An ENVIRONMENTAL IMPACT ASSESSMENT report

For

Development of Housing Scheme namely

WADI-E-AFFAN

LOCATED AT

Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad.

PROJECT PROPONENT:

MR. Akbar Humayun

PREPARED BY

Applied Environmental Associates

PEC Certified
209 – C Faisal Town, Lahore

Submitted to:

Environment Protection Agency, Punjab

EXECUTIVE SUMMARY

This executive summary provides an overview of the main findings of Environmental Impact Assessment report for the Development of Housing Scheme Namely Wadi-e-Affan located at **Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad**. The major purpose of this project is to develop a modern housing scheme for providing the residents a clean and green environment so that they could live a comfortable life. Proponent has made a proper plan to make the project for residents which will meet the current requirements of residential scheme. To maintain the natural beauty, proponent has made provision of trees, plants and green belts in the landscaping of the project.

PROJECT OUTLINE

This report is associated to the Development of a Modern Housing Scheme comprising of Residential Plots, Commercial Center, Parks/Open Spaces, Public Building, Grave Yard, Mosque, Roads, Parking, OHR, Solid Waste, Disposal area, passage, and all other basic necessities of life are easily available and approachable in said scheme. Scheme will have a capacity to approximately 273 residential plots. This project will cover the total area 321.10 Kanal approx. Total cost of project will be approximately **PKR 300 million**. Nature of area is residential. Coordinates of project site are **31°27'47.3"N 73°13'25.2"E.**

Salient features of project: assessment

Proponent Name	**Akbar Humayun**
Designation	**Managing Partner through Wadi-e-Affan** (partnership deed is attached)
Project Title	Development of Housing Scheme Namely Wadi-e-Affan
Project Location **Co-ordinates**	Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad **31°27'47.3"N 73°13'25.2"E**
Consultant Name	Applied Environmental Associates
Nature of the Area	Residential
Project Cost	Approx. PKR 350 million

Area of the Project	321.10 Kanal
Source of Water	Ground Water (220-280 ft.)
Wastewater **Wastewater Disposal**	Only Domestic Only domestic waste water will be generated which after primary treatment will be dispose of in the nearby drainage. (approval Obtained from WASA)
Source of Power	WAPDA
Solid Waste	Solid waste will be managed as per municipal practices of the area. The proponent has submitted an application for the contract of solid waste management.

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Key impacts related to the construction phase include:

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

Mitigation measures recommended to be incorporated into the project include running the machines and vehicles on good quality (low-sulfur fuels) in good working order ensuring regular maintenance, tuning and servicing, and providing them with emission control devices, such as mufflers and silencers, etc. Water suppression and covered transportation and storage of the construction materials and slow driving on unpaved roads will control dust emission. Regular testing for leakage detection will also be ensured. Solid waste of construction activities will be used for flooring, while the remaining solid waste will be managed as per practices in the area. For community safety, irrelevant persons will not be allowed inside. Safety of the workers will be ensured by discouraging any careless attitude of workers and providing the workers with, and encouraging them to use PPEs. Details analysis is given in **chapter 4.**

Key impacts related to the operation phase include:

- Wastewater

- Solid Waste

Only municipal wastewater will be generated, which will be discharged in WASA drain nearby the project site as per recommendations of concerned department after treatment through Sewage Treatment Plant utilizing Biological Oxidation Process The plot for STP installation is 119 as per layout map of the society. Solid waste will also be municipal. Solid waste will not be allowed to pile up and the municipal solid waste will be managed as per municipal practices of the area. Air pollution will not be there in the Housing Scheme. High noise vehicles will not be allowed in said housing scheme. Details analysis is given in **chapter 4.**

ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

During construction, ambient air quality for dust level in particular, vehicle and equipment exhaust, noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. Monitoring Plan has been included in Chapter-5. During operation solid waste management will be monitored. Plan has been included in Chapter-5.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ANNEXURES

Following Documents are attached as annexure.

ANNEXURE I: PROPONENT CNIC

ANNEXURE II: PARTNERSHIP DEED

ANNEXURE III: AKSE SHAJRAH

ANNEXURE IV: LAYOUT PLAN

ANNEXURE V: BASE LINE MONITORING REPORTS

ANNEXURE VI: APPROVAL FROM DISTRICT COUNCIL

ANNEXURE VII: GOOGLE EARTH MAP

ANNEXURE VIII: TEAM OF EXPERTS

ANNEXURE IX: NOC FOR WASTEWATER DISPOSAL

ANNEXURE X: GLOSSARY

LIST OF ABBREVIATIONS

°C	Degree Celsius
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
IEE	Initial Environmental Examination
Km	Kilometer
Ltd.	Limited
LTI	Loss Time Injury
LWI	Loss Work Injury
m^3/h	Cubic meter per hour
M/S	Masses
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
PEPC	Pakistan Environmental Protection Council
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
Pvt.	Private
SMART	Self-Monitoring and Reporting
SOPs	Standard Operation Procedures
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority

CHAPTER 1: INTRODUCTION

1.1 General

For any development project to be initiated in Punjab, it is mandatory to accord Environmental Approval from EPA Punjab under Section-12 of the Punjab Environmental Protection (Amendment) Act, 2012 by filing an IEE or EIA before EPA Punjab, as may be defined in Review of IEE/EIA Regulations, 2022 or recommended by EPA Punjab. This Report presents the **Environmental Impact Assessment (EIA)** for the Development of Housing Scheme Namely Wadi-e-Affan **at Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad**. For this purpose, the proponent has decided to engage environmental consultants, **M/S Applied Environmental Associates** to conduct Environmental Impact Assessment (EIA) for the Development of project. The purpose of this study is to identify the environmental baseline i.e., physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project and to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulation of Environmental Management Plan (EMP) for implementation of the project in environment friendly manner.

This report is prepared by critically examining of the environmental factors which might be affected due to construction and operation of the project. The purpose of this report is to analyze impacts of the project. This EIA provides the basis for a determination of the degree of the environmental impacts of the project.

The report provides relevant information, as required under the officially approved format, to help the decision makers i.e., EPA Punjab before issuing for the Environmental Approval.

1.2 The Proponent

The details of the Proponent of said Project are given below:

Table 1 Details of Proponent

Name	Mr. Akbar Humayun
CNIC	33100-5599255-7

Address	Office No 15, Siddique Plaza, 1st Floor Circular Road, Faisalabad.
Contact person	Mr. Wasiq
Contact Number	0328-3498120

1.3 The Project

The Project under study is titled as **Development of Housing Scheme Namely Wadi-e-Affan**. Its salient features have been described later in this Chapter, Chapter 2 and briefly in Executive Summary of the EIA.

1.3.1 Nature of Project

This project is the Development of a Housing Scheme.

1.3.2 Size of Project

Said Project will provide 273 Residential Plots, Commercial Center, Parks/Open Spaces, Public Building, Grave Yard, Mosque, Roads, Parking, Solid Waste, Disposal area, passage and all other basic necessities. The statement of area of said housing scheme is given below:

Table 2 Statement of Area

Sr. No.	Land Use Description	Area in Kanal	Percentage	No. of Plots
1	Residential	175.20	54.56%	273
2	Commercial	16.06	5.00%	04
3	Park	22.50	7.01%	05
4	Green Strip under HTL Line	2.32	0.72%	03
5	PB	3.22	1.00%	02
6	PB FDA	3.22	1.00%	02
7	Solid Waste & STP	0.5 and 1.5	0.42%	02
8	Grave Yard	6.42	2.00%	01

9	Parking	3.80	1.18%	03
10	Road	87.86	27.37%	—
	Total	**321.10**	**100.00%**	

1.3.3 Location of Project

This project is to be located at Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad.

1.3.4 Area of Project

Project will have total area of 321.10 Kanal**.**

1.3.5 Details of Consultants

For the preparation of the Environmental Impact Assessment report of the said project, the proponent has hired the services of the environmental consultants; **M/S Applied Environmental Associates.** Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report. Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report.

Environmental Compliance Studies

- Initial Environmental Examination
- Environmental Impact Assessment
- Socio-Environmental Impact Assessment
- Green House Gas Estimation
- Environmental Management Plan

- **Air Monitoring Services**
  - Ambient Air Quality Monitoring
  - Vehicular Emissions Monitoring
  - Indoor Air Quality Monitoring
  - Stack Emissions Monitoring
- **Water Analysis/Monitoring Services**
  - Drinking Water Analysis
  - Waste Water Analysis

- Surface Water Analysis
- Flow Monitoring

Contact Details:

Name	Azka Anwar on behalf of Applied Environmental Associates
Address	209 – C Faisal Town, Lahore
Contact No.	0092 314-4999563

1.3.6 Team Members

Qualified professionals with relevant experiences of conducting environmental assessment have contributed to the preparation of EIA report. The team has been shown in Table-1-1.

