F-272(EIA)-23

Environmental Impact Assessment (EIA) Report

NEW CITY BHALWAL HOUSING SCHEME



SQ No: 75, 112, 113, 114, Chak No: 9 N.B, Tehsil Bhalwal District Sargodha

CONSULTING ORGANIZATION

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EXECUTIVE SUMMARY

1. Title of the Project

This report presents the findings of the Environmental Impact Assessment (EIA) study of "New City Bhalwal Housing Scheme.

2. Location of the Project

The said project is located as SQ No: 75, 112, 113, 114, Chak No: 9 N.B, Tehsil Bhalwal District Sargodha.

3. Name of the Proponent

The owner of the project is Muhammad Farooq Baha Ul Haq Shah S/O Peer Muhammad Karam Shah R/O Muhallah Shah Naseeb Daryayi, Bhera District Sargodha.

4. Name of the Organization Preparing Report

To comply with IEE/EIA regulations 2022 as per Punjab Environmental Protection (Amendment) Act (PEPA) 2012, the proponent of New City Bhalwal Housing Scheme has entrusted the ***Safe Enviro-Solutions.***

Company office address: *99/Burj Al-Saeed building Room #110, Main Ferozepur Road, Ichra Lahore.*

Phone: *+92 336 8779107*

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5. A Brief Outline of the Proposal

"New City Bhalwal" is a housing development scheme situated close to Bhalwal-Kot Momin Road. The total area of the said housing scheme is 352K-06M-215 SFT. This is being developed into residential plots, commercial area, roads, Green Park, mosque area etc. The area left for proposed residential use is 185K 151 SFT. The 17K-15M-44 SFT land area has been allocated for commercial activities. The area left for roads is 109K-01M-228 SFT. The area left for Park & Open Space is 24K-13M-003 SFT. The area left for Graveyard is 7K-02M-001 SFT. The area reserved for Solid Waste Plot is 13M-214 SFT. The area reserved for WWTP is 08M-036 SFT. Park Area will also be present for recharging the ground water table. The designing of has been done in "New City Bhalwal Housing Scheme

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such a way that it should be remarked as one of the most modern and beautiful Housing Society. Sewerage water will be disposed of to the nearby drain. Sanitary workers will be hired by the Society Management for proper collection of solid waste. Final disposal of the solid waste will be done in accordance with the municipality facilities.

The scope of the current EIA Study aims at collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures are in this EIA Report. This is the legal requirement to submit before and approve the EIA of the said project from Environmental Protection Agency (EPA) according to Section 12 of Punjab Environmental Protection (Amendment) Act, 2012, which states that:

"No proponent of a Project shall commence construction or operation unless he has filed with the Provincial Agency an Environmental Impact Assessment (EIA)or, where the Project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof."

6. Methodology

The study was conducted in accordance with Environmental Protection Agency (EPA), Government of Pakistan (GOP) Guidelines, 2022. The study was based on both primary and secondary data and information. Discussions were held with stakeholders, community representatives and a wide range of local residents. The main purpose of this approach is to obtain a fair impression on the people's perceptions of the project and its environmental impacts.

To accomplish the job in time and to produce a quality report, a proper methodology was adopted as follows:

7. Meetings and discussions were held among the members of the EIA consulting team, design engineers and proponent. This activity was aimed at achieving a common ground of understanding of various issues of the study.

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8. The Major Impacts

The study team reviewed the Project 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

(a) Positive Impacts

The implementation of the project will have many socio-economic and environmental impacts.

- The scheme will supply new affordable rented and intermediate housing, helping to address substantial local affordable housing needs by providing opportunities for lower income households to own their own home or to secure rented accommodation.
- The scheme master plan includes the provision of play area, landscaping and pedestrian access through this green space. While this will directly benefit the residents of the scheme, it also represents a facility that will be available to residents of the wider area around the development. Managed green space of this type enhances the quality of a local living environment and can contribute to encouraging people to live healthier lifestyles by providing space for exercise and play.
- The development of the new homes in the said development could help to address local unemployment in the industry, and provide apprenticeship and training opportunities for young unemployed people.

(b) Negative Impacts

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 main issues that have been identified are:

- Water Resources Management, including groundwater flows and water quality, drainage and surface runoffs, sewage treatment and effluent disposal, effluent polishing.

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- Noise: Maintenance of acceptable noise levels during construction.
- Solid Waste Management: removal of vegetative matter; rocks and rubble; existing collection infrastructure; for solid waste separate site of 25x20 meter accommodating 960 m^3 Equivalent to 86400 kg has been allocated at the tail of the scheme.
- Health and safety problems of the workers may also arise during the construction and operational phases of the said project.

The most critical of these are represented in the design of the development footprint, the drainage system, the sewage plant and effluent disposal system, and the use of the land as a final recipient of runoff and effluent.

