient particulate matter monitoring.	• Sampling and laboratory testing should be done on monthly basis during the construction
Noise Levels	• Camp sites, • Selected Locations alon the access.	Noise meter	Monthly during the construction Stage.
Air Quality	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoring system. Monitoring of ambient air quality.	• Monthly monitoring of air pollution parameters including PM_{10},NO_X, SO_X; CO. Hydrocarbons during tfhe construction period, and quarterly monitoring of PM_{10},NO_X, SO_X; CO VOC_S during the operation stage,

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Cutting of trees	In all project area during the construction stageand operation stage.	Periodic visits Site to ensure that trees cutting is prohibited.	Reported on monthly basis during the construction period, and once in a year monitoring and reporting during the operation period.
Socio-cultural Environment			
Inconvenience community	All around the project area	Consultations with community to get feedback about inconvenience due to the construction activities to perform their daily routine chores.	Monthly monitoring and reporting during the construction period.

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Structure of the Report

This report comprises the following chapters in order stated:

Chapter 1: (Executive Summery**)** Title and location of project, Name of proponent, Name of organization, outline of proposal, major impacts, recommendation of mitigation measures, proposed monitoring

Chapter 2: (Introduction)purpose of report, identification of project, details of consultaants, brief description of nature, size, and location of project

Chapter 3: (Screening) whether the project required IEE/EIA as per regulations

Chapter 4: (Scoping**)**Spatial and temporal boundaries of Environmental Assessment, important issues raised during consultation, significant impacts and factors to be determined

Chapter 5: (Consideration of Alternatives**)** Site alternatives**,** design/ technology alternatives, environmental alternatives, economic alternatives

Chapter 6: (Description of project) objectives of projects, location and site layout, land use on site, road access, vegetation features, cost and magnitude, schedule of implementation, description of project, restoration and rehabilitation

Chapter 7:(Description of Environment) states and specifies the present environmental settings and socio-economic values of the project area and the surroundings

Chapter 8: (Impact Assessment**)** Methodologies for impact identification, checklist, matrices, network, overlays, GIS and computer expert system

Chapter 9: (Screening of Potential Environmental Impacts and Mitigation Measures) project location, design, construction phase, operational phase, potential environmental enhancement measures

Chapter 10: (Environmental Management and Monitoring Plan) throws a light on the authorities or individuals responsible to implement mitigation measures and monitor the environmental parameters against the environmental impacts

Chapter 11: (Stakeholders and Public Consultation)Public consultation plays a vital role in studying the effects of any development project on stakeholders and in its successful implementation and execution

Chapter12: (Appendices) list of abbreviation, list of individual, source of data, terms of references of environmental reports, list of name of consulted team, approvals from other departments

SCREENING

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Whether the project requires IEE/EIA as per regulation:

According to the section of the Punjab Environmental Protection Act 2012, no proponent of a project shall commence construction or operation unless he has filed an initial environmental examination or where the project is likely to cause adverse environmental effects, an environmental impact assessment, and has obtained NOC from the EPA Punjab. The proposed project fall in the Schedule-II and category G(3) of EIA&IEE Regulation 2022.

Subject to provision of this Act, proponent must get a NOC for Construction under section 12 of PEPA-2012 from provisional Agency in order to start Construction. This project requires an Environmental Impact Assessment (EIA) the project fall in Schedule-II, Category G(3) of EIA and IEE Regulations 2022. An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to proposed project along with environmental impact statement followed by appropriate Environmental Management Plan. The proponent will also conform to the other applicable environmental laws, rules and regulations during both construction and operation of the proposed project.

The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project. The EIA report has been prepared under the format of guidelines issued by EPA. The applicable laws for the environmental study of the project are briefly given below

- Punjab Environmental Protection Act, 2012
- National Environmental Policy, 2005
- Review of EIA & IEE Regulations, 2022
- Guidelines for Preparation and Review of Environmental Report, 1997
- Solid Waste Management Rules , 2005
- National Environmental Quality Standards 2000
- Punjab Land use Rules 2009

SCOOPING

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1- Spatial and Temporal Boundaries of Environmental Assessment:

The Natural Environmental setting, present industrial status and its future trends around the project site covering fairly large distance have been taken into consideration while taking stock of existing and expected conditions. Socio-economic condition, availability of basic infrastructure, availability of water, labor, raw materials, transport and means of communication, electricity and approach to the project site were the major considerations and spatial and temporal boundaries considered during this study.

2-Important Issues and Concerns rose during the Consultation:

Following issues were discussed during the stakeholder's consultation:

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

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General:

Majority of stakeholders appreciated the project and taken it as a necessary step.

Socio-Economic:

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

Strict traffic plan will be implemented. If the mitigation measures mentioned in later section of construction and operation phase are properly implemented, the proposed project with respect to location will be environment friendly and will not be involved in the deterioration of environment.

3-Significant impacts and factors to be determined:

Following factors have been taken in the account to assess the Environmental Impacts of the:

- Environmental impacts due to land use, location, waste generation, utility services consumption and emergency spillage etc.
- Environmental impacts physical resources i.e. soil topography, geology, climate, air quality etc. ecological resources i.e. flora as well as health and safety of workers

Consideration of Alternatives

Alternative considerations and reasons for their rejection:

Location Alternatives

The proponent also considered other sites but those sites don't have easy access to roads. Furthermore those sites were the environmentally degraded and polluted lands, and lack of aesthetic beauty is the major factor which urges the proponent to find an alternative. The project area is devoid of any tree cover, so it doesn't involve cutting of trees for carrying out project activities. No species of plants and animals having significance ecological importance present on the proposed project site. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. So, this is the best economically viable option for the proponent. Because of the availability of access roads, communication facilities, electricity, gas, basic infrastructure, sewer etc. was yet the other necessary requirements. Of course neat and clean environment was also the consideration. The project will also facilitate the people of area with increasing the opportunities of the employment, and other related facilities .Keeping these requirements and other feasibility and other basic infrastructural requirements, now the proponent considered other alternative site but the selected site is ideally suited for the said unit.

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Reasons of rejection

- Cost of alternatives lands was very high.
- There are thick fields/vegetation at the site of project.
- Populated areas were present near the project site.
- Basic infrastructure was not there.
- There was no easy access to roads

Site Selection

The proponent has selected this site due to the following reasons:

- Located on accessible road
- No settlements at a safe distance
- No watercourse within a safe distance
- There was no need of tree clearance for the said project
- No ecologically sensitive or declared protected area within 10 km of the selected site

In the light of above mentioned points Amin & Sons. considered the subject site as most suitable for this project.

2.3.2 TECHNOLOGY OPTIONS:

The machinery/technology which will be installed in Amin & Sons. is considered to be 'state of the art' in terms of being environment friendly, energy efficiency and modern plant & process design for similar units.

2.3.3 Environmental Alternatives:

The unit site is located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area.

Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site.

This location was determined to be the most convenient location in proximity to the market and domestic supply chain. This site has least environmental & social impacts.

Keeping these requirements and their availability, the present site is the best suited for the project. All the other basic infrastructural requirements are available at the selected site.
The site is ideal for this unit and this EIA report has also been prepared for getting the environmental approval for at this site. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. Availability of access roads, communication facilities, electricity, gas, basic infrastructure, sewer etc. was yet the other necessary requirements. Of course neat and clean environment was also the consideration.

Economic Alternatives their selection and rejection criteria:

The proponent also considered other site which economically undesired to proponent. Furthermore those sites were the environmentally degraded and polluted lands, and lack of aesthetic beauty is the major factor. The project area is devoid of any tree cover, so it doesn't involve cutting of trees for carrying out project activities. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. So, this is the best economically viable option for the proponent

Reasons of rejection

- Cost of alternatives lands was very high.
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- Basic infrastructure was not there.

Site Selection

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DESCRIPTION OF PROJECT

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

1-Type and category of project

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, this project requires an Environmental Impact Assessment (EIA).

2-Objectives of project

The proposed project shall yield following benefits:

- To take part in sustainable development
- To create job opportunities for locals
- To elevate the socio-economic status of the area

4-Location and layout of project

"Amin & Sons., located at Godown 145/7, Near Abdul Rehman Mushterka Adhat, Modern Kanta 4, Deen Road, Misri Shah, Lahore.

The surrounding area detail of this project is given below

North	Building
East	Building
West	Road
South	Building

Layout of the Project

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

5-Land use on site

Land is currently open, and due to the Project, it will be brought industrial use and also it will give employment opportunities, which is very positive.

6-Road access:

Main Road is present in the near of the proposed project site.

7-Vegetation features of site

Only local plant, herbs and shrubs species area present at the road side. This site is included in the industrial area. Significant or well-shaped trees and shrubs are not present on the project site. There is neither the biologically important or endangered species of plant were present and nor the plant or vegetation of any significance stands at the site to be dismantled. However, various local plants will be grown at the project site in the open areas and grounds.

8-Cost and magnitude of operation

The estimated cost of this project is **08 million rupees**.

Activities include the following.

a. Demarcation of Land for various required facilities
b. Construction/Installation of Machinery
c. Plantation

9-Schedule of Implementation

a- Phase-I (Start-up Phase)

Phase -1 is the start-up phase, which involves construction of boundary wall around the entire site. Most of the NOC's from various departments are in approval process and this report has been prepared to obtain NOC from EPA Punjab.

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b- Phase-II (Main implementation Phase)

In phase II, required machinery will be purchased including storage tanks, transfer pump, firefighting system, etc. During this phase, machinery will be brought on site and installed.

c- Phase-III (Wrap-up Phase)

Phase-III is the wrap-up phase. In this phase, all outstanding activities will be completed, required staff will be recruited, and contracts with suppliers and purchasers will also be signed after which the operational phase finally commenced.

10-Description of Project

The proposed project is scrapyard by M/s Amin & Sons which will be involved in the collection, transportation, handling, segregation, storage and sale of battery waste and haxzardous substance will be collected and sale to relevant dealer through the following process:

Collection: The process of gathering waste/batteries from industires, ensuring proper methods will be used to collect each material efficiently from the production site.

Segregation: Waste/batterires will be sorted segregated. The segregation process ensures that recyclable materials will be separated from those that need to be disposed of, optimizing the recycling potential of the waste.

Storage: After segregation, different waste materials will be stored in specific containers or designated areas. This temporary storage will be necessary before the materials will be sent for recycling or other purpose/disposal. Proper storage helps prevent environmental hazards and maintains the quality of recyclable materials.

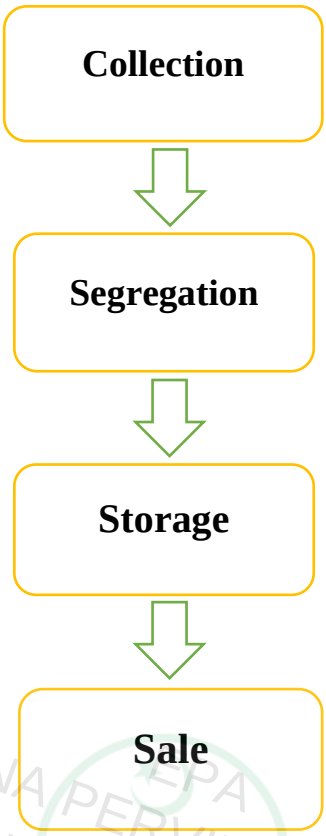
Sale: Once the waste will be processed or prepared, it will be sold to authorized dealers. These entities buy specific types of waste, such as metals and plastics, which will be then further refined or repurposed into new products, generating value from waste.