Table 3: Team of Experts

Sr. #	Name	Qualification	Roles
Environmental Scientist			
i.	Mian Awais	BS (Hons) Environmental Science	Project Head
ii.	Dr. Afzal Hussain	PhD Environmental Science	Social Survey
iii.	Ms. Zoha Anwar	M.phil Environmental Science	Report Writing
iv.	Ms. Kiran	BS (Hons) Environmental Science	Environmental Monitoring
v.	Mr. Shahzad	BS. Hons Environmental Science	Environmental Monitoring

1.4 Purpose of Report

The development of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. The development and commencement of housing society will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states "*No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Environmental Impact Assessment (EIA) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof.*" Later on, Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022 provided the guidelines for categorizing the Projects. According to Schedule-I of PEPA (Review of IEE and EIA) Regulations, 2022; H (I) Category of Urban Development and Tourism mentioned in Schedule I requiring IEE.

The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.5 Structure of Report

This EIA reviews information on existing environmental attributes of the Study Area. Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included. The report predicts the probable impacts on the environment due to the said housing scheme. This EIA also proposes various environmental management measures. Details of all background environmental quality, environmental impact/pollutant generating activities, pollution sources, predicted

environmental quality and related aspects have been provided in this report. The structure of the assessment report will be as follow;

- Description of the Project
- Description of Environmental and Social Conditions
- Assessment of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Public Consultation
- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

CHAPTER 2: Screening & Scoping

2.1 Screening

As per Review of Initial Environmental Examination (EIA) and Environmental Impact Assessment (EIA) Regulations, 2022 the Said project falls under H (I) Category of Urban Development and Tourism mentioned in Schedule II requiring EIA.

Scoping

Temporal and Spatial Boundaries:

Said project will have positive and negative impacts at local and national level. The Said project will contribute to enhance the revenue of country. Furthermore, it will provide quality of life to Pakistani nationals and sustainable use of resources will be ensured. Positive changes in lifestyles will occur due to availability of income when the natives take up jobs during construction and operation phase of said Housing Scheme.

2.2 Significant Impacts identified in scoping:

Operation Phase

- Particulate emissions
- Degradation of surface water quality due to process water and sewage direct disposal
- Work injury/hazards/incidents/accidents
- Disturbance of communities due to noise
- Solid waste management

CONSIDERATION OF ALTERNATIVES:

2.3 Alternatives

Site Alternatives

The development of a Housing Scheme is a commercial venture. 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 other consideration. Keeping these requirements and their availability, the present site is the best suited for the development of the project. The area is far away from the dense industrial activity. All the other basic infrastructural requirements are

available at the selected site. Accordingly, the selected site is ideally suited for establishment of the Scheme and no other site was considered as the selected site is within a residential cum agriculture area and no industry is nearby. Distances from nearest receptors and facilities are:

Project/ Technology Alternatives:

No project alternative is feasible to be considered as the area is in keen consideration of proponent, as well as the machinery will be exported from various regions. The technology which will be used is latest, and the machineries will have built in air emission control technologies.

Labor:

Cheap labor has always been the backbone of the economy of Pakistan. Cheap and ample supply of labor strengthens the industrial and agriculture sector of the country. There are approximately 7 upstream and 6,000 downstream production units in the country which provide employment directly and indirectly to ~ 600,000 people. Of the downstream units, only 700 belong to the organized sector while the remaining 5,300 units operate in the unorganized sector. Also, this project will emphasize to hire local labors as many as possible increasing the occupational status of the area. Considering the above-mentioned factors, no project alternative can be envisaged.

Environmental alternatives

Wastewater Treatment:

Wastewater, or sewage, originates from human and home wastewaters, industrial wastes, animal wastes, rain runoff, and groundwater infiltration. Generally, wastewater is the flow of used water from a neighborhood. The wastewater consists of 99.9% water by weight, where the remaining 0.1% is suspended or dissolved material. This solid material is a mixture of excrements, detergents, food leftovers, grease, oils, salts, plastics, heavy metals, sands, and grits. Types of wastewaters include: municipal wastewater, industrial wastewaters, mixtures of industrial/domestic wastewaters, and agricultural wastewaters. Typical agricultural industries include: dairy processing industries, meat processing factories, juice and beverage industries, slaughterhouses, vegetable processing facilities, rendering plants, and drainage water of irrigation systems. Subsequent to primary treatment of wastewater, large amounts of dissolved and colloidal material must be removed. Only Domestic wastewater will be produced from the said Project, which will be dispose of in the nearby drain after the primary treatment.

Economic Alternative

It is cleared that if such huge investment is being done, energy efficient machineries will be installed which will utilize the low power supply. The building will be constructed by following Green Building Laws which will also incline the graph towards optimal use of resources and enhance the ability to utilize the natural resources.

CHAPTER 3: DESCRIPTION OF PROJECT

3.1 General

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

3.2 Objectives of Project

Following are the major objectives of said housing scheme:

1. To provide sustainable living standards and to meet the ever-increasing demand of shelters for the locals at economical rates to sustain population growth.
2. Minimization of environmental impacts by adopting best management practices and to meet the set criteria for housing societies.
3. To support the local economy through significant investment and upgrades to infrastructure.
4. To develop modern housing scheme to provide residents a clean and green environment.

3.3 Location and Layout of Project

3.3.1 Location of the Project

Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad. Google map is given below at the end boundary:

Figure 1: Google map of project site

3.4 Nature of Area

Said area is agricultural cum residential in nature.

3.5 Land Ownership

Land ownership proof has been attached as **Annexure.**

3.6 Government Approvals

Government Approvals have been attached in the Annexure.

3.7 Land Use on Site

The land use on the site will be Residential and its under undisputed ownership of proponent so no need to buy or dismantle any new area or building.

3.8 Road Access

The said Project area has road accessibility as it is accessible through Wadi-e-Sitara Housing scheme upto **Lahore-Sheikhupura Road**.

Figure 2: Road Access

3.9 Vegetation features of the site:

Some fields and plants are present on site. These plants will not be removed and if removal is required then 3-5 folds trees will be grown. Trees will be grown in all parks and spaces (marked on map). These plants will include ornamental plants.

3.9.1 Cost and Magnitude of Operation

The total cost of the project will be **Approx. PKR 300 million** approximately and magnitude of operation includes:

- Detailed site survey, planning and demarcation of the various regions in the Project Area.
- Construction of public and social amenities such as; road construction, infra-structure development/public areas, installation of street-lights, demarcation of parks and graveyard.
- Plantation of herbs, shrubs, trees and grasses on the designated area.

3.9.2 Schedule of Implementation

The schedule of implementation of construction phase of Said Project is approximately six months and the detail timeline of the development period is given in Table:

Table 4: Timeline for development period

Sr. #		3 Months	3 Months

	Activities	1M	1M	1M	1M	1M	1M
1	Detailed Designing						
2	Lean Development Period						
3	Peak Development Period						
4	Restoration of Site (Plantation/green belt development)						
M=Month							

3.10 Description of Project:

The said project site is spread over an area of 321.10 Kanals. This will be developed into 273 residential plots; commercial center, parks/open spaces, mosques, Graveyard, Public Building, parking, OHR, Solid Waste, Disposal area, roads and all other basic necessities of life are easily available and approachable in said housing scheme. The said Housing Scheme shall provide electricity, water supply and sewerage system. The statement and description of area is given in the table below.

Table 5 Description of area

Sr. No.	Land Use Description	Area in Kanal	Percentage	No. of Plots
1	Residential	175.20	54.56%	273
2	Commercial	16.06	5.00%	04
3	Park	22.50	7.01%	05
4	Green Strip under HTL Line	2.32	0.72%	03
5	PB	3.22	1.00%	02
6	PB FDA	3.22	1.00%	02
7	Solid Waste & STP	0.5 and 1.5	0.42%	02
8	Grave Yard	6.42	2.00%	01

9	Parking	3.80	1.18%	03
10	Road	87.86	27.37%	—
	Total	**321.10**	**100.00%**	

3.10.1 Features of the Project

The designing of Housing Scheme namely Wadi-e-Affan has been done in such a way that it should be remarked as one of the modern and beautiful Residential Scheme due to its pleasing look.