9. Recommendations for Mitigation Measures

Results of the EIA Study have shown that overall the project is environmentally feasible. Most of the environmental impacts are moderate adverse in nature except the solid waste generation during the erection of the development footprint, the drainage system, the sewage plant and effluent disposal system, and the use of the land as a final recipient of runoff and effluent. However, these impacts can be mitigated by the implementation of Environmental Management Plan (EMP). Environmental Management Plan identifies monitoring needs and implementation on Environmental Management Plan is also recommended.

The following measures are recommended for the project:

- Sprinkling of water should be done to avoid soil erosion during the construction phase. However, it is short time impact, which would be stopped on completion of the construction work.
- The impact of noise will be mitigated by confining the excessive noise activities.
- Water sprinklers will be used for the suppression of dust.
- The domestic wastewater will be disposed in drain after treatment by the septic tank.
- Traffic movement plan should be formulated to avoid any issue for locals
- Planning was carried out to assess data requirements and their sources; time schedules and responsibilities for their collection; logistics and facilitation needs for the execution of the data acquisition plan.

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- Primary and secondary data were collected through observations during the field survey, environmental monitoring in the field, concerned departments and published materials to establish baseline profile for physical, biological and socio- economic conditions.
- The impacts of the project on the physical, biological and socio-economic environment prevalent in the project area were visualized at the design, construction and operational phases.
- The adequate mitigation measures and implementation mechanisms were said so that the proponent could incorporate them beforehand in the design phase.

10. Proposed Monitoring

a) Ambient Air Monitoring

Regular Monitoring for ambient air should be conducted during construction and operation phase as per PEQS rules and report should be submitted to EPA Punjab on annually basis.

b) Noise

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

c) Water Quality

Regular Monitoring for ground water should be conducted during construction and operation and report should be submitted to EPA Punjab. Record should be maintained regarding.

Sr No.	Parameters	Monitoring Schedule
1	Ambient Air Monitoring (NO_x, Co_x, So_x, VOCs, PM_{10})	Regularly
2	Noise Level	Regularly
3	Water Quality	Regularly

GLOSSARY

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Words	Dictionary
Domestic wastewater	Wastewater from sanitary uses
Residential	For living of people
Economically viable	Suitable in monetary terms
Endangered species	Which will extinct in near future
Threatened species	Those in danger of extinction
Aesthetic beauty	Scenic beauty of the area
Ambient	Surrounding of all sides
Topography	Physical features of the site
Silence zone	Where transmission/sound cannot be received
Anticipated Impacts	Expected Impacts
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
Orientation Session	Direction Session
Nuisance	Annoyance

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pH	Negative log of hydrogen ion concentration
Potential Issue	Problems likely to arise
Said Project	Planned activity
Residual Impacts	Impacts left behind after implementation of the mitigation measures
Significant	Important

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INTRODUCTION

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This document presents the findings of the Environmental Impact Assessment (EIA) of the said New City Bhalwal Housing Scheme, District Sargodha. The proprietor of this housing scheme engaged Safe Enviro-Solutions Consultants to carry out the Environmental Impact Assessment, as part of the permitting requirements stipulated by the Punjab Environmental Protection Agency in respect of the said Housing Schemes.

1.1 Project Background

Housing is a fundamental requirement of all human beings and it is a basic objective of any society to make attempts to satisfy this need. Housing is an important and productive sector of the economy and a fundamental human need. Tens of millions in the country are struggling to have a roof over their heads. There is a shortage of housing units in the country, which according to an estimate, goes beyond 7.0 million.

The proliferating population of Pakistan required building new housing schemes which are affordable, equipped with all basic life facilities and properly planned. According to the statistics published by the Ministry of Housing & Works, Government of Pakistan, annual requirement of housing in the country is around 800,000 units, whereas annual production is around 400,000 units leaving a recurring backlog of about 400,000 units annually. If the average household size is taken as 6.6 persons and the occupancy as 3.0 persons per room, then about 800,000 new units are required annually to makeup the backlog and to cater for shortfall in the coming years. Of the current housing stock of 22.25 million units, about 68% pertain to rural areas and 32% to urban areas.

Another dimension of housing is that as a sector of economy, housing can provide an opportunity for local as well as foreign investment of around Rs 2.5 trillion thereby generating tremendous economic activities in the country besides reducing current pressure of financial crises. It is for these reasons that New City Bhalwal Housing Scheme intends to invest in this important sector of the economy and to provide a well standard living place equipped with all basic facilities of comfort and security.

1.2 Scope of the Study

The scope of this EIA Study aims at collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare the

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baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the said project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures are said in this EIA Report.

1.3 Study Objectives

The specific objective of the EIA study includes the following:

- Collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare baseline environmental profile;
- Identification, prediction and evaluation of potential environmental impacts of the said project;
- Suggesting mitigation measures to minimize the adverse impacts of the project; and
- Preparation of an Environmental Management Plan (EMP).

1.4 Purpose of the Report

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to said project construction along with environmental impact statement followed by appropriate Environmental Management Plan. EIA of this said project has been carried out in order to conform to the requirements of the **Punjab Environmental Protection Act, 1997, amended in 2012 under section 12** of which no development activity can be initiated anywhere in Punjab without filing before the designated government agency an Environmental Impact Assessment (EIA) or an Environmental Impact Assessment, as may be required and having an NOC for construction and operation.