The total area of project is 16349.

The estimated cost is 08 million.

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Process Flow Chart:



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Manpower

A total of 40 workers and 10 staff members/employee will be working in this company.

Health & Safety

For health and safety of first Aid Boxes are available and workers are provided Following PPEs

Sr. #	PPEs	Qty.
1	Gloves	100 Pairs
2	Shoes	100 Pairs
3	Mask	50 Pairs

11- Restoration and rehabilitation plans

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

12-Government approvals

Management has applied for Environmental Approval and approvals from other government departments are also in approval process.

DESCRIPTION OF THE ENVIRONMENT

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

- **Physical Environment**

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

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

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

1. Physical Environment

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

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Topography

Lahore city is lying between 31°15′—31°45′ N and 74°01′—74°39′ E, Lahore is bounded on the north and west by the Sheikhupura District, on the east by Wagah, and on the south by Kasur District. The Ravi River flows on the northern side of Lahore. Lahore city covers a total land area of 1014 km² and is still growing. Lahore is generally flat and slopes towards south and south-west at an average gradient of 1:3000. It can be divided into two parts i.e. the low lying area along River Ravi and the comparatively upland area in the east away from Ravi. The low lands are generally inundated by the river water during monsoon floods. River Ravi flows in the west of Lahore District forming a boundary with Sheikhupura District. The original physiographic features like channels remnants and levees have been destroyed or changed by the construction of urban infrastructure. Flood plains have been confined by construction of embankments (bunds) and spurs. Sub-recent flood plain is 4 to 8 meters higher than the recent flood plain and can be identified at number of places i.e. Shalimar Garden, Mughalpura and Multan Road. Lahore city is situated at an average elevation of 210 meters above mean sea level.

Soil

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

Climate

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

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

Month	Mean Temperature		Precipitation (mm)	Relative Humidity AT 0500 HRS (%)	Relative Humidity AT 2000 HRS (%)
	Maximum	Minimum			
January	19.8	5.9	28.92	80.4	51.9
February	22.0	8.9	37.14	79.0	52.4
March	27.1	14.0	34.3	68.6	42.2
April	33.9	19.6	44.32	50.2	25.3
May	38.6	23.7	24.38	45.7	27.2
June	40.4	27.3	91.62	59.1	40.9
July	36.1	26.8	150.52	76.7	60
August	35.0	26.4	161.42	78.8	65.9
September	35.0	24.4	67.28	74.4	56.4
October	32.9	18.2	11.7	70.6	44.2

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			4		
November	27.4	11.6	4.44	77.1	48.8
December	21.6	6.8	9.94	82.9	53.73
Annual	**30.8**	**17.8**	**666**	**70.34**	**47.4**

Temperature

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

Humidity

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

Precipitation

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

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Ambient Air Quality

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

Ambient Noise

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

Ground Water

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

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

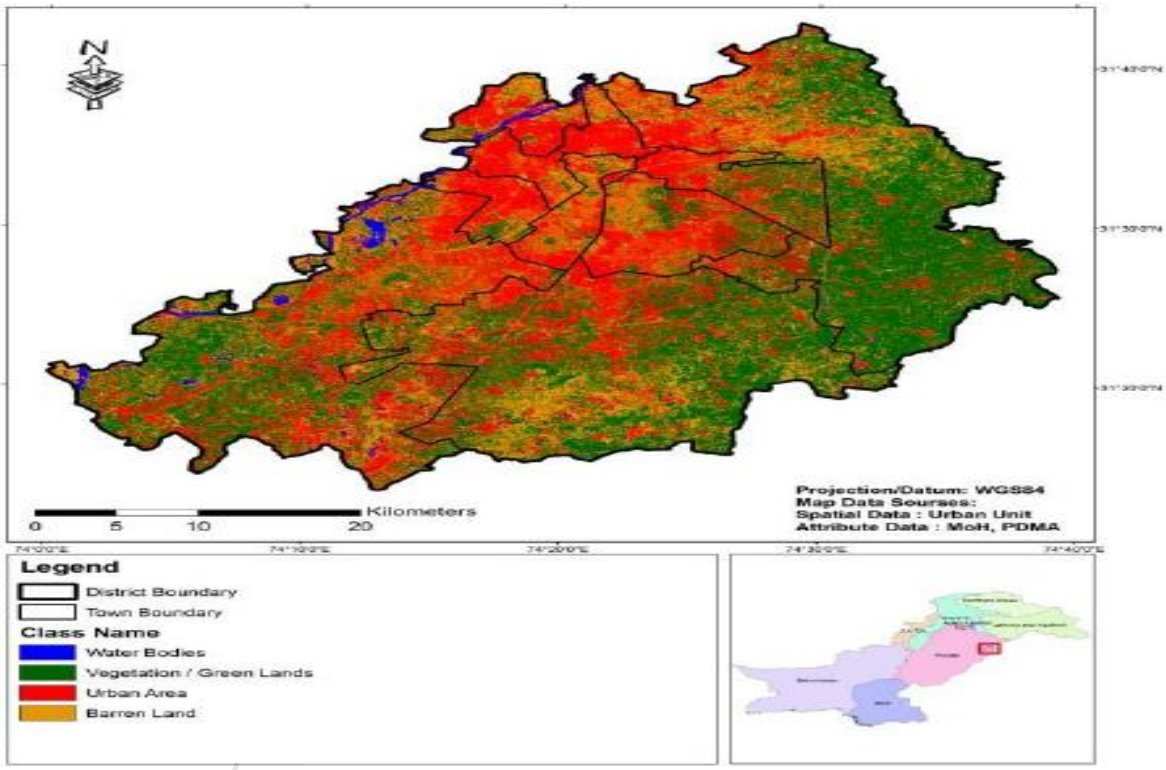
Geology

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

Land Use

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

Land Use Map Lahore:



2. Ecological Environment

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

Flora

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

Trees

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

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

List of Trees Identified in the Project Area

Serial Number	Common Name	Scientific Name
1	Tali/Sheshum	Dalbergiasissoo
2	Kikar	Acacianilotica
3	Safeda	Eucalyptus cinerea
4	Neem	Azadirachtaindica
5	Piple	Ficusreligiosa
6	Papaya	Caricapapaya
7	Shree	Acaciagreggii

Grasses

A number of grass species were identified. These are Crow Foot Grass (Dactylocteniumaegyptium), Dabri Grass (Dichanthiumannulatum) and Indian Dab (Cynadonedactylone).

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Grasses in Study Area

Different types of grass species were also identified outside the project site during our visits to the nearer localities, these species include Dabri Grass (Dichanthiumannulatum), Lesser Bulrush (Typhaangustifolia) and Indian Dab (Cynadonedactylone).

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

List of Grasses Identified in the Project Area

Common Name	Scientific Name
IndianDab	Cynadonedactylone
Dabri Grass	Dichanthiumannulatum
LesserBulrush	Typhaangustifolia

Herbs and Shrubs

A large number of herbs and shrubs species were identified in the area. Among these species, the most dominant were JangliBooti (Partheniumhysterophorus), Bathu (Chenopodium album) and Ak (Calotropisprocera). Frequency of these species in different zones of the study area is as under:

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

Common Name	Scientific Name
JangliButi	Partheniumhysterophorus
Puthcanda	Achyranthesaspera
Bathu	Chenopodiumalbum
Ak	CalotropisProcera
Bhang	Canibus sativa

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Medicinal Plants

Medicinal Plants within project site

A number of medicinal plants in the area were identified which are AK (Calotropisprocera), Amaltas (Cassia fistula), Pilak, Janglikashni and Itsit (Boerhaviadiffusa).

List of Medicinal Plants Identified in the Project Area

Sr #	Study Area	
	Common Name	Scientific Name
	AK	Calotropisprocera
	Amaltas	Cassia fistula
	Itesit	Boerhaviadiffusa
	Ajwain	Hyoscyamusniger

Ornamental Plants

Ornamental Plants Project Site

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

List of Ornamental Plants Identified in and Around the Project Area

Sr #	StudyArea	
	Common Name	ScientificName
1	Bottle Brush	Callistemonecitrinus
2	Araucaria	Araucariaheterophylla
3	Bouginvillea	Bougainvilleaspectabilis
4	Milkwood pine	Alostoniascholaris

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Vegetables

Vegetables in around and Project Site

No vegetables are grown in or around proposed project site.

Vegetables in Study Area

Some important of these are PhoolGobhi/cauliflower (Brassica oleracea Ver. botrytis), Band Gobhi (Brassica oleracea Ver. capitate) Turnip, Raddish (Raphanussativus), Carrot (Daucuscarota), Bhindi, Tomato (Lycopersicumesculentum), Vegetable Marrow (Cucurbitapepo), Baingan, etc.

List of vegetables Identified in and Around the Project Area

Sr #	Study Area	
	Common Name	Scientific
1	Bangun	Solanummelongena
2	Bhendi	Abelmoschusesculentus
3	Karela	Momordicacharantia
4	PhoolGobhi	BrassicaoleraceaVer. Botrytis
5	Raddish	Raphanussativus
6	Tomato	Lycopersicumesculentum
7	Marrow	Cucurbitapepo

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Agriculture

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

Farm Traction Power

Tractor is the sole source of farm traction power. No farmer was found using animal traction power. There was significant variation in tractor ownership across farm size groups. However, more than half of the farmers owned tractor while rest were hiring the services for land preparation.

Irrigation

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

drains for agricultural practices. On the other hand plenty of ground water is easily accessible for agriculture use.

Fauna

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

Mammals

Mammals within project site

During our survey to the proposed project site, some mammals were identified evidently while some were reported by the workers like Cats (Feliscatus), Rats (Rattusrattus) and Squirrel (Sciuruscarolinensis).

Mammals in Study Area

The wild and common or domesticated mammals found in the study area are Dogs (Canisfamiliaris), Cats, House Rats (Rattusrattus), Bats, Horses (Equuscaballos), Donkeys (Equusafricanusasinus), Mules, Buffaloes, Cows (Heracleumlanatum), Goats (Copra hircus) and Sheep.

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List of Mammals Present in and Around the Project Area

Project Site		**Study Area**	
Common Name	Scientific	Common Name	Scientific
Cat	Feliscatus	Cats	Feliscatus
Rat	Rattusrattus	Dogs	Canisfamiliaris
Squirrel	Sciuruscarolinensis	Cows	Heracleumlanatum
		Goats	Copra hircus

		Horses	Equuscaballos
		Donkeys	Equusafricanusasinus
		Sheep	

Reptiles

Reptiles within Project Site

No reptiles were identified within the project site

Reptiles in Study Area

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

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List of Reptiles Present in and Around the Project Area

Common Name	Scientific Name
Lizards	
Spiders	
Scorpions	
Pakistani cobra	Najanajakarachiensis
Goh/large lizard	Varanis

Amphibians

A number of Amphibians found in the tract include Common Frog (Ranatigrina), Common Toad (Bufobufo) and Tortoise (Chitraindica).