Following are the main features of the Housing Scheme:

- Optimum use of space
- Wide roads and streets with street lights
- Excellent sewerage and drainage facilities
- Efficient solid waste collection and disposal system
- Provision of commercial, recreational and religious facilities,
- Landscaping of open areas i.e., trees, park etc.
- Complete administration set up for the operation of the Scheme.

3.11.2 Facilities Provided to the Residents

Said Housing Scheme will provide excellent facilities to its residents. Residents will have access to the basic life facilities Parks, parking, public building, graveyard etc. within the premises of the Scheme and they will not have to go far for their everyday needs. In short, all basic necessities will be provided in adequate manner.

3.11.3 Environmental Considerations

The said Housing Scheme will be an environment-friendly Scheme. Sewerage water from the houses and commercial facilities will be disposed of according to concerned irrigation department recommendation drainage. The residents will not be allowed to throw their wastes in the open area. Sanitary workers will be hired by the Scheme for handling of solid waste. Final disposal of the solid waste will be done in accordance with the municipal practices of the area.

3.10.4 Public Amenities

Following are the main amenities that will be available to the residents of Housing Scheme namely Wadi-e-Affan.

3.10.4.1 *Natural Gas Supply*

The natural gas supply to the residents of the said Housing Scheme will be the responsibility of the Sui-Northern Gas Pipelines Limited (SNGPL).

3.10.4.2 *Electricity Supply*

WAPDA will be engaged to supply power to the inhabitants of the Housing Scheme namely Wadi-e-Affan. The efficient utilization of the electricity will be making sure by the residents. To promote the sustainable development solar-powered generated electricity can be utilized as an alternative source of energy. To conserve electricity during operation phase energy efficient electric lights and appliances may be used.

3.10.4.3 *Freshwater Supply*

Approximately 1550 Liters/d water will be required during construction phase. The water requirement for the project during operation phase is only for domestic purpose. Assuming 5 persons per plot and per capita demand to be 180 lpcd, total water requirement during operation phase will be approx. 245 m^3/d. This requirement will be fulfilled through groundwater from depth of 220ft.

3.10.4.4 *Wastewater disposal*

Only municipal wastewater will be generated and will be discharged after treating through settling tanks (due to low quantity of wastewater) as well as biological oxidation process in Trunk Sewer. Approx. 196 m^3/day will be the wastewater discharge of colony. Recommended/Suggested technology is Biological Oxidation / Aerobic Treatment. Plot (119) of wastewater treatment is allocated in said housing scheme. Waste water will be discharged after primary treatment in recommended drain of WASA.

3.10.4.5 *Solid Waste Collection and Management*

During the construction phase the solid waste will mainly consist of the construction material such as; steel, wood, sand, debris and packaging material. They are reusable and will be sold to local contractors. During operational phase the solid waste will be mainly generated by the residents mainly consisting of the municipal solid waste such as; kitchen waste, plastic, paper,

tin, etc. The solid waste generation rate by each person is approximately 0.4-0.6 kg/day. The estimated amount of the solid waste generated will be 650-750 kg/d approx. The solid waste collection system will be formulated by the Proponent and it will be a door-to-door collection system. Domestic solid waste during operation phase will be disposed of according to the municipal practices of that area. The residents will not be allowed to throw their wastes in the open area. Sanitary workers will be hired by the Scheme for handling of solid waste. Final disposal of the solid waste will be done in accordance with the municipal practices of the area. The proponent has submitted an application for the contract of solid waste management.

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 GENERAL

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This chapter of Initial Environmental Examination (IEE) encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

A Social survey in the Project Area was also carried out through consultation with the various communities. Local residents living in the Project Area were interviewed to obtain their feedback regarding the construction of the proposed Project and its impacts on their daily life/future in the short and long term.

4.1 PHYSICAL ENVIRONMENT

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the Project site but also the city as a whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of project site is presented in the following sub sections.

4.1.1 Topography

Project Site:

The proposed project site is located in residential area. Google map of area is given below:

4.1.2 Hydrology

Project site:

Groundwater from depth of 180-200 ft can be used for drinking and other purpose. Ground water quality report of area is annexed.

4.1.3 Climate

PROJECT SITE:

Temperature observed at site was 43^0C on visit and ranged from a high of 47^0C to a low of 30^0C during the week.

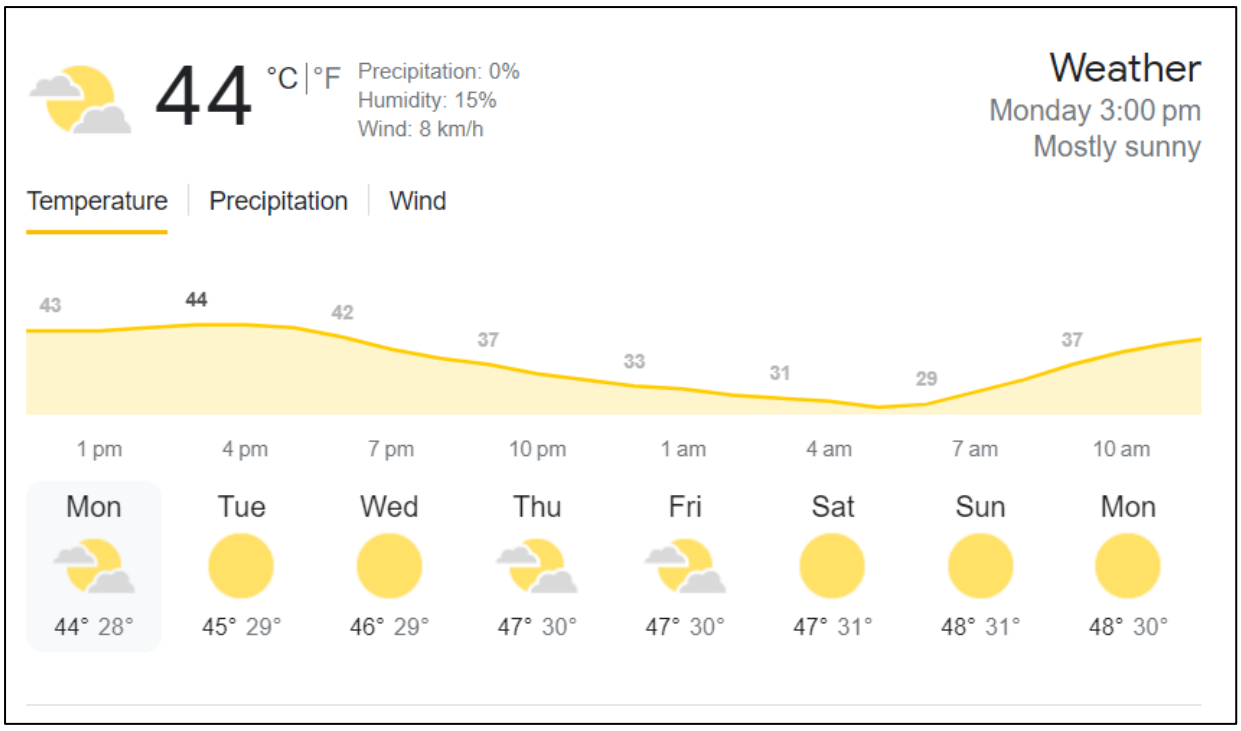

Figure 4-1 Temperature recorded at project site

4.1.4 Noise Level

Project site:

Noise monitoring report of site is annexed.

4.1.5 Ambient Air Quality

Project Site:

Ambient air quality report of site is annexed.

4.2 BIOLOGICAL ENVIRONMENT

4.2.1 Flora

Project Site:

Site is surrounded by residential area.

4.2.2 Fauna

With an increase in the rate of urbanization, the ecology of Faisalabad has been considerably affected but there is no threatened or endangered species found in the project site. No wildlife was present there. Only cats, dogs, sparrows and crows passed by temporarily. No permanent habitat of any fauna was found.

4.3 SOCIOECONOMIC ASSESSMENT

Socioeconomic Assessment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the general public and neighbors.

4.3.1 Health Facilities

Project Site:

Various health facilities are found nearby project site

4.3.2 Educational Facilities

Project Site:

There are a number of private and government schools such as Govt. Girls Primary School, Govt. Boys Elementary School and other private schools. Lahore Grammer School is situated at distance of 2.5 Km

4.4 SOCIO-ECONOMIC SURVEY

From socio-economic survey and interviews conducted, it is concluded that no residential area is present near the project site. The individual assessed from the neighboring communities of the project area were involved in industrial and commercial practices.

Neighboring community inhabitants involved in different occupations were asked about their monthly income but most of them hesitated to tell and stated that they earn just enough to fulfill their basic demands. Regarding the project, almost all of the interviewed members were in favor of the project as it does not involve any chemical manufacturing or pollution causing operational activities which generate pollution.