The purpose of this EIA is to predict all the probable adverse environmental impacts and plan adequate mitigation measures for eliminating, controlling or compensating them and drafting the complete institutional framework for their implementation.

1.5 Identification of the Said Project and Proponent.

The owner of the project is Muhammad Farooq Baha Ul Haq Shah S/O Peer Muhammad Karam ShahR/O Muhallah Shah Naseeb Daryayi, Bhera District Sargodha. According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments,

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the construction/development of this Housing Society falls in the category of projects mentioned in ***Schedule II-Category H Clause 1 Urban Development & Tourism of IEE/EIA review & regulations 2022***, as this project is related to housing Scheme above 300 Kanals.

Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

1.6 Detail of Environmental Consultants

This EIA study has been carried out by Safe EnviroSolutions. This company comprises environmental engineers, Senior Environmentalists, chemical engineers and architects having diversified experience in national system and assignments. The companies address and contact information is as follow:

Office:99/ Burj Al-Saeed building Room #110, Main Ferozepur Road, Ichra, Lahore.

Phone: 0336-8779107 ***Email: safe.envirosolutions@gmail.com***

Table 1: Detail of team conducting EIA Study with qualification and position in team.

Name	Qualification	Position in the EIA/IEE Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Muhammad Shahzad	M.Phil Environmental Science GCU Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Ammara Anwar	MS Environmental Science (PU-Lahore)	(Author of the Report)
Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)

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**Only the main roles of the team members are given. However, their role was not restricted to these, rather it also includes many other studies in their respective fields in the context of this EIA studies.*

1.7 Brief Description of Nature, Size and Location of Project

Title of the Project

This report presents the findings of the Environmental Impact Assessment (EIA) study of New City Bhalwal Housing Scheme.

Location of the Project

The said project is located at SQ No: 75, 112, 113, 114, Chak No: 9 N.B, Tehsil Bhalwal District Sargodha.

A Brief Description of the Project

The aim of the said project is to satisfy the current housing demand in Bhalwal City. The total area of the society is 352K-06M-215 SFTs at site. This will be developed into residential plots, commercial area, roads, Green Park, mosque area etc. The area left for proposed residential use is 185K 151 SFT.

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Screening:

The New City Bhalwal Housing Scheme" is a housing development scheme situated close to Bhalwal-Kot Momin Road. The total area of the project is 352K-06M-215 SFT at site.

According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments, the construction the construction/development of this said housing scheme, falls in the ***Schedule* II-*Category H Clause I Urban Development & Tourism of IEE/EIA review & regulations 2022***, as this project is related to housing Scheme above 300 Kanals.

Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

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Scoping:

SPATIAL AND TEMPORAL BOUNDARIES OF ENVIRONMENTAL ASSESSMENT

Project site is open land. After its development with time nature of area will change from open land to a housing scheme (residential area). Already many housing schemes developments is being taking place in this area.

IMPORTANT ISSUES AND CONCERN RAISED DURING CONSULTATION

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised which have also been discussed in length in Chapter 9 Stakeholder Consultation:

- Locals should be preferred for the job opportunities.
- Wastewater should be treated prior to final disposal.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.
- Workers should be hired from local community.
- Indigenous tress around the society should be planted to control air pollution.

SIGNIFICANT IMPACTS AND FACTORS TO BE DETERMINED

Main impacts and factors to be determined are;

- Site Security
- Traffic Management
- Hygiene management
- Community impacts
- Control Air emissions
- Job opportunities for locals
- Confined noisy activities
- Resource conservation
- Avoid excessive water consumption
- Energy efficient techniques must be adopted

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- Proper site restoration after construction
- Tree plantation at designated green areas

Emergency preparedness

1.9) Structure of the Report

Section 1: Introduction briefly presents the project background, objectives, methodology and need of the EIA study.

Section 2: Policy, Legal and Administrative Framework comprise policy guidelines, statutory obligations and roles of institutions concerning EIA study of the Project.

Section 3: Description of the Project furnishes information about the location of the said Project, cost and size of the project, its major components and alternatives considered for the said project to select at the preferred alternative for detailed environmental assessment.

Section 4: Environmental Baseline Profile establishes baseline conditions for physical, biological and socio-economic conditions prevalent in the project area.

Section 5: Screening of Potential Environmental Impacts and Mitigation Measures identifies, predicts and evaluates impacts of the project activities during the construction and operation stages and deals with the measures said to mitigate potential environmental impacts of the said project.

Section 6: Environmental Management and Monitoring Plan outlines institutional arrangements for the implementation of the said mitigation measures, training needs of the staff for implementation of the mitigation measures, monitoring requirements and monitoring cost.

Section 7: Conclusions and Recommendations provide the outcome of the study and major observations of EIA and suggestions for environmental management and pollution control.

Section 8: References.