List of Amphibians Present in and Around the Project Area

Project Site		Study Area	
Common Name	ScientificName	Common Name	ScientificName
Common Frog	Ranatigrina	Common Frog	Ranatigrina
Common Toad	Bufobufo	Common Toad	Bufobufo
		Tortoise	Chitraindica

Birds

Different types of birds' species were identified within the project site. The bird's species identified in these areas include House Sparrow (Passer domesticus), House Crow (Corvussplendens), Common Mynah (Acredotherestristis), Tatiri (Vanellusindicus),Cheel, Bagle, Bulbul (Pycnontuscafer), Parrots (Psittaculakrameri), Pigeons (Columbia livia), Dove (Stigmetopeliasenegalensis), Surkhab, Ullu, etc. are also seen in the area.

List of Birds Present in and Around the Project Area

Sr #	Project Site		Study Area	
	Common Name	ScientificName	Common Name	ScientificName
1	House Sparrow	Passerdomesticus	Parrots	Psittaculakrameri
2	HouseCrow	Corvussplendens	HouseSparrow	Passerdomesticus
3	Common Mynah	Acredotheres Tristis	HouseCrow	Corvussplendens
4	Tatiri	Vanellusindicus	Common Mynah	Acredotherestristis
5	Pigeons	Columbia livia	Tatiri	Vanellusindicus
6			Pigeons	Columbia livia

7			Dove	Stigmetopelia Senegalensis
8			Bulbul	Pycnontuscafer
9			Cheel	

Wildlife Sanctuaries and Game Reservoirs

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

Rare or Endangered Species

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

3. Socioeconomic Environment

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

Objectives of the Study

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

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

An Overview of Socio-economic Conditions

This section describes the status of overall socio-economic baseline conditions prevailing in the study area. It deals with various socio-economic and cultural aspects of the community

including income, employment, professions, basic facilities, education and health, social structure, culture, women's status, traditions, ethnics, sectarian status and residential needs of the local people.

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

Analysis of Socio-economic Conditions

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

A) Sources of Income

The economy of Lahore has a diversified base spanning from telecommunication, information technology, manufacturing industry, engineering, pharmaceuticals, steel, chemicals and construction material. As a major urban center, the economy of Lahore has relatively prospered. Lahore is hailed as the industrial belt of Pakistan and is home to the largest IT Park in Pakistan. It is the country's second largest economic hub and the commercial capital of Punjab. In 2008, the city was ranked with high efficiency to be classified as a gamma world city. Majority of the people are working as labors in industries, and many do their own common business (shopkeepers).

B) Basic Facilities

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

C) Educational Facilities

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

The system is divided into five levels: primary (grades one through five); middle (grades six through eight); high (grades nine and ten, leading to the Secondary School Certificate); intermediate (grades eleven and twelve, leading to a Higher Secondary School Certificate); and university programs leading to graduate and advanced degrees.

D) Medical Facilities

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

E) Recreational Facilities

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

G) Types of Community

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

H) Types of Family

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

I) Ethnic Status

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

J) Status of Women Literacy

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

K) Decision Making Authority

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

L) Role of Women

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

4. Quality of Life Values

If we specifically talk about the project area then majority of the people has to adopt seasonal occupation to supplement their income due to low-income level and inconsistent income opportunities. People are educated and doing jobs as per their profession and many are industrialists as well. Majority of the people are working as labors and many do their own common business (shopkeepers).The locals of this are provided with basic facilities like electricity, roads, transport etc. but are disorganized and mismanaged. If we talk about educational facilities then education up to master level are available in almost all the localities and are easily approachable. The proper health care facilities are present in the area for both male and female population. Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

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

5. Lab Reports of Environmental Analysis

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

Site suitability

- This site which is selected for proposed extension is devoid of any tree cover and has no environmental sensitivity.
- The proponent selected the site because the site has the availability of basic human necessities such as roads and easy access to markets.
- The proposed site is best suited and economically viable option for the proponent. The proponent has no other land for carrying out his project.

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Impact Assessment

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8.1; Identification of Impacts:

For the identification of all the possible impacts such as social, economic and biological checklist are used.

8:1.1 Methodologies for Impact Assessment:

Checklist:

All types of impacts associated with the project of Amin & Sons. are covered in this checklist. All kind of impacts are organized to ensure that no potential impact is overlooked.

Activities	*Adverse effect*	*No Effect*	*Beneficial Effect*	*Minor Effect*
Land Use			✓	
Ground Water Resources			✓	
Air Quality				✓
Noise & Vibration				✓
Transportation System		✓		
Socio-economic			✓	
Surface Water Quality			✓	
Vegetation			✓	
Flora and Fauna		✓		

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This section discusses the potential environmental impact for the establishment of Amin & Sons. The impacts may include; soil contamination, water resources damage, air pollution, biological resources disturbance and socio-economic impacts and, where applicable, identifies mitigation measures that will reduce significantly, if not eliminate its adverse impact. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

5.1 Impact Assessment Methodology

The impact assessment methodology for the installation of unit is given below:

5.1.1 Screening of Potential Impacts

Based on site visit, observations, brain storming, provided information, studying related projects and social interviews, significant impacts were anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is to be carried out.

5.1.2 Identification of Mitigation Measures

After anticipation and screening of significant impacts, certain mitigation measures are to be provided in order to enhance benefits of said project and reducing the adverse environmental and social impacts. These measures can be classified as:

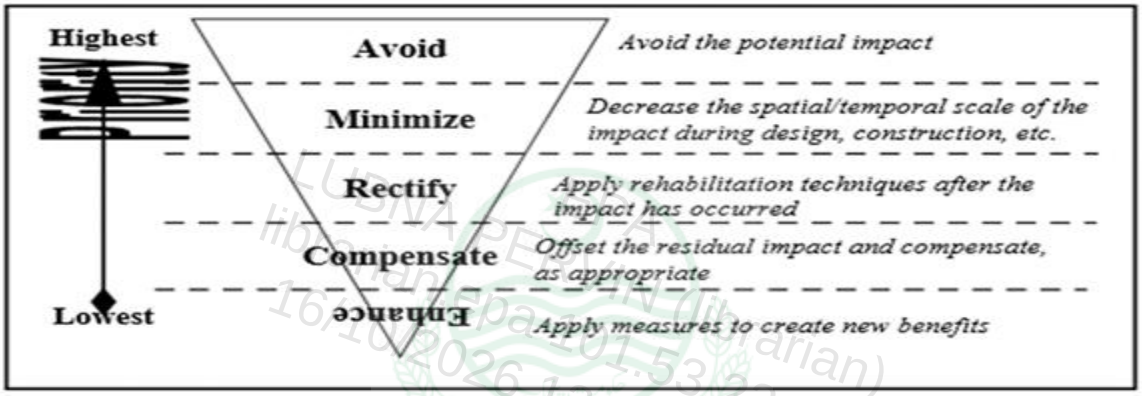


Figure 1: Hierarchy of Mitigations

5.6.3 Evaluation of the Residual Impacts

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of aforesaid project but sometimes, it may fail in bringing them within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

It can be concluded in view of these reasons that the selected site is best suited for project and the technology adopted for production of medicinal drugs & personal hygiene products is the most suitable and sustainable option. The aforesaid project will not pose any adverse impact or threat on any component of environment. The impact assessment criteria are given below along with their impacts:

Table 1: Impact Significance Criteria

Impact	
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 duration
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 duration
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 conditions

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Table 2: Impact Matrix Checklist for Designing Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	Low Intensity	Moderate Intensity	High Intensity	Local	National	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Topography	✓			✓									
Land Acquisitions	✓			✓									
Seismicity													
Biological Parameters													
Land Environment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Social Parameters													
Local Economy	✓			✓									
Social Impacts	✓			✓									

Table 3: Impact Matrix Checklist for Construction Phase

EnvironmentalSensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	LowIntensity	ModerateIntensity	HighIntensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	ShortTerm	Moderate	LongTerm
Physical Parameters													
AirQuality	✓			✓									
Noise	✓			✓									
WaterQuality	✓			✓									
Biological Parameters													
LandEnvironment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Physical Parameters													
LocalEconomy	✓			✓									
Social Impacts	✓			✓									
Health & Safety	✓			✓									

Table 4: Impact Matrix Checklist for Operational Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	LowIntensity	ModerateIntensity	HighIntensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	ShortTerm	Moderate	LongTerm
Physical Parameters													
AirQuality	✓			✓									
Noise	✓			✓									
WaterQuality	✓			✓									
Biological Parameters													
LandEnvironment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Physical Parameters													
LocalEconomy	✓			✓									
Social Impacts	✓			✓									
Health & Safety	✓			✓									

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5.2 Identification of Monitoring Requirements

The last step in the assessment process is the identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if acceptable limits are being breached.

SCREENING OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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

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

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

2- Impacts Associated with Project Location

The proposed project is located at Industrial area . The project area is open area. However it could affect the people around the project area if proper mitigation measures will not be taken. The transportation of material can cause traffic problems in the area. Otherwise, there is no as such impacts are associated with project location.

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Mitigation

Strict traffic plan will be implemented. If the mitigation measures mentioned in later section of construction and operation phase are properly implemented, the proposed project with respect to location will be environment friendly and will not be involved in the deterioration of environment.

- The site is undisputed and under the ownership of the proponent
- There is no need of relocation of utilities.
- There is no community or human settlement on the site.
- There is no fauna flora (particularly belonging to an endangered species) on the site
- Main road network runs in front

- There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, any structure of socio-cultural significance (historical or archaeological site or religious structures; Masjid, temples, etc.) within 10 km of the selected site

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

3- Impacts Associated with Design Phase

At the design phase, considerable impact can occur on land, soil, ground water, and on people of the area.

Mitigation Measures at Design Phase

The design has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards. The design of this unit is state-of-art and environmentally friendly. At design phase special attention should be given to the design of the project in the sense that it has been designed in such a way as to cause minimum disruption and deterioration of environment and surroundings. However in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the unit will adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health. There will not be any environmental problems at any stage from design stage to its operational stage. The project is to be designed in a way that it guarantees all out compliance with the Punjab Environmental Quality Standards (PEQS).At the design phase, no considerable impact will

Occur on land, soil, topography, ground water, and on people of the area. The Proponent intends to construct the unit on modern lines, meeting International Standards, with incorporation of new Technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the Environment and will not pose any adverse impact or threat on any component of the Environment.

4- IMPACT DURING CONSTRUCTION PHASE

It is as follow:-

- **Impact on Soil**

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

Mitigation

Any spill if occur will be immediately clean up. If the problem of water logging occurs during development phase the area will be immediately reclaimed. The impact is not significant.

Depending on the nature of the material, location of spill and quality of spill, soil can get contaminated. Low permeable membrane should be present at the bottom of vehicles. Proper tuning of vehicles is also necessary. Due to mitigation measures, the overall impact on soil during construction phase is minor.