4.5 QUALITY OF LIFE VALUES

Majority of people in project area are working in shops and some are doing jobs. The locals of proposed area are provided with basic facilities like electricity, roads, transport etc. If we talk about educational facilities then education up to primary level are available in almost all the localities and are easily approachable. They are also provided with health facilities including dispensary and hospital where basic health facilities are provided to workers and community. Common diseases observed in that area were diabetics and heart diseases.

4.6 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

Testing of different parameters was done from a certified laboratory ESPAK to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis) is given in annexure.

4.7 SOCIOECONOMIC SURVEY AND PUBLIC CONSULTATION

For ascertaining the perceptions of different stakeholders about the project, meetings were held with them. These meetings were held in an open atmosphere, in which participants expressed their views freely. Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders.

Methods of Public Consultation

Public Consultation was carried out for two days. The following methods were used for public consultation with project stakeholders in order to ascertain their stakes regarding project implementation.

- Focused Group Discussion
- Scoping Sessions
- Formal Group Meetings
- Informal Group Meetings

List of people consulted

Abdullah Jhanzaib	Umair Raza
Raza Ishaq	Asghar Ali Butt
Chaudhry Ikhlaq	Muhammad Rashid
Muhammad Akram	Ali Chaudhry
Irum Nisar	Zainab Fatima

Awareness Regarding the Proposed Project

Out of total 10 respondents, 72% knew about the project whereas 28% were not aware of the project planning and implementation.

Acceptability of the Proposed Project

Majority of the respondents, 99% favored the construction of the project keeping in view its importance

Concerns and solutions:

COMPONENTS	CONCERNS	SOLUTIONS
Environmental Enhancement	Trees should be planted to avoid any impact	• Trees will be planted along boundary of project • Indigenous tress around the facility should be planted to control air pollution
Socio-Economic Uplift	Workers should be hired from local community	• Proponent has considered hiring labor from local community to enhance the socio-economic condition of the area as this aspect is included in the scope of the proposed project.
Affordable Living	Residency should not be expensive	• Proponent is concerned about the socio-economic condition of the area. The plots will be available and in range for middle class as well.
Solid Waste	Proper disposal of solid waste should be practiced	• A designated area has been planned to establish in the society for the collection of solid waste. Solid waste will be disposed of regularly from the site as per practice.

CHAPTER 5: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 General

Assessment of impacts depends on the nature and magnitude of the activity being undertaken, as well as the type of environmental control measures that are envisaged as part of the project proposal. The potential impacts from the project area are identified and assessed based on the type and scale of the various activities associated with this project.

Several aspects and potential impacts were identified for each phase (Project Location, Construction and Operation) of the development, with impacts evaluated in terms of their nature, occurrence, possibility and severity potential.

5.1 Screening of Potential Impacts

Several impacts are likely as a result of the construction and operation of the project. Such impacts may be direct, indirect or ultimate. For the purposes of this EIA, these potential impacts (whether direct, indirect or ultimate), are assessed based on their magnitude (short-term or long-term) and effect (positive or negative). Impacts are also classified in three groups: impacts due to project location, impacts as a result of project construction and impacts as a result of project operation.

All the potentially significant environmental impacts from the project are grouped below:

5.2 CLASSIFICATION OF IMPACTS

According to the type of potential receptors, the potential impacts are classified. The following receptor categories were used.

Category of Receptor	Description
Community	People their social and cultural values, aspirations and archaeological sensitivity
Land and Soil	Land resources, soil resources
Air Quality	Ambient air quality
Water Resources	Ground and surface water resources
Ecosystem	Vegetation, wildlife and biodiversity

5.3 SCOPING CRITERIA FOR IMPACTS

The identified potential impacts of the project are evaluated on the basis of following criteria;

- The present baseline condition, the change in environmental parameters likely to be affected by the project related activities;
- Is there any impact that environmental standards or environmental guidelines applicable to the project will be breached?
- Is there a high risk of permanent, irreversible, and significant change to environmental condition due to particular project activity?
- Did the community express any concern about this aspect?

5.4 METHODOLOGY FOR IMPACT ASSESSMENT

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

Table 6: Definitions of severity and likelihood of impacts

Level	Severity of Impact (Consequence)	Likelihood
High	Serious / catastrophic damage to local and regional environment Serious threat to corporate reputation/ profitability / ability to do business	High likelihood of occurrence during lifetime of operation Regular / continuous part of operations
Moderate	Measurable damage to the environment Potential to affect reputation / cost Reduced efficiency	Moderate possibility of occurrence during lifetime of operation Periodic / occasional part of operations
Low	Negligible damage to the environment No risk to business	Unlikely to occur during lifetime of operation

Table 7: Impact Significance Matrix

		Likelihood (Probability of occurrence)		
Impact		**High**	**Medium**	**Low**

	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low

The prediction of impacts also includes the duration of impacts in terms of short-term or long-term, nature of impact, geographical location of the impact, reversibility of the impact. The criterion for impact assessment is illustrated in the Table

Table 8: Impact Assessment Criteria

Impact Characteristics	Categories
Nature of the Impact	**Direct:** The environmental parameters that are directly affecting by this project. **Indirect:** The environmental parameters change due to the combinational effect by project and environmental impacts.
Duration of the Impact	**Short term:** Lasting only till the duration of the project. **Medium term:** Lasting from a few months to a year. **Long term:** Lasting for a period much greater than medium term impacts.
Geographical Location of the impact	**Local:** Within the area of project i.e., operation site and access roads. **Regional:** Within the boundaries of the project area. **National:** Within the boundaries of the country.
Reversibility of the impact	**Reversible:** When a receptor resumes its pre-project condition. **Irreversible:** When a receptor cannot resume its pre-project condition.

5.5 What is the problem?

The project is about Development of Housing Scheme Namely Wadi-e-Affan Located at Sq No 33, Killa No 21-Min, 22-Min, Sq No 42, Sq No 44, Sq No 51, Chak No 200 // RB, Faisalabad. The major impact associated with the construction and operation of said Project

includes solid waste management, wastewater management, noise emissions, tree plantation and fire-fighting arrangements.

5.6 When problem will occur and when it should be addressed?

The impacts from the said project mainly occur during the construction and operational phase of the project. These issues include; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts. To tell the description and impacts to Government and public by reports and public hearing.

5.7 Where problem should be addressed?

The problem will be generated from site development and operation of the Housing Scheme. So, it should be addressed on source, i.e., at site within the same timeframe.

5.8 How the problem should be addressed?

Problem should be addressed with its full detail i.e., its magnitude, possible impacts and problem, long time effect, environmental impacts, and proper mitigation measures will be provided according to the nature of the impacts/problems.

5.9 Ways of Achieving Mitigation Measures:

Following ways will be adopted to reduce the impacts of the said project:

5.10 Changing in Planning Design

The design of Housing Scheme is developed considering environmental risk and hazards. As the area is residential lot of other small and large residential areas are present there. Moreover, there is no endangered and threatened species present in the project area. Any human settlement or infrastructure was not dislocated or dismantled due to the project development. The proper roads and transportation system along with migration measures is there. The project is fare away from urban development. Not any impact will affect the urbanization. Hence, there is no need to change the design of the project.

5.11 Improved Management and Monitoring Practices

The anticipated impacts will be reduced significantly by adopting better management activities, as it will be carried out for the betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check during construction Phase. All the migration measure will be implanted to mitigate the impact. All the practices will meet the Punjab environmental standards.

5.12 Compensation in Money Terms

Due to the development of the project, no tree cutting is involved, however, there is no protected or environmentally sensitive area present within 5.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms is required.

5.13 Replacement/Relocation/Rehabilitation

The project site is owned by the proponent and partners reserved for the said Housing Scheme. No replacement, relocation and rehabilitation are required for the commencement of the aforesaid project.

5.14 Impact Summary

Environmental Parameters	Impact Assessment during Different Phases	
	Construction	**Operational**
A: Physical		
Land Resources		
Soil Erosion and Contamination	-1t	0
Transportation	-1t	-1 p
Solid Waste and By-Products	-1t	0
Land Use	+1p	+1p
Air Resources		
Noise Pollution	-1t	-1p
Air Emission	-2t	-1p
Dust	-1t	0
Water Resources		
Ground Water	-1t	-1p
Surface Water	NA	NA
Wastewater	-1t	-1p
B: Ecological		
Flora		
Tree Cutting	N/A	N/A
Fauna		
Terrestrial Fauna	N/A	N/A
C: Socio-Economic		
Employment Opportunities	+1t	+1p
Land Value Appreciation	N/A	N/A
D: Hazards		
Physical Hazards	-1t	-1p
Health and Safety	-1t	-1p
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible		

Air Environment

- Impact on ambient air quality

Noise Environment

- Impact on ambient noise

Water Environment

- Impacts on surface and ground water quality

Land Environment

- Impacts on land use

Ecological Impacts

- Impacts on trees/vegetation
- Impacts on forests and wildlife

Socio-Economic Impacts

- Impacts on other infrastructure
- Impacts on employment
- Impacts on public health and safety
- Impacts on cultural resources
- Impacts on aesthetics

5.15 Impacts due to Project Location

The development will have both socio-economic and environmental implications as discussed in the sub-sections below.