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DESCRIPTION OF THE PROJECT

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3.1 Rationale of the Project

The rapidly increasing urbanization in Bhalwal Distt, Sargodha has increased the shelter demand in the city. The shortage of houses in the city has led to growing number of slums and squatter settlements due to an increase in the cost, distances and the inconvenience related to commuting.

To respond to these problems, low-rise and low-income settlements near places of work or town centers are informally becoming smaller so as to become more affordable. It is dire need to build new housing schemes to provide shelter which are affordable, equipped with basic life facilities and designed eco-friendly.

3.2 Type and Category of the Project

The owner of the project is New City Bhalwal Housing Scheme is Muhammad Farooq Baha Ul Haq Shah S/O Peer Muhammad Karam Shah R/O Muhallah Shah Naseeb Daryayi, Bhera District Sargodha. According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2022 for filling, review and approval of environmental assessments, the construction/development of housing society falls in the category of projects mentioned in ***Schedule* II-*Category II Clause 1 Urban Development & Tourism of IEE/EIA review & regulations 2022***, as this project is related to housing Scheme above 300 Kanals require **Environmental Impact Assessment (EIA).** Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

3.3 Objectives of the Project

- To develop a modern, stable, affordable, accessible and green housing linked to health, justice and community support services
- To help people live independently and improve life opportunities related to family, work, education, recreation or other pursuits
- To develop the housing scheme in environmentally sound way
- To create job opportunities for the locals
- To raise the socioeconomic status of the area

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3.4 Alternatives

From the point of view of locating housing scheme the features, which are considered extremely important, are:

- Availability of suitable land.
- Availability of required utilities and infrastructure
- Road access to the site for easy transportation of students.
- Optimum investment requirement for the development of the infrastructure.

3.4.1 Do Nothing Alternative

Do-nothing alternative is not feasible due to the following reasons

- The said project is going to be located on land which was already owned by the proponent.
- The developing of a Housing Scheme is a commercial venture. It will not only provide affordable housing with basic life facilities but it will also provide employment opportunities to local labor and will engage multiple sectors of trade and services. Do nothing alternative is not feasible because opting it means depriving 3300 people directly from quality housing facilities and 25-30 people from direct employment opportunities

3.4.2 Current Project Option

The said site is devoid of any tree cover and has no environmental sensitivity. The proponent selected the site for his said project because the site has the availability of basic human necessities such as health, education and easy access to markets. The access to road networks is another reason for selection of this site. The area is far away from dense industrial activities and does not involve tree cutting for the development purposes. The proponent also considered other sites but rejected later because of due to unavailability of basic human necessities such as health, education, easy access to market and roads. Those sites were environmentally degraded & polluted lands and lack of aesthetic beauty is the major factor which urges the proponent to find an alternative. The propose site is best suited and economically viable option for the proponent for the establishment of their development scheme. The proponent has no other land for carrying out his project.

Keeping these requirements and their availability, the present site is the best suited for

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the construction 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 construction of the Scheme. The proponent has only this area for this project and this area is best suited in all aspects.

3.5 Location and Site Layout of the Project

3.5.1 Location of the Project

Location of the Project

The said project is located as Bhalwal-Kot Momin Road. Land use of the project area is mainly agriculture and residential along with few mosques, educational facilities and medical facilities along the said project site.

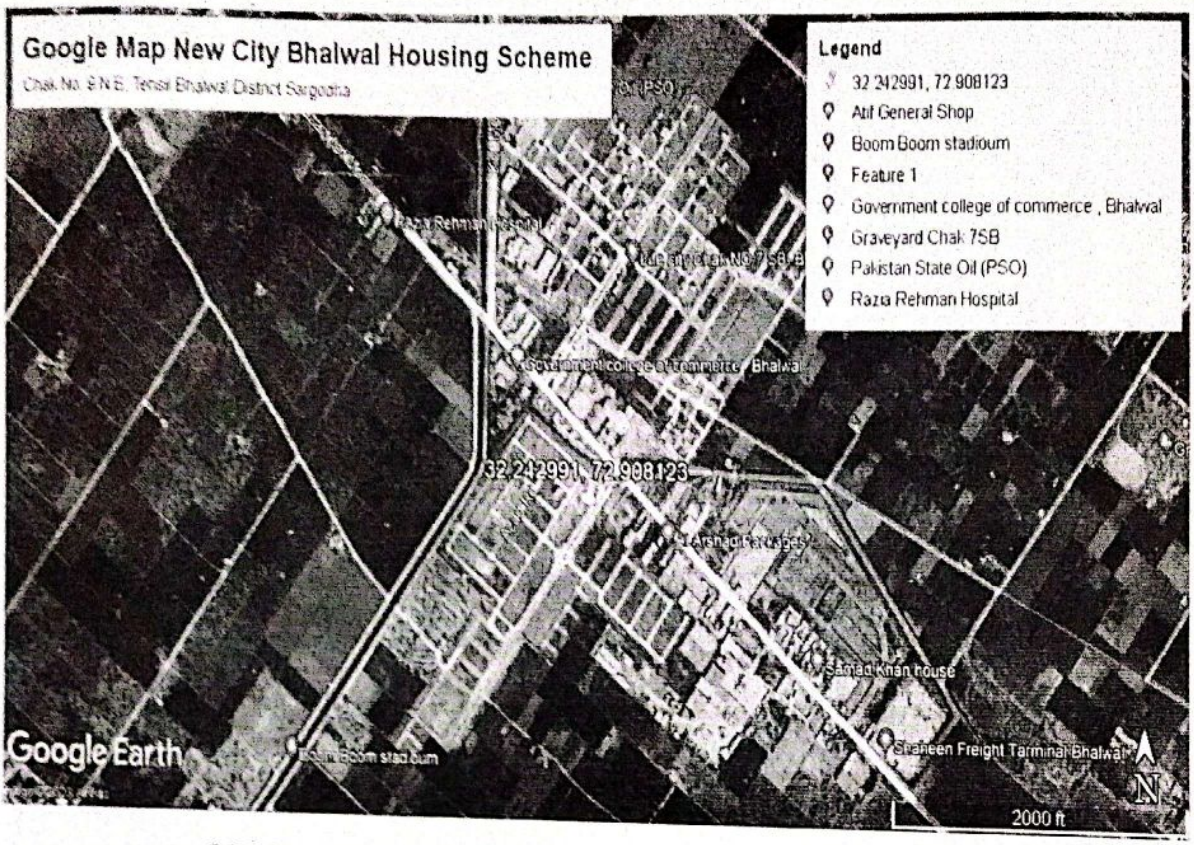
The project is surrounded by the following:

East	Open land
West	Agri Land
North	Bhalwal-Kot Momin Road
South	Open land

3.5.2 Layout Plan of the Project

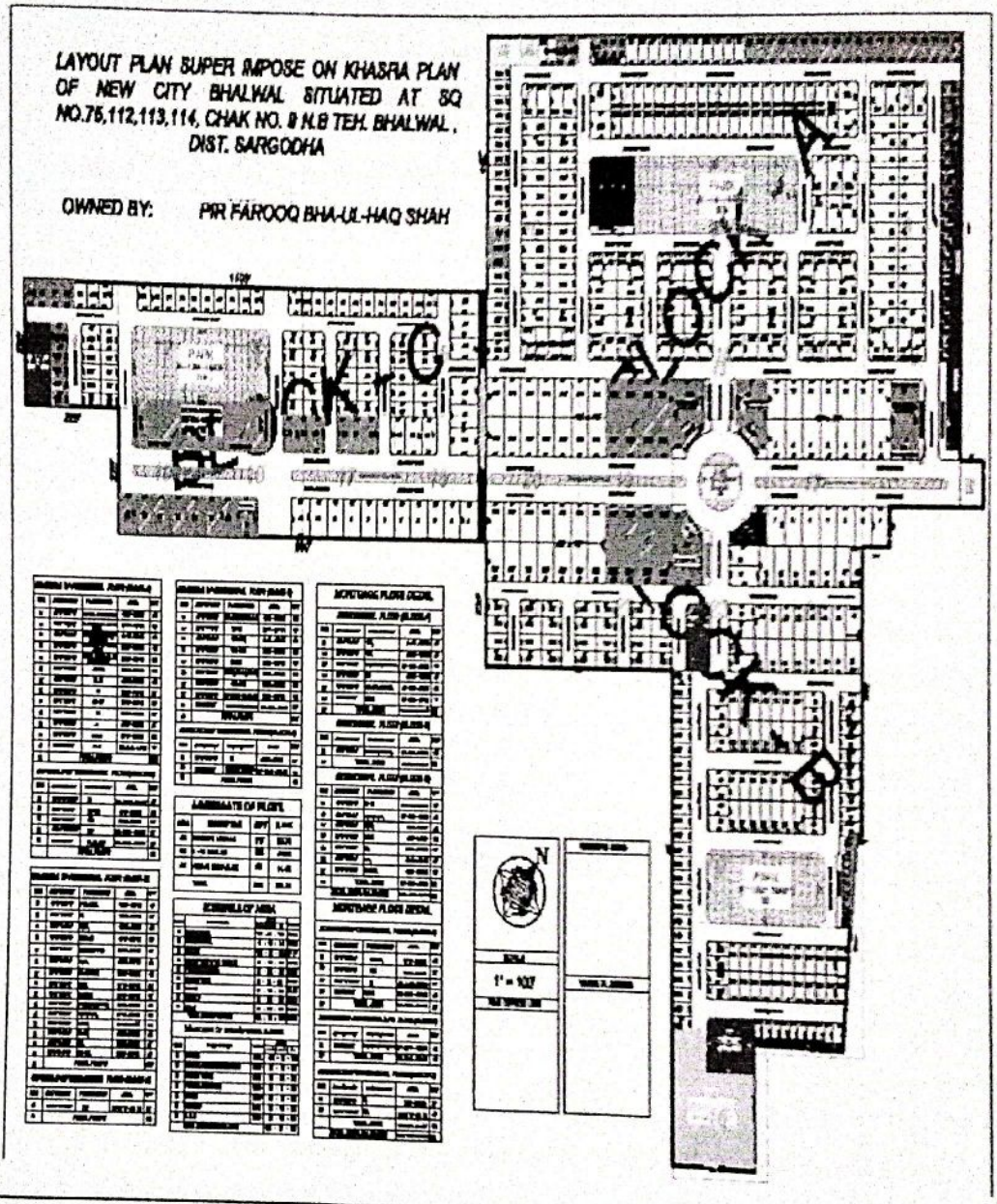
Layout map of the project site is annexed at the end of the EIA report.