- **Impact on Geology**

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

Mitigation

No impact

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- **Ecological Impacts**

There would be a considerable impact on flora and fauna if present in area and it could be a cause of their elimination from the area.

Mitigation

There is no impact. No flora and fauna present around the proposed project site. The project area is devoid of any trees cover or any endangered or threatened animal species.Plantation will be done to improve the ecological conditions of the area. The impact will be Nil.

- **Impacts on Air Quality**

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

Emission of Dust and Particulate Matter

During the development / construction vehicles and machinery will be employed. These will generate some dust and smoke temporarily. During construction phase due to continuous operation of machinery and movement of heavy trucks and vehicles can generate gaseous emissions and can have a slight adverse effect on the surrounding environment. Combustion

exhaust from vehicles and construction equipment's during construction phase can affect ambient air quality of project area.

Mitigation

All vehicles, machineries, equipment and generators used during construction activities should be in good working condition, properly and be properly maintained in order to minimize exhaust emissions. This impact is classified to be short term, reversible and limited, as it will only occur during the excavation activities. Also these impacts are expected to be contained within the site boundaries. For dust sprinkling of water is done to avoid dust.

- ## Solid Waste

The solid waste generated during the construction phase of Project can pose a health hazard, pollute soil, surface and ground water if not managed properly. A significant impact will be interpreted if the waste management is not carried out properly; witch may effect to health of workers, pollution of soil, surface or groundwater.

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Mitigation

The Potential sources of solid waste from operational activities include excavated material, construction waste, food waste, plastics, and paper. Dumping of excavated waste will be done at a designated site approved by LWMC. and it will be ensured minimum degradation to the soil around the Project area. Construction waste will also be disposed off as per LWMC procedures. Other generated solid waste comprise of a domestic waste. Waste storage bins will be installed. The waste from these bins will be collected by the sanitary workers. The waste will be disposed off in accordance with the procedures of LWMC. No significant impact on the environment is anticipated from solid waste generation at the project site as the solid waste is managed efficiently.

- ## Noise and Vibration

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

Mitigation

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

- Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.

- Confining of excessively noisy areas and limiting the work to normal working hours in the day;

- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; and

- Regular checkups and maintenance of the construction equipment, and oiling and greasing of the noise making mechanical parts.

- **Traffic Congestion and Disturbance to People**

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

Mitigation

During construction, following mitigation measures will be followed:

- Observation of timing by the vehicles carrying construction material of infrastructure to cause minimum disturbance to traffic on existing road. The construction equipment and machinery must be stationed in the boundary premises to avoid the traffic congestion on the main Road.

- Transportation of raw material and heavy machinery will be done early in the morning; and

- There will be coordinated planning of traffic movement by the Traffic Police and the Transport Department in accordance with the construction program with advance warnings to the affected residents and road users.

- All the machinery will stay inside the periphery of project so it will not cause disturbance in the traffic.

- **Workers' Safety and Hygienic Conditions**

During construction phase minor and severe injuries to workers due to operation activities may occur. The construction activities impose certain negative impacts on health and safety

of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

Mitigation

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

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

- The Administrator will ensure that the construction workers/labours are trained in safety procedures for all relevant aspects of construction;

- Construction workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;

- Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;

- The safety of the public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags; and Proper illumination will be provided at night.

Proposed Mitigation Measures during Construction / Development Phase

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

- Appropriate waste disposal mechanism should be followed during the construction phase. The construction waste would be disposed in a manner that does not contaminate surface or groundwater.

- The construction waste generated will be used for earth filling within the project site premises.

- The Contractor needs to make sure that their machinery and equipment's are properly tuned and serviced and there is no leakage of oil from construction equipment's and machineries.

- Contractor should give assurance of quality of machineries and equipment's which will be used during excavation and construction process.

- All vehicles, machineries, equipment and generators used during construction activities should be in good working condition and be properly maintained in order to minimize exhaust emissions.
- Construction labor must be trained in safety procedures for all relevant aspects of construction
- Helmets or hard hats should be worn by workers at all time of work and everywhere on the Project Site.
- Regular checks should be carried out to ensure that the contractor is following safe working procedures and practices.
- Workers should be provided with personal protective equipment's (PPE's) such as safety jackets, ear plugs or ear muffs, special boots and dust masks.
- Use of up-to-date and well maintained machineries or equipment with reduced noise level.
- Confining excessively noisy work to normal working hours in the day, as much as possible.
- Providing construction workers with suitable hearing protection like ear cap, or ear muffs and training them in their use.
- Ear muffs or ear caps should also be provided to those people living in nearby area.

5- *IMPACTS OF OPERATIONAL PHASE*

The Environmental and Socio-Economic impacts associated with the operation phase of the unit are following:

Mitigation Measures

Both are collected and properly stored in the unit. Both will be recycled in next process.

- **Waste Water**

The domestic waste water will be generated during the operational phase of the project. The domestic waste water will be produced from sanitary uses. It would deteriorate the surface and ground water quality if not treated properly. Waste water will be domestic waste water in nature. It could affect the underground water table, which in turn affects the health of the people. The effects of untreated sewage on the environment are largely negative. If

wastewater is not properly treated, then the environment and human health can be negatively impacted.

Mitigation

There is a proper management of wastewater generated from the unit so it has no considerable impact on environment.

- **Solid Waste Management**

The solid waste generated during the operational phase of proposed project comprises of, packing material, Waste Pieces of metal.

Mitigation Measures

Small storage waste bins will be installed for the collection and proper management of waste. The solid waste produced during the operation will be sold out to contractor.

Residual Impacts

Proper implementation of the mitigation measures will ensure that the residual impact from waste is minimum. Monitoring and inspection will be undertaken to ensure compliance and minimize any residual impact.

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- **Air Quality**

During operational stage, the continuous operation of air conditioners and generators etc. may deteriorate the quality of air if not managed properly. However emissions from vehicles can also cause impact on environment.

Mitigation

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

- Plantation will generate fresh oxygen;
- Generators, air conditioners will be properly tuned and maintained.
- Vehicles will be properly tuned and maintained.
- Vehicles with excessive smoke emissions will not be allowed to enter the proposed unit.
- An air quality monitoring and improvement plan will be developed to keep the air pollution levels from generators, air conditioners etc. within the limits of Punjab Environmental Quality Standards (PEQS);
- PPEs will also be provided to workers.

- **Noise and Vibration**

Noise will be generated from transportation, generator and operation of the project. It may affect the health of the workers.

Mitigation

- Workers will be provided with PPE's such as ear plugs.
- There will be a sound proof roof room for generator.
- There will be a selection of up-to-date generator (if any) with reduced noise levels ensured by suitable in-built damping techniques
- Vehicles and generator will be properly tuned and maintained to control noise.
- Only those vehicles will be used that are properly tuned and maintained and are equipped with silencers.
- Also excessive use of horns will be avoided. Further tree plantation will be done as it acts as noise absorbers.
- Oiling and greasing of the mechanical parts of the machinery will be done to control noise.
- Maintenance of the machinery should be done on regular intervals.

Residual Impacts

Implementation of the mitigation measures proposed above will result in negligible / no residual impact due to noise on surrounding environment.

Monitoring Requirements

During project operation, it should be ensured that the noise level at the project site does not exceed the prescribed limits.

- **Water Consumption**

Water will be required for the domestic use and for colling purpose during process. The increased withdrawal of surface water for the proposed project may affect the water availability for the other users of the Project Area.

Mitigation Measures

- Water conservation program will be initiated in plant to prevent wastage of water.

- **Safety of Workers**

Operation of the project may cause some concerns for safety, public health and nuisances within the project area

Mitigation:

- Personal Protection Equipment (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles and Masks will be provided to the employees to ensure their safety at work place.
- While dealing withdraws material, the workers will be wear gloves and shoes. In short worker's body will be completely covered.
- Workers' awareness and safety wall chart showing safety symbols and other necessary information will be displayed at various places.
- First Aid Box will be kept in every department which will be within the approach in case of any injury or mishap.
- To avoid any chance of fire, a comprehensive firefighting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and firefighting Vehicles.
- Basic medical and safety training will be held from time to time to minimize the risk of health and safety issues which can result from ignorance (ergonomic hazards in particular) in the industry premises.

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Residual Impacts

Implementation of the suggested mitigation measures may leave behind some residual impacts of safety incidents.

Monitoring requirements

Visual monitoring of hazards and accidents will be done

6- Emergency Response Plan

GUIDELINE EMERGENCY PREPAREDNESS AND RESPONSE PLAN

PURPOSE

The purpose of this Emergency Response Procedure is to provide measures and guidance for the establishment and implementation of emergency preparedness plans for the project. The aim of the Emergency Response Procedure is to:

- Ensure all personnel and visitors to the office/job sites are given the maximum protection from unforeseen events.
- Ensure all personnel are aware of the importance of this procedure to protection of life and property.

EMERGENCY PREPARATION AND RESPONSE MEASURE SCOPE

The emergency management program is applied to all Project elements and intended for use throughout the Project life cycle. The following are some emergencies that may require coordinated response.

- Construction Accident
- Road & Traffic Accident
- Hazardous material spills
- Structure collapse or failure
- Trauma or serious illness
- Sabotage
- Fire
- Environmental Pollution
- Loss of person
- Community Accident

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RESPONSIBILITIES

The detailed roles and responsibilities of certain key members of the Emergency Response team available to assist in emergency are provided in **Table** below.

Table: Emergency Response Team

Action Group	Responsibility

Emergency Coordinator	▪ Overall control of personnel and resources. ▪ The Emergency Coordinator will support and advise the Site Safety Supervision as necessary. ▪ Serves as public relations spokes persons, or delegates to some staff member the responsibility for working with news media regarding any disaster or emergency. Also assure proper coordination of news release with appropriate corporate staff or other designated people.
Site Safety Supervision (Emergency Commander)	▪ Overall responsibility for activating emergency plan and for terminating emergency actions. ▪ Be alternative of emergency response chairpersons. ▪ Disseminates warnings and information as required to ensure all people in the immediate area have been warned and evacuated either by alarms or by word of mouth. ▪ Supervise the actions of the Emergency Response Team to ensure all persons are safe from the danger. ▪ Notify outside authorities if assistance is required. ▪ Carries the responsibility for coordinating actions including other organizations in accordance with the needs of the situation. ▪ Ensure maximum co-operation and assistance is provided to any outside groups called to respond to an emergency. ▪ Establish and appoint all emergency organization structure and team. ▪ Assures adequate delegation of responsibilities for all key positions of assistants on the Project to assist with any foreseeable emergency. ▪ Ensure resources available to purchase needed emergency response equipment and supplies. ▪ Assures that all persons on the Emergency Response Team aware and fully understand their individual responsibilities for implementing and supporting the emergency plan. ▪ Establish the emergency drill schedule of all identified

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	emergency scenarios, track the status and evaluate the emergency. ▪ The Emergency Commander shall ensure that senior management personnel have been reported of the emergency as soon as practical after the event.
Security Team	▪ Ensure that the exit route is regularly tested and maintained in good working order. ▪ Maintain station at the security gate or most suitable location to secure the area during any emergency such that only authorized personnel and equipment may enter, prevent access to the site of unauthorized personnel. ▪ Assist with strong/activation of services during an emergency. ▪ Ensure vehicles and obstructions are moved to give incoming emergency vehicles access to the scene, if ambulance or emergency services are attending the site, ensure clear access and personnel are located to direct any incoming emergency service to the site of emergency.
Rescue & Medical Team	▪ Protect the injured from further danger and weather. ▪ Provide treatment to the victim(s) to the best of their ability by first aid and then transfer to hospital. ▪ Remain familiar with the rescue activities and rescue apparatus. ▪ Assist outside medical services personnel when they arrive
General Administration Team	Response to support any requested general facilities for assisting Emergency Response Team in their work.
Government Relation Team	▪ Coordinate with local government on a matter of concerned in the emergency response plan to liaise with local officers in their affair for support Emergency Response Team.