5.15.1 Relocation of People

Currently, there are no infringements on the project site that may be affected therefore relocation exercises are not required.

5.15.2 Loss of Vegetation

Considering the scale of the project and commonly found flora and fauna within the project influence area, no significant adverse effects are envisaged on the ecology of the area.

5.15.3 Shifting of Utilities

There will not be any shifting of existing utilities such as water supply pipelines, sewers, electrical lines, etc. due to the said project.

5.15.4 Impact on Archaeological/Cultural Property

Within the project influence area there are no significant archaeological properties, hence no impact in this area is anticipated.

5.16 Impacts due to Project Design

Design of the said project can have impacts on the environment if it is not prepared accordingly. It is necessary to consider a sustainable project approach. Sustainability is an important issue to consider in design, not only due to environmental concerns but also due to economic and social matters, promoting architectural quality and economic advantages.

5.17 Impacts during Construction/Development Phase

5.17.1 Raw Material Transportation

The said Project area is located in the residential zone and some roads of the area are un-metaled. During the transportation of the raw-material such as cement, bricks, sand, gravels, etc., the dust may be generated which could may impact the near-by community.

Nature of Impact

The nature of the impact is medium, short-term and significant.

Mitigation

Impacts of raw materials can be reduced significantly by adopting better management and monitoring practices. Following management and monitoring practices will be adopted to reduce the impacts:

- Proper tuning of vehicles will be done on the regular basis
- Restrict excessive transportation of the vehicles as well as the speed of the haulage trucks that shall not exceed the speed limit of 40km/hour
- Cover the vehicles with tarpaulin carrying sand

5.17.2 Impacts on Vegetation

Project site has some trees and bushes. It will be made sure that removal of trees is avoided as much as possible. 3-5-fold trees will be grown in case of removal of trees. The impact is considered to be insignificant.

Nature of Impact

The nature of the impact will be low, short-term and insignificant.

Mitigation

Following mitigation measure will be adopted to reduce the impact of the vegetation removal:

- Trees should be planted as soon as the construction on-site completed
- Dust along the un-metaled road should be control by regular sprinkling water on the construction material

5.17.3 Impacts on Water Resource

During construction phase, water will be used for the preparation of the raw material as well as for domestic consumption and will cause negative impact on water resources. The consumption of the water will cause negative impact on the water resource of the area, it may pollute the water resources due to spillage of petroleum products from vehicles as well as the workers working on the Project Site will also consume water.

Nature of Impact

The nature of impact is low, short-term and insignificant.

Mitigation

Following mitigation measures will be adopted to avoid the impact on water resources

- Avoid un-necessary consumption of the water
- Close the tap when water isn't in use
- Proper tuning of vehicles will be required to protect the petroleum products from spillage
- The labor will use the public toilets already present near the Study Area.

5.17.4 Impacts on Air Quality

During construction phase, the machinery working on Project Site may cause air pollution due to release of the pollutants such as; carbon dioxide, NOx and SOx from the burning of the fossil fuels in the vehicles. Dust may be generated due to the excavation activity. No other impact is envisaged that may pollute the air quality.

Nature of Impact

The nature of the impact will be low, short-term and insignificant.

Mitigation

Following mitigation measures will be adopted to reduce the impact on the air quality:

- Proper tuning of vehicles will be done on the regular basis in order to control the air pollution
- Avoid unnecessary movement of the trucks carrying raw-materials
- Avoid excavation and filling activity on the windy days
- Regular water sprinkling on dusty areas will reduce dust emissions

5.17.5 Impacts of Noise

During construction phase, heavy construction machinery will be used. The machines are noisy and can cause a certain degree of nuisance to the nearby residents. The noise levels of machines and vehicles vary widely depending on the type of noise generated and level of activity. Some common impacts of noise nuisance include annoyance, sleep disturbance and interference with communication. Acceptable levels of noise are regarded to be 40 dB (A) during the night and 50 dB (A) during the day. Since construction will take place during the day only the 50 dB (A) level is of importance. As the Said Project is located in the residential zone so the noise related impacts will cause significant impact on the nearby community.

Nature of Impact

Nature of impact will be low, short-term and significant

Mitigation

Following mitigation measure will be adopted to reduce the noise;

- The noise related activities should be done during the day time to ensure minimum disturbance to the local community
- Proper tuning of the vehicles should be done on regular basis
- Noise related activities should be done speedily and completed as soon as practically possible
- Construction activity will be confined to the small reserved area

5.17.6 Impacts on Land-Use

The land-use around the Project Site is characterized as residential cum agricultural zone. No impact is anticipated as the housing society is said to be constructed in residential area and the construction will not change the land use of the area.

5.17.7 Impacts on Socio-Economic Environment

During this phase, skilled and unskilled labor will be required. Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. Furthermore, indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labor and after completion of construction phase serve as a permanent business opportunity. In this sense the construction of the Housing Society will have a positive impact on the employment situation of the nearby communities.

Nature of Impact

This impact is considered to be positive, short-term and significant.

5.17.8 Impacts on Cultural and Historic Sites

There will be no adverse impact anticipated on the cultural and historical sites as there are no cultural and historical sites located within the Study Area that could be impacted due to the construction of Said Project.

5.17.9 Impacts on Human Settlements

There is no dispute related to the land ownership and dislocation of any human settlements. Moreover, there will be no possibilities of demolition and relocation of any physical infrastructure. The potential adverse impact is considered insignificant in nature because the Project Area is located in residential zone. Said scheme will not cause any adverse impact or may not cause public nuisances.

5.17.10 Impacts of Work Accidents

To limit the risk of accidents, safety procedures will be put in place and enforced by the foreman to ensure that vehicles and machinery only drive-in designated places by authorized personnel.

Nature of Impact

The nature of the impact will be minor, low, short-term and insignificant.

Mitigation

Following mitigation measures will be adopted;

- Make sure all the workers wear Personal Protective Equipment (PEPs) while working
- Regular checking of the machines should be done in order to maintain working machinery and to avoid accidents

5.18 Impacts of Operational Phase

5.18.1 Land and Soil

After the end of the construction phase the area will be restored back to its original state. After completion of construction phase different ornamental plants and native tree species will be planted in parks and around the public buildings. This will improve the overall ecology, aesthetic and landscape of the area whereas; the un-paved roads will be converted to metaled roads. This will have positive and significant impact on the land and soil condition of the area.

Nature of Impact

This impact is considered to be positive, long-term and significant.

5.18.2 Energy Consumption

A large amount of energy will be consumed during the operational phase for lightning, heating and cooling during different weathers as well as during the construction of public and private buildings. Pakistan is an energy deficient country and it will cause significant adverse impact on the Energy Sector.

Nature of Impact

The nature of impact will be direct, low, long-term and significant.

Mitigation

Following mitigations should be adopted to reduce the energy consumption of the housing society:

- Energy efficient equipment and appliances should be installed in order to conserve energy
- Renewable energy options can be considered for the production of electricity such as solar system for lightening the street-lights

5.18.3 Solid Waste Management

Solid waste generated from the households can be divided into two categories: organic waste (e.g., food waste) and inorganic waste (e.g., service materials, glass, plastic, etc.). In the terms of weight, a large portion of the solid waste consists of organic kitchen waste and it may

produce vector which could transfer diseases to humans and can be the cause of public nuisance.

Nature of Impact

The nature of impact will be direct, medium, long-term and significant.

Mitigations

Following mitigations should be adopted to reduce the issues related to the solid waste:

- A door-to-door solid waste collection system will be formulated to avoid public nuisance and to provide hygienic conditions
- Solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odor and to reduce public nuisance
- Solid waste should be collected and transported to the waste disposal site on the daily basis

5.18.4 Wastewater

The domestic activities during the operation phase of the project will involve the use of large quantities of water. Wastewater generated from Housing Society will be domestic in nature.