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GOOGLE MAP PROJECT SITE NEW BHALWAL CITY

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LAYOUT PLAN

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3.6 Road access

Main roads and markets are in easy and close access of the project site. New City Bhalwal Housing Scheme is situated on Bhalwal-Kot Momin Road.

3.7 Project Administrative Jurisdiction

The said project lies in the District of Sargodha in Punjab Province.

3.8 Vegetation Features of the Site

Land is clear and there are no plants or vegetation on site. 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.

3.9 Cost and Magnitude of the Project

The total cost of the project would be around PKR 300 Million. The project includes the site survey, geotechnical investigations, site clearing work, infrastructure work, structural work, electrical and mechanical works and Activities of construction includes the following:

a) Demarcation of the Area for various facilities

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

c) Installation of street lights

d) Plantation of plants and grass

3.10 Schedule of Implementation

Tentative project implementation schedule is presented below. Final schedule will be available after selection of contractors.

Table 3.2: Project Implementation Schedule

Feasibility study	Finished
Incentives granted for housing scheme	June, 2023
Final investment decision	Aug, 2023

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Plot cutting	Feb, 2024
Construction/Development	March, 2024

3.10.1 Construction/Development Schedule

The activities to be carried out within a period of twenty months from the starting date.

The implementation stages of the project activity include:

1st Stage

The stage–1 comprises the onsite contouring studies and soil investigations.

2nd Stage

The stage –2 comprises the following task:

- Laying of foundations excavation and commencement of erection work.
- Start of civil, electrical and mechanical work.
- Development of basic infrastructure.

3rd Stage

- The stage –3 comprises the following task:
- Completion of the basic infrastructures water supply system, electricity supply etc.

4th Stage

The Last stage will be commencement of regular allotting of plots and start of construction/development work.

The time schedule for the construction/ development of Housing Scheme may prolong from **10** to **15** months.

3.11 Expected Equipment for Construction

The list of the machinery and the equipment expected to be used for the said project is provided in **Table 3.3**.

Table 3.3: Machinery and Equipment Requirement for the Said Project

Type of Machinery and Equipment	Type of Machinery and Equipment
Dump Truck	Self-Propelled Pneumatic Roller

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Front End Loader	Asphalt Distributor
Dozer	Batching Plant
Grader	Concrete Transit Truck
Vibratory Roller	Concrete Pump
Water Tankers	Excavator
Aggregate Spreader	Water Pumps
Three Wheel Rollers	Cranes
Tandem Roller	Vibrators
Asphalt Plant	Generators

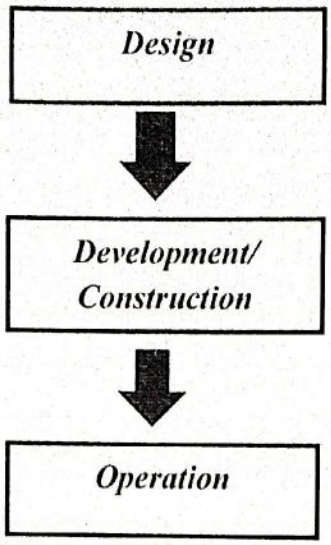
3.11 Description of the Project:

New City Bhalwal Housing Scheme" is a housing development scheme situated close to Bhalwal-Kot Momin Road. The total area of the said housing scheme is 352K-06M-215 SFT. This is being developed into residential plots, commercial area, roads, Green Park, mosque area etc. The development aims to satisfy the current housing demand along the Bhalwal City. The area left for proposed residential use is 185K 151 SFT. The 17K-15M-44 SFT land area has been allocated for commercial activities. These activities will be limited to small "corner shops" for groceries, dressmaking, hairdressing or other low-impact businesses. The area left for road/parking use is 109K-01M-228 SFT. The area left for Park & Linear Open Space is 24K-13M-003 SFT. The area left for Graveyard is 7K-02M-001 SFT. The area reserved for Solid Waste Plot is 13M-214 SFT. The area reserved for WWTP is 08M-036 SFT. Park Area will also be present for recharging the ground water table. The designing of has been done in New City Bhalwal Housing Scheme such a way that it should be remarked as one of the most modern and beautiful Housing Society. Sewerage water will be disposed of to the drain. Sanitary workers will be hired by the Society Management for proper collection of solid waste. Final disposal of the solid waste will be done in accordance with the municipality facilities.