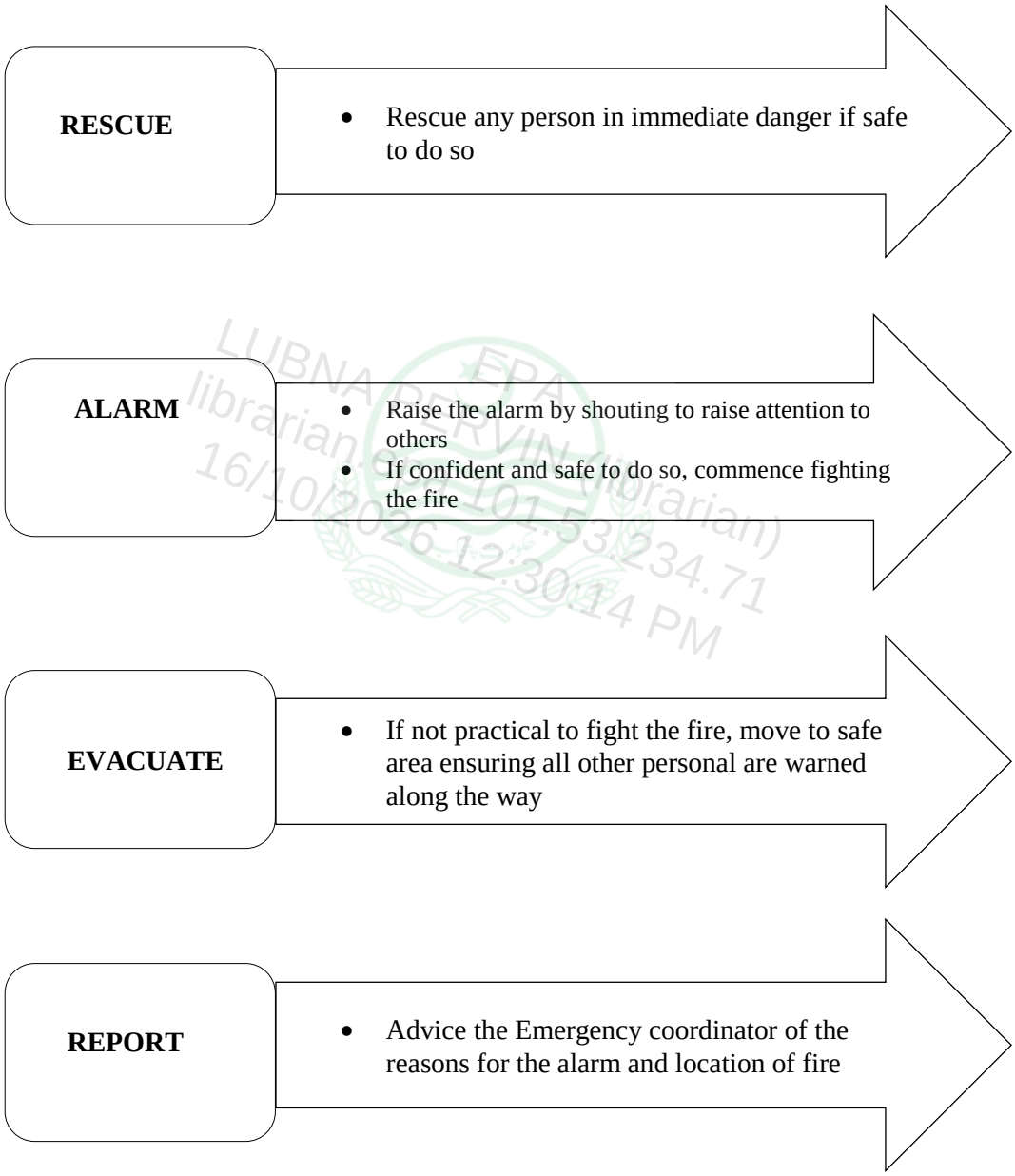
	▪ Coordinate emergency plan with the government authorities, local Community.
Environment Team	In case of emergency related to the environmental pollution such as the chemical spill, oil spill into the ambient, the environment team will support the technical advice to control and mitigate the pollution until return to the normal situation.
Department Heads	▪ Call up of personnel into the safe location for protective life and property. ▪ Take immediate and appropriate action while Emergency Response Team is being mobilized. ▪ Keep in touch with the Emergency Commander ▪ Control and supervise operators and contractors on the implementation of this procedure, with consultation with Safety Team as necessary. ▪ Provide and maintain emergency equipment of their responsible areas.
Other Staff and Employees	▪ All other staff and employees will remain at their workstations or assembly point unless directed otherwise from Emergency Response Team. ▪ Each supervisor will ensure that all members of his work group are accounted for and keep in touch with each of their Department Head.

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PROCEDURE

Emergency situation and injuries to person can occur at any time or place either on Project site or elsewhere. The most two common types of emergencies on site are fire and serious accident.

Figure: Emergency Procedures for Fire



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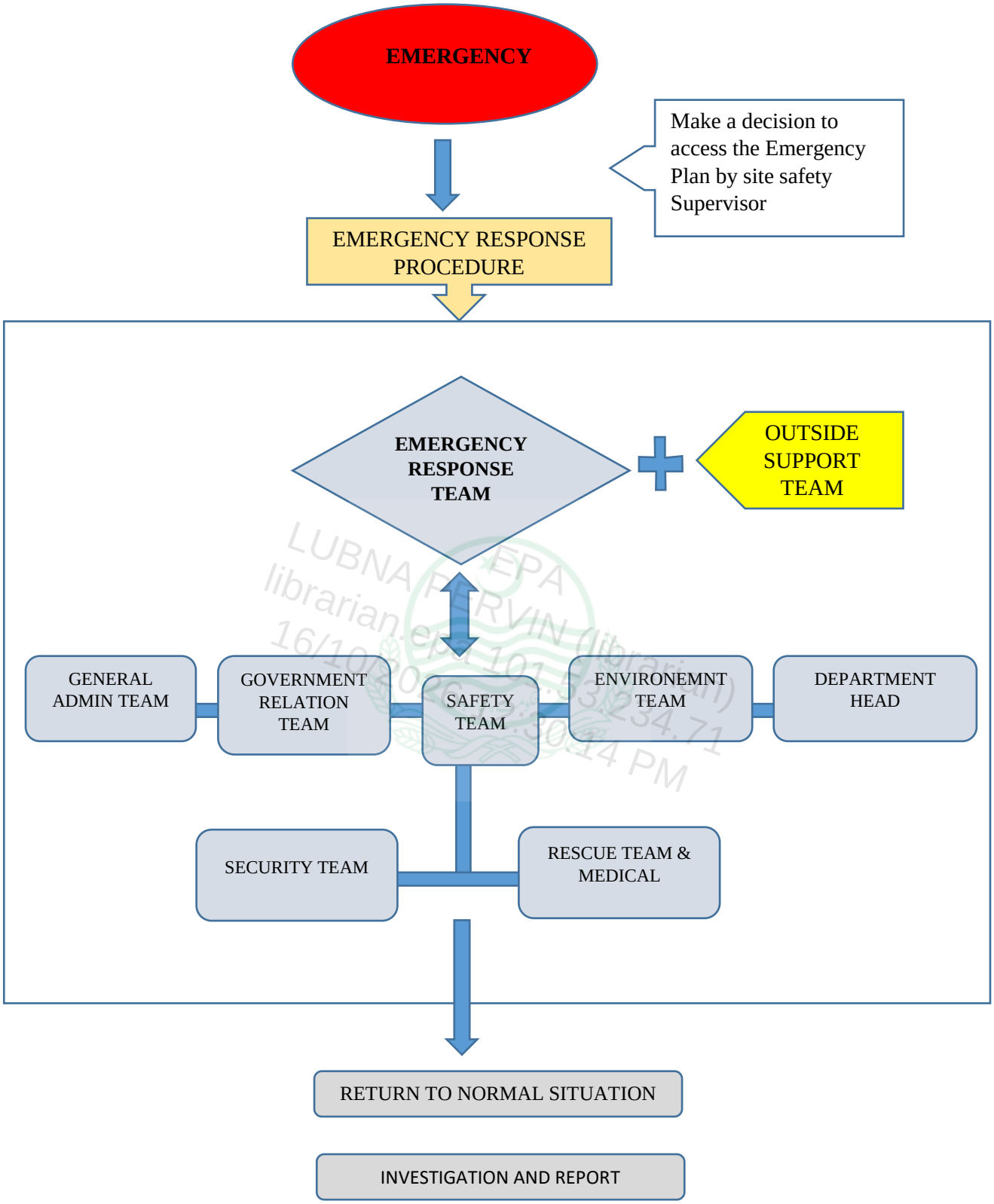
Emergency Procedures for Serious Accident

ACCIDENT

In the event of Injuries of persons, the first person on the scene should take the following action:

- If a hazard exists consider your own safety then if possible remove the hazard or the injured person
- Assess the patient by checking for airways, Breathing pulse and obvious
- Report directly to first Aid or Security Centers, when raising the alarm you must clearly give the following information:
    - Your name and the detail of accident
    - The location of the injured person (s)
    - The number of persons injured
    - The extent of the injuries if known
    - What known hazards are in the area
- Make the injured person as comfortable as possible
- Treat obvious injuries
- Reassure the injured person

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EMERGENCY
Make a decision to access the Emergency Plan by site safety Supervisor
EMERGENCY RESPONSE PROCEDURE
EMERGENCY RESPONSE TEAM
OUTSIDE SUPPORT TEAM
GENERAL ADMIN TEAM
GOVERNMENT RELATION TEAM
SAFETY TEAM
ENVIRONEMNT TEAM
DEPARTMENT HEAD
SECURITY TEAM
RESCUE TEAM & MEDICAL
RETURN TO NORMAL SITUATION
INVESTIGATION AND REPORT

7- Potential Environmental Enhancement Measures

Tree plantation and cropping within and outside the premises has been planned by the proponent for environmental enhancement. Among plants native flora like Peepal and Amaltas will be involved which have maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like rose will also be introduced in the lawn for aesthetic beauty and trees like Sufaida will be planted as boundary wall inside the lawn which will look like green wall

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

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

A. Trees: 3x3x3

B. Shrubs: 2x2x2

C. Hedges: trenching 2wide x'2 deep of required length.

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

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

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plants become damage or injured, they shall be treated or replaced. Protection shall also include all temporary protections fences and barriers. all signs and all other work incidental to proper maintenance.