Mitigation Measures

The proponent of the project will lay down sewerage system of the whole scheme. The domestic waste water during the operation phase will be disposed of nearby sewerage lines after primary treatment. 10 Marla plot is reserved for waste water disposal and water works

5.18.5 Socio-economic Impact

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

The socio-economic impacts like employment, education, life, style and cultural uplift are the direct benefits during this stage for the people of the Project Area. Local people will be hired for different jobs, i.e., gardening, housekeeping, cooking, tuitions, driving etc. Facilities like commodity market and medication will also generate working opportunities for the shopkeepers of nearby communities. The human resources will be developed at local level for future development activities in the area. The institutional facilities like roads, dispensaries, proper drainage and sewerage will help improve the lot of the people. Operation of the project

will also result in the increase land values. All the Project related job opportunities will ultimately improve per capita income of the population in the area. This is a major positive impact.

Mitigation: As this is a positive impact so it doesn't need mitigation measures.

5.19 Potential Environmental Enhancement Measures

Following are the positive impacts of the Said Project that will enhance the overall socio-economic and ecological condition of the Project Area.

5.19.1 Employment/Poverty Alleviation

The employment opportunities in the Project Area will be increased due to the development and operation of the said project. During development and operation of the said Housing society unskilled workers will be required as labors, sanitary workers and sweepers as well as for the skilled workers such as; accounts and managers to run the administration office. In totality, the overall economic conditions of the area will be improved.

5.19.2 Local Economy

The employment opportunities and/or income sources generated by the Project development and operation will be long term in nature. These will be enhanced once the construction phase is completed. The local economy will experience a slight boom during development period and for the construction of public and private buildings.

5.19.3 Increased Business Opportunities

For a construction of the public and private buildings in the housing society a number of raw-material will be required. Many venders can supply the required stuff to the on daily and weekly basis. This will serve as a new business opportunity and it will enhance the socio-economic status of the people directly linked with it.

5.19.4 Increased Housing Capacity and Standards

Development of Housing Scheme Namely Wadi-e-Affan will enhance the housing capacity and standard of the housing. The development is being carried out in the residential cum agricultural zone. Development of the housing society in this zone will solve the issue related to non-availability of the adequate space and shelter.

5.19.5 Infrastructure Development

The development of Said Project in this zone will enhance the land values in this particular region. Their price will be high due to many building facilities including accommodation, market places and hospitals nearby the project zone as well as provision of amenities in the region such as electricity, drinking water supply and sewerage system, etc. So, the more population will be settled near the said Project area due to increased facilities.

5.19.6 Tree Plantation

The tree plantation will be carried out along the boundary of the Project Site, parks, green belts and open green spaces as the part of the said Project part. This will include plantation of ornamental as well as indigenous species of the plants. The plantation will improve the overall ecological conditions of the area.

Green areas are mentioned on map. Trees and plants will be grown in all parks and all open spaces. Greenery for beauty enhancement of housing scheme will be done. Shade trees including sheesham, neem will be grown outside boundary of project. Grasses, median plants and median shrubs will also be grown. Aesthetic and beauty plants including roses and jasmine will be grown. Trees height will be between 3-7 ft. Total number of plants and trees will be approximately 100-150. Spacing between plants will be 6-8m.

6 CHAPTER 6: ENVIRONMENTAL MANGEMENT AND MONITORING PLAN

6.1 General

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

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

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

6.2 Objectives of Environmental Management Plan

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA.
- Define the responsibilities of the project proponent and contractor and provide a means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

6.3 Management Approach

The organizational roles and responsibilities of the key players are summarized below:

Proponent: The project proponent will undertake overall responsibility for compliance with the EMP. Proponent will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

Contractors*:* The contractors will implement the majority of environmental and social mitigation measures. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

Table 9: Summary of Impacts

Environmental Parameters	Risk Assessment		Recommended Mitigation
	During	After	
1. Location	+2p	+3p	• There is no dispute associated with the ownership of the land • The said area is not inhabited by any ecologically important or protected flora and fauna specie as well as within 1.0 km vicinity of the Project Area no archaeology and historically important site is located
2. Design	+1p	+2p	• The design of the said Project will be sustainable as it follows the principles of energy conservation and management. • The design of the public buildings will follow the maximum utilization of the sunlight, insulation of building to reduce heat exchange (as insulation of the building will reduce the electricity consumption), high roofs to keep the building cool, etc.
A: Physical			
Land Resources			

Solid Waste	-2p	-2p	• A door-to-door solid waste collection system will be formulated to avoid public nuisance and to provide hygienic conditions • Solid waste should be stored in the covered bins in order to avoid the growth of vectors and rodents as well as to control the odor and to reduce public nuisance • Solid waste should be collected and transported to the waste disposal site on the daily basis • Good management practices should be adopted to avoid the spread of diseases among the locals • Appropriate in-housekeeping, sanitary and solid waste management practices should be adopted
Land Use	-1p	+2p	• The prices of the land will be enhanced due to availability of facilities including accommodation, market places and hospitals as well as provision of amenities in the region such as electricity, drinking water supply and sewerage system, etc.
Air Resources			
Air Emission	-1p	-1p	• Proper tuning of vehicles should be done on the regular basis in order to control the air pollution • Avoid unnecessary movement of the trucks carrying raw-materials • Avoid excavation and filling activity on the windy days • Impact can be minimized through a management program which ensure dust will be controlled by regular watering the dusty areas • Regular water sprinkling may be done to control the dust generation

Noise	-1t	-1t	• The noise being generated is within the PEQs limit but it can be further mitigated by properly tuning the machinery and automobiles. • The noise related activities should be done during the day time to ensure minimum disturbance to the local community • Proper tuning of the vehicles should be done on the regular basis, so that the noise level will be reduce up to the acceptable limits • Construction activity will be confined to the small reserved area
Water Resources and Wastewater Management			
Water Resource	-1p	-1p	• The capacity of the toilet tanks in the public and private buildings should be reduced in order to conserve water • Wastewater will be discharged in drain nearby the project site
B : Ecological			
Flora			
Vegetation	0	+2p	• Trees will be planted along the boundary of the Project Area, parks and in the boundaries of parking zone.
Fauna			
Wildlife	NA	NA	• No impact on the fauna and its habitats are foreseen as the Project Area is located in residential cum agricultural zone
C: Socio-Economic			
Transportation	0	0	• Strict speed limit for the movement of vehicles should be regulated • Avoid unnecessary movement of the vehicles • Enforce traffic rules with true spirit

Employment	+1p	+1p	• During this phase, skilled and unskilled labor will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. • Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labor and after completion of construction phase serve as a permanent business opportunity
Aesthetic	-1t	2p	• The aesthetic of the area will be disturbed on the temporary basis during the construction phase • The housing society adds to the beauty of the area as green belts are developed
Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible			
All adverse environmental impacts except natural calamities are manageable easily by implementing EMMP			

6.4 Environment Management Plan

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect, during construction and operation phase with the administrative framework involving all the responsible implementing authorities required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environment-friendly.

Table 10: Environmental Management Plan for Construction and Operation Phase

Project Activities	Type of Impact	Potential Impacts on Environment	Extent / Magnitude	Mitigation Measure	Institutional Responsibility	
					Implementing Body	Supervision
PRE-CONSTRUCTION						
Land acquirement and land use	Physical, Social and Aesthetical	Positive use of land but proper planning will be required	More/at community level and to Proponent	• Land is under undisputed ownership and no settlement existing there so no impact will be there. • Land will be improved from open land to residential land.	Contractor	Proponent*
Use of local manpower	Social	Employment Generation	Less/ Adjacent area	• Local people will be hired for less technical work or non-skilled work	Contractor	Proponent*
CONSTRUCTION						
Civil works	Physical, Social, Biological Aesthetical	Soil Erosion, Emissions, Water Contamination, Noise & Vibration, Employment, Health & Safety of Workers	More/ Adjacent area	**Minimization:** • Dust emission from soil piles and aggregate storage stockpiles will be reduced by keeping the material moist by sprinkling of water at appropriate frequency **Avoidance:**	Contractor	Proponent*

				• Covering the pile, • Noise control measures will be implemented		
Movement and fueling of vehicles	Physical & Aesthetical	Soil & Water Contamination due to Fuel Leakages & Spillage, Emissions, Noise & Vibration	Moderate/ at the site	**Avoidance:** • Periodic maintenance and inspection of vehicles • Vehicles with leaks will not be operated. • All vehicles will be maintained in good working condition • All vehicles will have properly functioning silencers (mufflers).	Contractor	Proponent*
Transportation of construction material	Bio-physical	Dust and Particulate Emissions, Noise Generation, Safety and Health Effects	Moderate/ Adjacent area	**Minimization:** • Excessive use of horns will be avoided • PPE's will be provided to workers **Avoidance:** • Covering of transporting material trucks • Nighttime driving of project vehicles will be limited where possible	Contractor	Proponent*