Land Acquisition



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The scope of the current EIA Study aims at collection and scrutinization of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the said project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures are said in this EIA Report. This is the legal requirement to submit before and approve the EIA of the said project from Environmental Protection Agency (EPA) according to Section 12 of Punjab Environmental Protection (Amendment) Act, 2012, which states that:

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Distribution of Land of Project (Land Use):

SCHEDULE OF AREA					
S.NO	DESCRIPTION	AREA			%AGE
		KANALS	MARLAS	SFT	
01	RESIDENTIAL	185	00	151	52.51
02	COMMERCIAL	17	15	044	05.00
03	ROADS	109	01	228	31.02
04	PARKS AND OPEN SPACES	24	13	003	07.00
05	PUBLIC BUILDING	07	09	191	02.12
06	GRAVE YARD	07	02	001	02.01
07	S.W.M	00	13	214	00.19
08	W.W.T.P	00	08	036	00.11
09	O.H.R	00	02	163	00.04
TOTAL AREA OF SCHEME		352	06	215	100.00

The said housing scheme has been planned to be divided into six main categories, i.e. residential, roads, commercial, parks, public building and grave-yard. During planning proper consideration was given to keep the area open and pleasant by providing road access to each residential site.

3.12 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 or restoration and rehabilitation is required.

3.13 Features of the project

Following are the main features of the New City Bhalwal Housing Scheme:

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3.14 Supplies

a) Water supply

The underground water of this area is fit for drinking and domestic proposes. The said project intended to install his own tube wells for the extraction of the groundwater's.

b) Electricity

Source of power will be WAPDA (FESCO) mainly. The New City Bhalwal Housing Scheme would provide electricity to households from its distribution line. A good electricity system shall be developed according to current demands. Mobile service is available through Different Private Cellular Services like Mobilink, Ufone and Telenor in the surrounding area. The service ducts are provided with the idea that because of modern computerized age the daily life style changes and the needs increased.

c) Manpower

On the said project site 20-25 workers will be present daily throughout the construction period of said project. While during operational phase 15-20 workers will be hired by the management.

d) Fire Fighting Arrangements

The fire hydrants & fire extinguishers will be used for overcoming the hazard of fire. Furthermore Smoke detector will be installed by the proponent.

3.15 Management of Wastewater

The location for the Sewage Treatment Plant is proposed. The collected water will be used to irrigate the parks of the housing scheme. Possibilities will be search out to use this water for irrigating surrounding agriculture fields also.

3.16 Solid Waste Management

Waste generated during construction would include mostly construction material (mainly steel and wood), empty cement bags, excavated earth and general packaging waste. Waste will be stored within the site until transfer to the waste disposal site. Domestic solid waste & remaining of food waste during operation phase will be collected at solid waste collection point and from that point it will be disposed off at designated site of muncipality. The total solid waste of the New City Bhalwal Housing Scheme would be dumped into a dump place. The structure of the dump place has been designed in such a

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way there shall be no seepage to the natural ground, in case of rain or any liquid disposal in the dump. It has been provided with reinforce and water tight walls all around with double wall provision. It is expected that private trucks will be hired to remove construction and other debris from the site during the construction phase of the development.

3.17 Government Approvals

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

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DESCRIPTION OF THE ENVIRONMENT

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4.1 General

For any development project, the prevailing environmental conditions need to be assessed prior to the preliminary stages of planning, designing and execution of the project. Identification of physical, ecological and social aspects of environment and collection of relevant data is essentially important for the evaluation of impacts as well as for the suggestion of adequate mitigation measures which forms the basis of the Environmental Impact Assessment exercise.

The existing environmental conditions of the said project have been considered with respect to physical, biological and socio-economic aspects. Information has been collected from variety of sources, including published literature, field observations and surveys conducted specifically for this project have been analyzed for this study.

4.2 Methodology

For baseline data collection, following sequences of various techniques has been adopted. These techniques were chosen because of their pragmatic application in very short span of time.

1. Reconnaissance survey;
2. Field investigations/ Surveys;
3. Meteorological analysis;
4. Environmental analysis (air, noise and water quality surveys);
5. Collection and review of secondary environmental and social data; and
6. Basic parameters collection from published sources.

4.2.1 Reconnaissance Survey

Reconnaissance survey of the project site was conducted on OCT, 2023 for the collection of preliminary information about the flora, fauna and existing human intervention along with ecological characteristics. Reconnaissance survey helped us to delineate the ecological habitats and to explore the diversified ecological rich environment.

This information has become the baseline information for the detailed survey that specifically targets those areas which are going to be affected by the implementation of the said project. As a result of this survey, basic plants and animals' families were identified that actually prevailing in the associated habitats.

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4.3 Physical Environment

3.1.1 Topography

- **Physiography and Geology**

Sargodha District is a district of Punjab, Pakistan. Sargodha is located at 32° 5' 1" North, 72° 40'16" East. It is an agricultural district, wheat, rice, and sugarcane being its main crops. The Sargodha district and region is also famous for citrus fruit; Kino (Orange) is a newly developed variety.