ENVIRONMENTAL MANAGEMENT& MONITORING PLAN

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I. Description of proposed mitigation action:

Proposing the mitigation measures for the negative environmental (physical, biological and socio-economic) impacts arising from the various project activities is not the only responsibility of the proponent; rather the proponent is liable to provide a complete plan showing in-depth details of how the activities will be managed in a way to keep environment undisturbed or in a state receiving least burden from the project construction and operation. This plan; called as the "environmental management plan" not only states the mitigation measures of the negative environmental impacts but also makes some person or authority responsible for carrying out that mitigation measure. Having an EMP in an EIA binds the specified people for taking the indicated mitigation measure.

An environmental management plan is a project or site specific plan developed to ensure that all the necessary measures are identified and implemented in order to protect the environment and to meet the environmental legislations.

Aspects	Potential Impacts/ Risks	Proposed Mitigation Action
	CONSTRUCTION PHASE	
Traffic Congestion due to construction phase of	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.	Adequate parking facilities will be provided for the construction machinery and tractor-trolleys bringing the material into the Project Area.
Air Quality degradation due to construction phase	Dust produced due to construction activity can affect the health of employees and residents in the surrounding areas	Use of dust suppression Techniques like water sprinkling etc. will be made to minimize the effect of dust. Construction workers will be provided with masks for protection against the inhalation of dust. Regular monitoring of all vehicles, equipment, and machinery used for construction. All vehicles, machinery, equipment and generators

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		used during construction activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.
Disposal of Construction Waste/Excavated Material produced in construction phase	Dumping of construction wastes / excavated material in the surrounding area may limit use of land	Management of Construction activities in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site approved by LWMC.
Noise and Vibration due to machinery being used for construction	Noise pollution due to increased construction machinery operation	Selection of up-to-date equipment and machinery with reduced noise levels ensured by suitable in-built damping techniques; Regular checkups and maintenance of the construction equipment; and use of appropriate muffling devices
Sanitation and Waste disposal facilities at Project site	Health risks to construction workers	All the solid waste will be properly collected and disposed off in accordance with the procedures of LWMC.
Workers' Safety and Hygienic conditions	Health risks in case of unsafe and/or unfavorable work conditions	Enforcement of work safety measures such as wearing safety goggles, protective masks and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
OPERATIONAL PHASE		

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Packing Material waste metal pieces will be produced as waste	Packing material may be affecting the environment.	After the completion of each batch, the whole waste will be collected and will be sold out to the contractor.
Waste water Generation	Domestic will be generated while during operation from washroom.	To get rid from domestic wastewater septic tank will be present before its disposal..
Production of Sanitary Solid Waste in operational phase	There will be mostly domestic waste like, plastics, and food waste.	Small waste storage bins will be installed and solid waste will be hand over to the sanitary workers of the LWMC.
Groundwater Depletion	Prolonged water consumption may in the long run lower/deplete the underground water table.	Workers will be trained in water conservation measures such as use of water efficient/ economy appurtenances.
Air Quality	Air quality may deteriorate due to the continuous movement of vehicles and generator etc.	• Vehicles causing heavy smoke/emissions will not enter the premises. • Vehicles and generators (if any) will be properly maintained and tuned • Plantation will be provided which will generate fresh oxygen. • An air quality monitoring and improvement plan will be developed to reduce air pollution and to remain it within the limits of Punjab Environmental Quality Standards (PEQS) • Level of air pollution will be monitored on regular basis; and vehicles with excessive smoke emissions will not be allowed to

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		enter. • Raw material Storage will be done properly and will be properly covered after using it
Noise & Vibration	Noise will be generated from transportation, generator. It may affect the health of the workers.	• Workers will be provided with PPE's such as ear plugs. • There will be a sound proof roof room for generator. • There will be a selection of up-to-date generator (if any) with reduced noise levels ensured by suitable in-built damping techniques • Vehicles and generator will be properly tuned and maintained to control noise. • Only those vehicles will be used that are properly tuned and maintained and are equipped with silencers. • Also excessive use of horns will be avoided. Further tree plantation will be done as it acts as noise absorbers. • Oiling and greasing of the mechanical parts of the machinery should be done to control noise. • Maintenance of the machinery should be done on regular intervals.
Workers' Safety and Hygienic conditions	Health risks in case of Unsafe and/or unfavorable work conditions	Enforcement of work safety Measures such as wearing safety goggles, protective masks and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
Emergency Response	There are always chances of earthquakes and	• Emergency evacuation plan will be developed to evacuate the area in case of accidental fire

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	manmade disasters, fire, road accidents etc.	• Emergency response and plan along with safety charts showing symbols and other necessary information will be displayed at various places for the awareness of workers • An Emergency Response Plan for earth quakes and manmade disasters will be developed by the Management. • Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics • Firefighting equipment's should be installed or present in the unit.
Traffic Congestion	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.	Adequate parking facilities will be provided for the vehicles bringing the material into and out the Project Area

II. Schedule of Implementation & Environmental Budget:

The schedule of implementation for the commencement of the civil work involved for the construction is approximately 06 month and the detail timeline of the construction period is given in **Table 14:**

Table 5: Timeline for Project Development

Sr#	Activities	1.5 Months			1.5 Months			1.5 Months			1.5 Months		
		2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2 W
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Development Period												
4	Peak installation Period												
5	Plantation at Site												
6	Commissioning												*
W=Weeks													

- **Environmental Budget**

A total of 350,000 rupees approximately will be assigned for environmental budget. Tree plantation will be done from this budget. This budget can be increased in case of any requirement.

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Sr.no	PROJECT ACTIVITIES	ALLOCATED BUDGET
1	Water Sprinkling	30,000 PKR
2	Personal Protective Equipment's (PPEs)	100,000 PKR
3	Safety & awareness Board	50,000 PKR
4	Sanitation and Waste disposal facilities, Solid Waste Bins	80,000 PKR
5	Tree Plantation	90,000 PKR
6		

		Total Amount	**350,000 PKR**

III. Environmental Management Team along with their Roles and Responsibilities:

It is the responsibility of the management of the project to ensure that monitoring of air, water, soil and noise are being carried out efficiently and properly maintain the records of monitoring in order to access the environment quality. There should be precise recording and maintenance of all information generated during the monitoring. The management must hire a person to look over the monitoring. It is also the responsibility of management to ensure that all mitigation measures are being implemented to eradicate the possible adverse environmental impacts. For capacity building, all the employs should be given awareness about the environment and what should be their roles to protect the environment. Hired workers should be aware of the safety procedures and what to be done in emergency situations. Lectures should be given on environment safety twice a year. Training should be conducted yearly or twice a year to cope with emergency situations. The management must ensure that environment management plan is properly carried out. The EMP aims to ensure that

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- Site activities are well managed
- All environmental safeguards are carried out correctly
- Coordination is made with other trades
- Adverse impacts on environment are minimized
- The biodiversity of the site is conserved or enhanced
- All relevant legislation is complied with
- The project is monitored for environmental impacts

Local workers will be hired during operation phase and one person from management should be there in order to implement EMP for construction phase. There will be 25-30 workers during construction phase and 30 workers will be hired during operational phase of the project. There will be a contractor who will head the workers in construction phase and supervisor will head the workers during operational phase. It is the responsibility of

management that contractor and supervisor should implement safety procedures of health and environmental safety.

The environment management and monitoring plan will be implemented by the following;-

- **Project Manager**
- **Supervisor**
- **Contractor**

The proponent will also manage EMP during operational phase and at least one person (supervisor) should be given the task to work on EMP and check and monitor that all the activities are going in compliance. Furthermore, monitoring of different parameters will also be done on regular intervals to check the quality parameters related to environment.

The duty of that person (supervisor) from management side would be to:

- Describe how it fits into the overall planning process for the project
- Detail the activities that are to be carried out
- Identify the impacts those activities may have on environment
- Propose environmental control methods to be used to prevent or minimize those environmental impacts
- Assign responsibility for each control measure to specific staff members
- Identify key monitoring parameters and schedule of monitoring of these parameters
- Identify training requirements at various stages of the development of the project
- Identify the resources required to implement the EMP and outline relevant expenses arrangements

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Organizational structure & Responsibilities

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

Primary Responsibilities

The administration is primary responsible for implementing EMP within this project construction and operational phase

Operational Management and Control

Conducting the operational activities in the environmentally sound manner will be the responsibility of the administration.

Supervision and Monitoring

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

IV. Proposed Monitoring program to assess Performance or output of EMP:

The proposed monitoring program to access the performance of suggested mitigation measures and the output of EMP along with the role & responsibility of Environmental Management Team is discussed in detail.

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Development and Operation Phases					
Land Resource	Solid Waste and By-Products	Implementation of SW* Management System	• Record keeping and timely transfer of SW from bins and its ultimate disposal • Incineration of chemical residues	Weekly and Annually	Contractor
	Soil Contamination	Implementation of Management Plans	Visual monitoring and regular site inspection Incineration chemical residues	Daily, Monthly and Annually	Project Manager

Air Resource	Air Emission	Air quality will deteriorate due to transportation related activities and during the production of the final goods	Monitor of the air exhaust emissions as per SMART parameters	Monthly Monitoring	Project Manager/Self-Monitoring
Ecological Resource	Flora	Uprooting of trees during construction phase and maintenance of photographic record of the removed vegetation	Inventory of uprooted trees and re-vegetation plan during operation phase	During Baseline Survey, once in a year and after the completion of the project	Project Manager/Self-Monitoring
Wastewater		Wastewater will be generated mainly from domestic use	parameters on regular basis before finally discharging	Monthly basis	Project Manager/Self-Monitoring
Noise		The noise will be produce during constructional and operational	Noise will be monitored through Digital Sound Meter	Monthly	Project Manager/Self-Monitoring
*SW= Solid Waste, **EA= Executive Agency					

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V. Proposed EMP Reporting and Reviewing procedures:

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

Regular monitoring will be required to check that the construction and operation is not going to cause any adverse environmental impacts; hence monitoring visit will be done once in a month during construction phase. During these visits samples will also be taken to check the quality of air, water and soil etc

Parameter/	**Location**	**Monitoring**	**Mechanism Monitoring and**

Receptor			Reporting Frequency
Water Quality	• Ground Water • Surface Water	Discrete grab sampling and laboratory testing of water samples.	• Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. • Discharges from the construction sites should be tested for temperature, PH and turbidity. • Treated effluent discharges from the worker's camp to be tested for PH TSS and BOD.
Dust Emissions	• Tracks along the roads during construction period.	Ambient particulate matter monitoring.	• Sampling and laboratory testing should be done on monthly basis during the construction
Noise Levels	• Camp sites, • Selected Locations alon the access.	Noise meter	Monthly during the construction Stage.
Air Quality	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoring system. Monitoring of ambient air quality.	• Monthly monitoring of air pollution parameters including PM_{10},NO_X, SO_X; CO. Hydrocarbons during the construction period, and quarterly monitoring ofPM_{10},NO_X, SO_X; CO VOC_S during the operation stage,
Cutting of trees	In all project area during the construction	Periodic visits Site to ensure that	Reported on monthly basis during the construction period, and once in a year monitoring and reporting during the

	stage and operation stage.	trees cutting is prohibited.	operation period.
Socio-cultural Environment			
Inconvenience community	All around the project area	Consultations with community to get feedback about inconvenience due to the construction activities to perform their daily routine chores.	Monthly monitoring and reporting during the construction period.