				• Low speed limit will be maintained on the section of the access road that is adjacent to the community and site.		
POST-CONSTRUCTION/OPERATION						
Wastewater management	Physical/social	Degradation of water quality	Moderate/local	**Reduction:** • Wastewater will be discharged in drain nearby the project site as	Contractor	Proponent *
Air quality management	Physical	Dust and PM	Moderate/adjacent areas	**Avoidance:** • No waste should be burnt at the premises. **Reduction:** • Tree plantation will also be done as environmental enhancement measure.	Contractor	Proponent*
Noise generation	Physical, social, biological	Psychological and hearing problems	Moderate/local	▪ There will be ban on the use of horn in the housing scheme. ▪ Proponent has planned a proper plantation plan which will also act as barrier for noise.	Contractor	Proponent*

Solid Waste Generation	Physical, Biological, Social	Vectors production, odor, Health and Welfare	Severe/ local and global	**Reduction:** • Solid waste will be managed entirely by the solid waste management contractor. • Provision of Separate waste bins for each house	Contractor	Proponent*

6.5 Environmental Monitoring Plan

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

6.6 Proposed EMP reporting and reviewing procedures

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect, during construction and operation phase with the administrative framework involving all the responsible implementing authorities required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environment-friendly.

Institutional Capacity of the Unit

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

Primary Responsibilities

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

Operation Management & Control

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

Supervision & Monitoring

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

Communications and Documentation

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

Table 11: Environmental Monitoring Plan for Construction Phase

Components	Objective of Monitoring	Parameters to be Monitored	Measurement	Frequency	Location	Responsibility
Noise Levels	To determine the effectiveness of the noise abatement measures on the sound level	Noise level on the site and adjacent area on dB(A) scale	Noise level reading will be Taken	Twice during construction	At least two locations on the scheme boundary	Environment Officer /manager
Waste Collection, Storage and Disposal	To check the availability of Waste Management System and Implementation	Inspection of Waste Generation, collection, Storage and Disposal at site	Visual inspection	Once daily	Construction site	Environmental officer/manager
Soil contamination	To determine the effectiveness of the control measures taken to minimize the	Inspection of equipment and vehicles so that they may not affect the quality of soil.	Visual inspection and availability checks	Monthly inspection	All vehicles and equipment in use at construction site	Contractor/Environmental officer

	spillage of oil and chemicals					
Worker's safety	To check and evaluate the effectiveness of the workers' safety plan	Injuries and accidents	Recording injuries	Daily	Onsite	HSE/Contractor

6.7 Institutional Capacity of the Unit

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

6.7.1 Primary Responsibilities

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

6.7.2 Operation Management & Control

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

6.7.3 Supervision & Monitoring

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

6.7.4 Communications and Documentation

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

6.8 Training Schedules

To enhance the capacity of the Proponent/EA as well as the Contractor, training will be imparted related to the environmental and social issues of the project implementation of mitigation measures, the monitoring protocols and reporting mechanism. Project will ensure in-house training for the project staff, contractor and the supervisory staff of the Proponent/EA and the Consultants through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the development projects in general and implementation requirements will emphasis on the development projects in general, implementation requirements with emphasis on the roles and responsibilities of the Proponent/EA and the Contractor staff while executing the environmental monitoring plan in particular. The training protocols will include the following aspects:

- Procedures for monitoring the air quality parameters and measures to be adopted for avoiding or minimizing air pollution, particularly from the concrete batching plant and haul-trucks, etc.

- Procedures for monitoring water quality parameters and measures to be adopted for avoiding or minimizing water pollution, particularly from the wastewater effluent generated from the raw-material preparation, machinery washing yards and other obnoxious chemicals whose leaching can deteriorate the quality of the ground water resource
- Safe waste disposal practices to manage the generated solid waste during the constructional and operational phases
- Safe noise levels from the operation of the construction machinery during the constructional as well as operational phase.
- Safety measures against hazards for workforce and the local communities arising from the construction activities
- Use of safety equipment and gadgets by non-skilled workers

6.9 Equipment Maintenance Details

As the Said Project is a housing scheme so no machinery will be used during operation phase and no maintenance of machinery is required. However, maintenance of green areas will be done properly by Gardeners and proper security arrangements and guards will also be there.

6.10 Environmental Budget

Approximately PKR 1 million budget will be reserved for the Environmental measures.

7 CHAPTER 7: STAKEHOLDER CONSULTATION

7.1 GENERAL

Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the EIA and EIA Review Regulations, public consultation is mandatory for any socio-environmental study. Impact assessment survey and public consultation sessions held with different Stakeholder groups that may be impacted by the said project development. The consultation process was carried out in accordance with the guidelines laid by EPA. The objectives of this process were to:

- Share information with stakeholders on said project installation and operation.
- To access the impacts on the physical, biological, and socio-economic environment
- Understand stakeholder concerns regarding various aspects of the project.
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the said project.
- To invite people to express their views about the positive/negative impacts on their life styles and environment.

7.2 OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It offers an opportunity to sharing knowledge with the all stakeholders. Referring particularly to a project related to environmental evaluation, public participation is very mandatory, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social problems, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have

thoroughly observed the site conditions in the pre-developmental phase, goes a long way in updating the knowledge and understanding.

7.3 IDENTIFICATION OF STAKEHOLDERS

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surroundings, some other stakeholders were identified and contacted. They are the key players including; shops owners, vendors, public offices, school, university, hospitals. Not only published material but also noted their views and the concerns. Project stakeholders include the settled families, property owners or the tenants, businessmen, land owners, traders, shopkeepers, vendors, transporters, restaurant owners etc.

7.3.1 Direct

In this case, the PAPs are those who will be benefited directly by project. No disturbance on the local community is being foreseen due to the installation of the said housing scheme.

7.3.2 Indirect

Indirect impact will occur on those who are living or doing business within project area of influence. Indirect respondents include;

- Government agencies responsible to deal with the project related activities
- Government Agencies directly, indirectly or widely involved in the execution and monitoring of the said project
- Workers of political, cultural, religious or social scientific bodies, directly or indirectly related

7.4 PUBLIC DISCLOSURE

Public disclosure is the outcome of all such activities where public is involved at least in the information sharing process. This is an integral part of that process so before the proponent applies for NOC to the EPA, this disclosure will be distributed properly among all stakeholder. It is the responsibility of the proponent and the consultants to display public disclosure document at prominent places where community has easy access.

7.5 COSULTATION PROCESS

Information disclosure, public consultation and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socio-economic resources falling within the immediate area of influence of the project. Primary data collection included:

- ✓ Data collection regarding the socio-economic condition of the study area
- ✓ Pretesting of socio-economic survey tools in the field
- ✓ To consult the locals for collection of information on biological environment

Various meetings with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- Provide an opportunity to the public to influence the project design in a positive manner
- Attain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA and eliciting their comments and feedback

7.5.1.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

7.5.1.2 Consultation Material

The main document for distribution to stakeholders during the consultations was Social Impact Assessment Interview.

7.5.1.3 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings held in the project area. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the said project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis, and interpretation. By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

7.5.1.4 Primary Stakeholder Consultation

The community consultations were conducted with the community members outside their settlements to encourage and facilitate their participation. Consultation was done for 1 day.

7.5.1.5 Stakeholders Concern & Recommendation

The finding of the community consultation has been addressed in various sections of EIA. Mitigation plan has been incorporated into EMP. The summary of consultation with various stakeholders is given below Out of total respondents of, 76% knew about the project whereas 24% were not aware of the project planning and implementation (Fig-06). All people were then briefed about the project. 89% commented their views about the project and 11% didn't respond (Fig-10).