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- **Training Schedules**

The whole staff will be given training on different things like:

1- Health Safety & Environment Awareness Session

This training would be for whole unit staff and it would be done once in every 6 months.

2- Emergency Preparedness Training

This training would be arranged once in a quarter of every year by hiring consultant firm. This training would be helpful to ready the employees to handle any kind of emergency situation.

3- Fire Safety

This training would be for whole staff and it would be done once in every 6 months.

- **Equipment's Maintenance Plan**

The said unit maintains the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The unit shall maintained PPEs, medical facilities, firefighting Equipment's, SOPs, conduct trainings, design for proper fencing and records for their periodic fillings or replacement. All machines require routine cleaning and

maintenance after every three months and an annual service which costs around 1% to 5% of the total cost depending upon the use of the machine and operator's skill. The inspection should be done because inspection process will highlight any kind of disorder in them prior to its occurrence. All the mechanical equipment will be cleaned on regular intervals of time, like on a very seventh day, and necessary maintenance will be done.

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Involvement of Stakeholders/Public Consultation

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7. INVOLVEMENT OF STAKEHOLDERS/PUBLIC CONSULTATION

7.1 GENERAL

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

The objectives of this process were;

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

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7.2 IDENTIFICATION OF STAKEHOLDERS

There are two types of stakeholders, i.e.

a. Primary stakeholders
b. Secondary stakeholders

7.2.1 Primary Stakeholders

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

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

7.3 STAKEHOLDER ENGAGEMENTS PLANNING

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

7.3.1 Stakeholder Consultation during the Preparation of EIA Report:

The consultation with the primary and secondary stakeholders has been conducted initially during the preparation of the EIA report.

7.3.2Stakeholder Consultation / Public Hearing during the Approval of the project:

The proponent is bound to complete as a regulatory obligation by the Environment Protection Agency (EPA), Punjab to conduct such Consultative Event known as "Public Hearing" under Section 12(4) of Punjab Environment Protection Act, 2012. This process shall be carried out during the review of the project to get the Environmental approval from the EPA, Punjab, Pakistan.

During this process following activities shall be carried out.

i. The proponent shall cause to be published, in any English or Urdu national newspaper, a public notice mentioning therein the type of project, its exact location,

ii. The public notice issued shall fix a date, time and place for public hearing of any comments on the project or its EIA. The date fixed for public hearing shall not be earlier than 30 days from the date of publication of the notice.

iii. The EPA shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.

iv. All comments received by the EPA from the public or any Government Agency shall be collated, tabulated and duly considered by it before its decision for approval

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7.4 STAKEHOLDER CONSULTATION PROCESS

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

Table - 7.1: Process of Stakeholder Consultation

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

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Stakeholder consultation for this project was planned during the preparation of EIA report. In first step during the scoping, which has already taken place, consisted of meetings with individuals, groups, relevant organizations and government departments, which are in some way linked to the project and therefore considered stakeholders. The meetings were conducted to inform stakeholders about the project and how it may affect their lives/activities, and to record their concerns, whether real or perceived. Through the use of various tools the study team tried to involve the stakeholders in active decision-making. The results of this exercise are described below, where mitigation measures have been developed addressing the pertinent stakeholder concerns.

7.5 PRIMARY STAKEHOLDERS CONSULTATION

Apart from gathering of quantitative data through household survey of the area of influence of the project and survey of local community to share the information about the project and record their concerns/ feedback associated with this project. In this context, nearest

community shared their view point regarding the assessment especially procedure for entering their concerns/ grievances, employment opportunities, and implementation of the project.

Topics for Discussion

The topics discussed in the consultations were:

- Employment and livelihoods of communities.
- Gender and women issues
- Contractor's camp and access
- Environmental issues during construction and operation of project
- Company responsibility for employment, etc.

7.6. PROPONENT ENVIRONMENT MANAGEMENT TEAM:

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

7.7. THE RESPONSIBLE AUTHORITY

The proposed project shall be the responsible authority to take all measures prior to start the project and during operation.

7.8. OTHER DEPARTMENTS AND AGENCIES

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

7.9. ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Team of Pro Green Environmental Consultants visited the project site, had discussion with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own businesses, doctors, some of them communicated but according to social value of the area they mostly hesitate to communicate comfortably and

get pictured. People provide the massive information about the project and have positive remarks regarding the project development.

7.10. Affected and Wider Community

There is no affected community present in the area of proposed project. Consultant's team has consulted with the inhabitants of different villages. The remarks of people are positive regarding the project and people foresee positive impacts like employment opportunities, business, development of the area etc.

7.11. COMMUNITY CONCERNS

7.11.1. Project Approval

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

7.11.2. Resettlement/ Relocation

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

7.11.3. Local Employment

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

7.11.4. Interaction with Local Community

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

7.12 MEETINGS WITH SECONDARY STAKEHOLDERS

The following stakeholders were consulted on different occasions during the preparation of EIA to seek their inputs, feedback and opinion on the design and scope of the project. The offices and Individuals who were consulted are as follows:

- Office of District Officer, Environment Protection Agency, Lahore
- Chamber Of Commerce & Industry
- Department of Social Welfare, Lahore
- Department of Wild Life and Fisheries
- Sui Northern Gas Pipe Line (SNGPL),
- Human Federation Organization (Local NGO)

STATISTICAL ANALYSIS

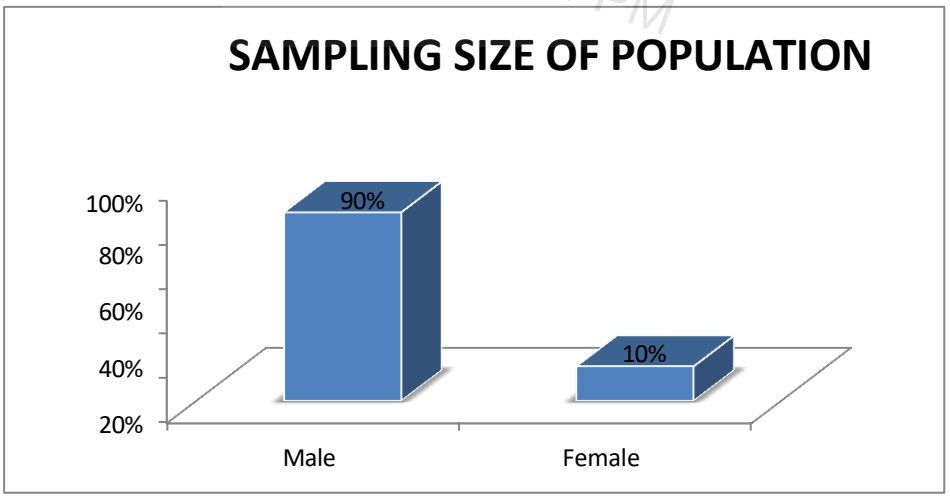
SAMPLE SIZE

Sample size of 40 respondents was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey.

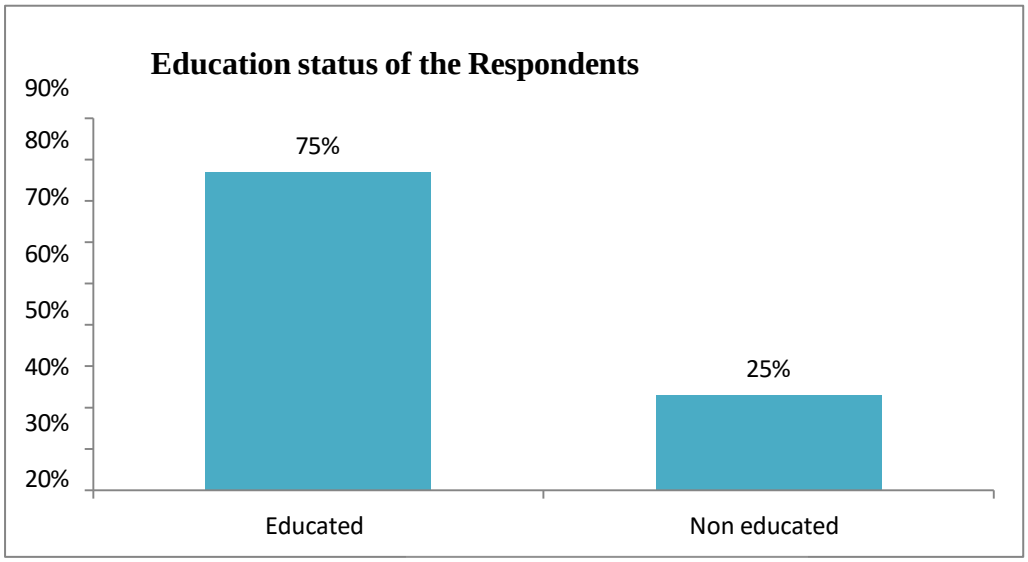
STATISTICAL ANALYSIS

SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site area through questionnaires. Graphical Analysis of survey is given below.

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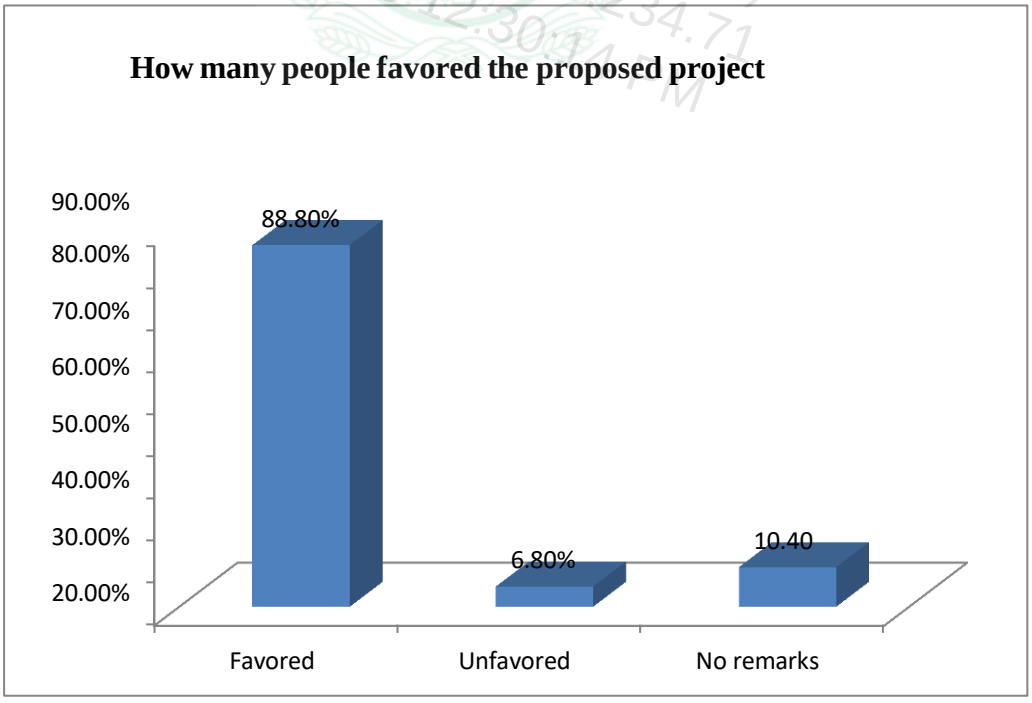


In the sampled population, 90% respondents were male while 10% respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



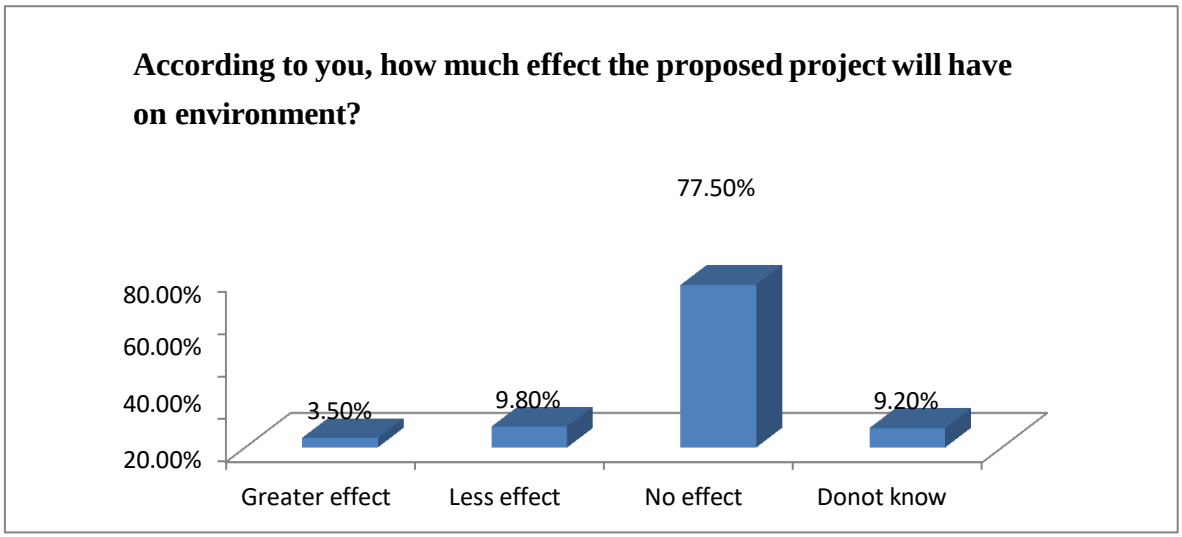
In the sampled population, 75% respondents were educated while 25% were uneducated. Overall education status of the area is good.

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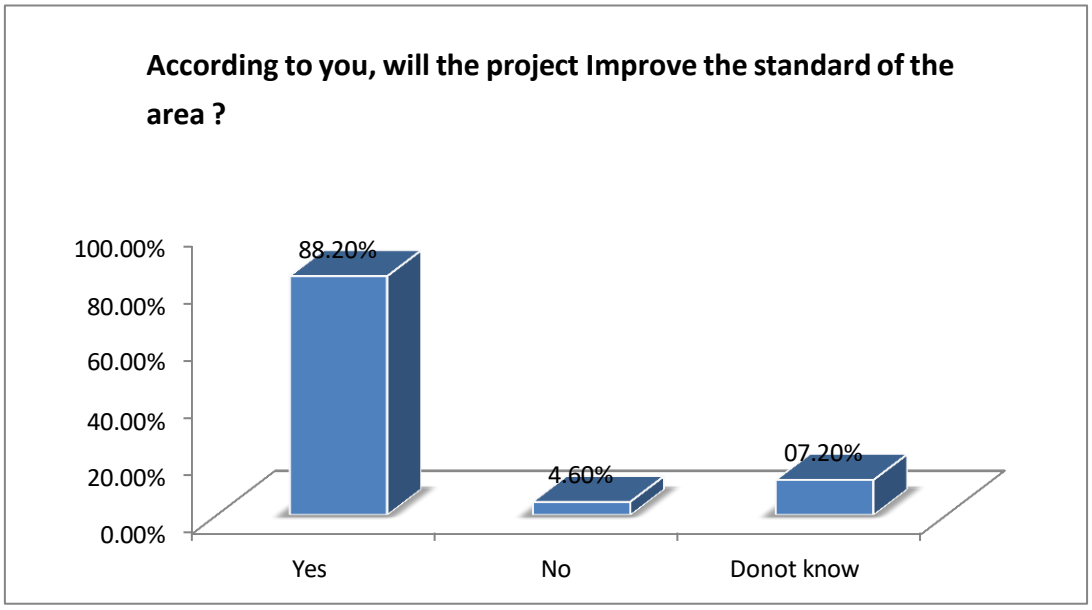


As per survey, 88.80 % people favored the proposed project and they gave positive remarks regarding the subject project. While 10.40% respondents had no opinion regarding the project

and 6.80% respondents were not satisfied with the proposed project because they think that development will affect the natural aesthetics of the area.



As per survey, 3.50% respondents said that subject project will affect the environment of the area, 9.8% said that there will be less effect on the environment, 77.50% respondents said that the project will not affect the environment and 9.20% said that they have no idea regarding the subject project. Most of the population was not aware about the environmental importance; they were giving their remarks according to their own knowledge



As per survey, 88.2 % people said that the project will improve the standard of the area, 4.60% said that it will have no impact on the area while 07.20 % respondents gave no remarks.

7.13. OUTCOMES OF CONSULTATIONS

The outcomes of the primary and secondary consultation are precisely briefed as below:

- All actions associated with the project should be taken through proper consultations.
- There should be a continuous community consultation program throughout the project implementation period.
- There should be employment opportunities for skilled and unskilled people, preference should be given to the local communities.
- To include local people wherever possible in jobs during the construction of project. Thus, income generating activity of the area should be enhanced.
- Reduce the chances of environmental effects like noise/ vibration and dust emissions caused to the nearby community.
- Overall the project is good for the surrounding villagers in specific and the country in general.
- No serious concerns with the project because this project will increase the employment and enhance the

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Site suitability

- This site which is selected for proposed extension is devoid of any tree cover and has no environmental sensitivity.
- The proponent selected the site because the site has the availability of basic human necessities such as roads and easy access to markets.
- The proposed site is best suited and economically viable option for the proponent. The proponent has no other land for carrying out his project.

Appendices

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	Appendices	Detail
	1- Glossary	This is attached with this report.
	2- List of Abbreviations	This is attached with this report.
	3- List of individuals or organizations consulted along with their written feed back	This is attached with this report.
	4- Sources of data and full list of all reference material used	This is attached with this report.
	5- Terms of references for environmental reports and those given to individual specialists	This is attached with this report.
	6- List of names, qualifications and roles of team members carrying out the IEE/EIA study	This information is given on page 20 of this report
	7- Approvals from other concerned departments	

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1.GLOSSARY:

Words	Dictionary
Anticipated Impacts	Expected Impacts
Low Permeable Membrane	Which resist the things to pass through
Magnitude of operation	Scale of carrying out project
Endangered species	Which will extinct in near future
Threatened species	Those in danger of extinction
Aesthetic Beauty	Scenic beauty of the area
Domestic wastewater	Wastewater from sanitary uses
Ambient	Surrounding of all sides
Topography	Physical features of the site
Yield	Productivity
Watercourse	Channel of water
Wildlife Sanctuary	A protected area within which wildlife is protected
Baseline	Conditions prevailing at the time of study or before initiation of any project
Environment Budget	Monetary assets reserve for Environmental activity
Evaluation	Assessment
Fauna	Variety of Animals found in an area
Flora	Variety of Plants found in an area
Million	10,00,000
Mitigation Measures	Measures aimed to curtail or entirely control an adverse impact or to compensate some loss or cause additional improvements
Nuisance	Annoyance
pH	Negative log of hydrogen ion concentration

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Potential Issue	Problems likely to arise
Proposed Project	Planned activity
Residual Impacts	Impacts left behind after implementation of the mitigation measures
Significant	Important
Statutory Requirements	Legal Requirements

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2. LIST OF ABBRIVIATIONS:

CO	Carbon monoxide
CO_2	Carbon dioxide
°C	Degree Celsius
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
CSR	Cooperate Social Responsibility
CSR	Cooperate Social Responsibility
EMMP	Environment Management & Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environment Protection Department
OGRA	Oil and Gas Regulatory Authority
HSD	High Speed Diesel
HSMS	Health Safety Management System
FM	Fire Monitor
FH	Fire Hydrant
HC	Hose Cabinet
GWT	Ground Water Table
PM_{10}	Particulate Matter >10
SPM	Suspended Particulate Matter
HC	Hydrocarbon
BOD	Biological Oxygen Demand

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TSS	Total Suspended Solid
VOC	Volatile Organic Compounds
ERP	Emergency Response Plan
BDS	Bomb Disposal Squad
HSE	Health Safety and Environment
SWM	Solid Waste Management
GDP	Gross Domestic Product
IEE	Initial Environmental Examination
Km	Kilometer
Ltd.	Limited
M/S	Masses
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
O_3	Ozone
PA	Protected Area
PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment's
SFT	Square Foot

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SOPs	Standard Operation Procedures
SO_x	Oxides of Sulphur
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WHO	World Health Organization

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4. REFERENCES

- Guidelines for Preparation and Review of Environmental Reports
- Guidelines for Public Consultation
- Labor Laws
- Pakistan oil (refining, blending, transportation, storage and marketing) rules, 2016
- Oil and Gas Regulatory Authority Ordinance, 2002
- Oil and Gas regulatory Authority (amendment) ordinance 2009
- Meteorology Department Data (from website)
- National Environmental Policy 2005
- National Environmental Quality Standards (Self-Monitoring and Reporting by Industries) Rules, 2001
- Pakistan Biosafety Rules 2005
- Pakistan Environmental Protection Act, 1997
- Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations, 2000.
- The Land Acquisition Act, 1894
- The Punjab Local Government Ordinance, 2001
- Punjab Environmental Protection (Amendment) Act, 2012

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Detail of Environmental Consulting Firm

This EIA study has been carried out by Pro Green Environmental Services. This Firm comprises environmental engineers, environmental lawyers etc.

Name	Roles
Muhammad Ahmad Chughtai Environmentalist	Team leader and Author
Gulzaib Afzal Environmental Engineer	Monitoring Assistant and Author
Muhammad Hassan Chemist	Monitoring and Author
Muhammad Masud Adil Environmentalist	Author

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