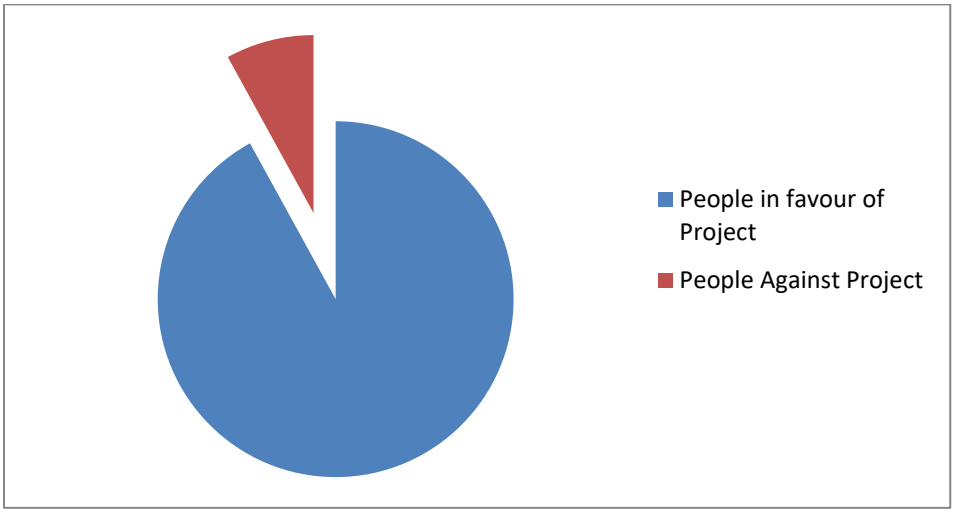

Figure 2: Awareness Regarding Projects

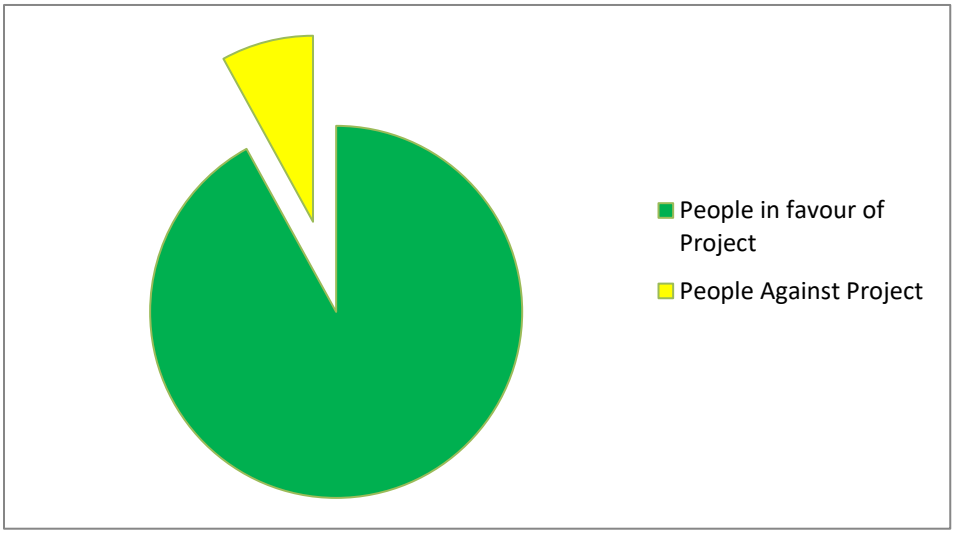

Figure 3: Percentage of People Who Showed Perspective

Out of 89%, majority of the people (about 92%) favored the construction of the project keeping in view its importance and 8% people showed pessimistic views in general but mitigation measures and solutions to their concerns were provided. Majority of people were in favor of project. They said that project will result not only in direct jobs opportunities for locals but also will enhance subsidiary business, trade, education, and community development. The people were of the view that industry might also elevate education standards, struggle for career enhancement besides improvement in standard and quality of living in area. People were also of the view that industry may also be instrumental in connecting the local people with major cities and will result in increase in GDP. Very few near to 8 % only show concerns over generator emissions, noise, and waste water and health impacts. Majority of the concerns were changed in the favor of installation after communicating the participant's proper solutions and mitigation measures.

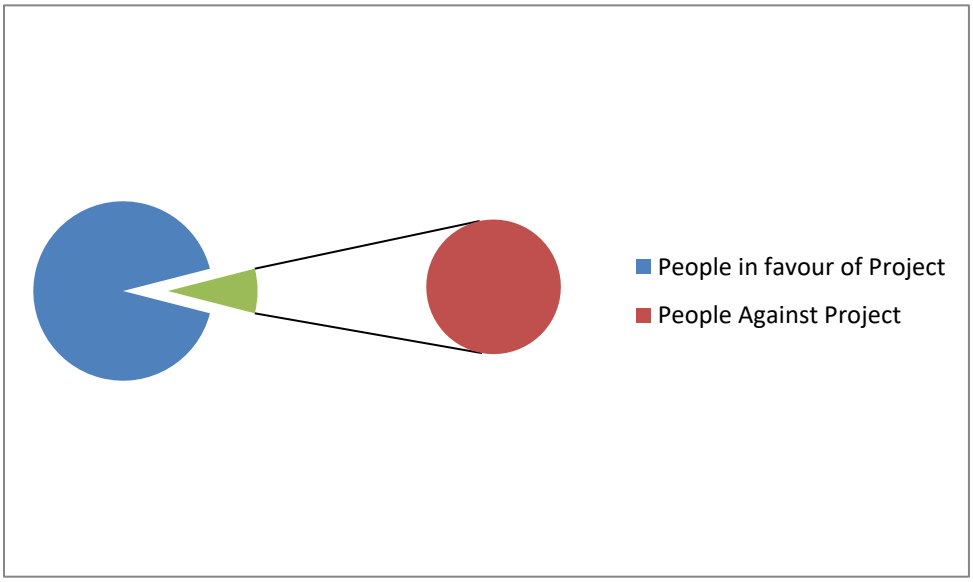

Figure 4: Peoples in favor of Project

7.6 STAKEHOLDERS CONSULTED

Names and CNIC of consulted stakeholders are given in table below:

Photo log of participants consulted is given below:

Sr. No	Stakeholder Name	Feed Back
1	Asghar Ali	Environmental Enhancement measures should be taken.

2	Yousaf Ali	Tree plantation should be ensured.
3	Muhammad Dilshad	Local people should be preferred for employment opportunities.
4	Ali Ahamd	Personal protective equipment's should be used.
5	Muhammad Umair	Quality of life should be ensured.
6	Muhammad Bilal	Dust control measure should be ensured during construction.
7	Muhammad Ashraf	Smoke control measurements should be ensured during operational phase.
8	Mr. Umer	Measures should be done to control noise pollution from the said housing scheme.
9	Shah Jahan Shah	Waste management from construction phase should be ensured.
10	Waqas Ahmad	Waste water should be disposed of after treatment.
11	Abdul Rehman	Social welfare should be ensured by the industry.

7.7 Govt Official Consultation

The consultations were carried out with the local government officials and officials of the following departments:

District Office Environment, Kasur.

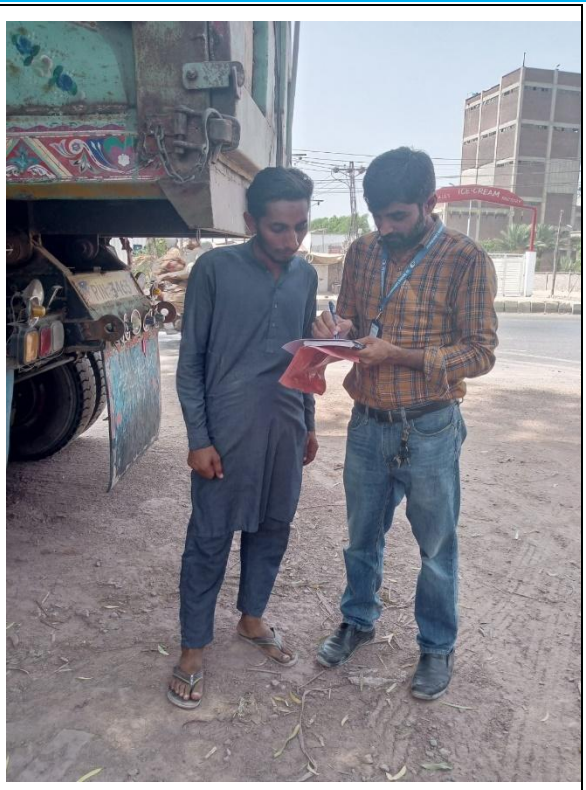

Figure 5: Consultation with Community

8 CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

The report presents Environmental Impact Assessment (EIA) of the Establishment of Said Housing Scheme. Its main objective is to provide people with clean and green environment to live a comfortable life.

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

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

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

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

8.2 Recommendations

The EIA study and survey results are finally evaluated to recommend the following:

- Implementation of EMP must be given top priority.
- During construction phase Create environmental awareness amongst the workers by training.
- Provide guidance to workers on use of PPEs and also make it compulsory for them to use PPEs during construction.

- Installation of fire extinguishers in the premises.
- Use of equipment with low operating noise levels within PEQS limits and regular monitoring of machines used during construction phase