It is located 172 kilometers northwest of Lahore, in Sargodha District. It lies about 30 miles fromthe M-2motorway, which connects Lahore and Islamabad. It is connected to the M-2 by severalinterchanges at different locations. Sargodha is roughly 94 km from Faisalabad, due southeast. Directly east connected by the M-2 motorway are Lahore and the route to Rawalpindi and Islamabad. Due east is the city of Jhang; toward the west are the city of Mianwali and the Chashma Barrage. Dera Ismail Khan is located 232 km southwest from the city. Sargodha city also has a Pakistan Air Force base within its city. The PAF Base Sargodha now known as PAF Base Mushaf, named after the late Air Chief Marshal Mushaf Ali Mir, a former Chief of Air Staff of the Pakistan Air Force. The strategic location of the base has allowed the Air Force to carry out experimental work within the city. The Indus Valley is that part of the district, which lies between two high banks of Indus River. The area close to the main stream is called as "Kacha" and beyond that is known as "Pacca". The entire area is generally called as "Nasheb". The floods in Indus, supply water to the cultivated land of "Kacha" area of the district. Thal, the sandy desert and prairie lies above the high banks of the Indus River.

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4.2.1 Hydrology& Water Resources

- **Surface Water Resources**

The major surface water source in the area is Indus River, flows right side of the Bhakkar District. In addition to that, there are few other surface water sources, which are used forirrigation purposes for agricultural lands in the area.

- **Groundwater Resources**

The main source of drinking water in the area is groundwater, which is pumped through hand pumps, pressure pumps and tube wells. The groundwater is also used for irrigationpurposes.

- **Groundwater Quality**

For establishment of baseline data and to assess the ground water quality, samples of ground water were collected from the New City Bhalwal housing society development site, District Sargodha and were tested, by an EPA approved Lab for baseline establishment. The sample of Ground Water was collected from various location at housing society development site, District Sargodha and tested to assess the groundwater quality. Comparison of groundwater sample has been made with WHOdrinking water standards.

4.2.3 Soils

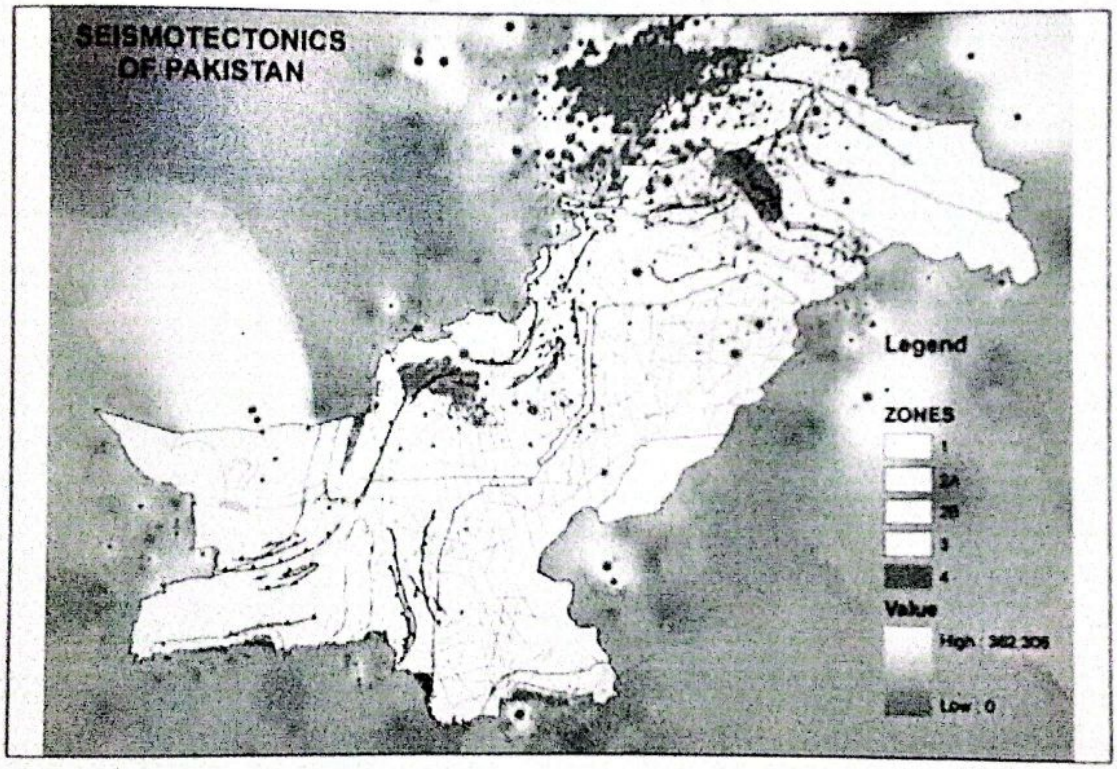
The Sargodha district is a part of West Indus basin that has gradually been filled up by alluvium brought by the Indus and its tributaries from the North. The alluvial deposit is generally more than 300 meters thick and extends down to several hundred meters at some

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places. Towards the South of Sargodha this alluvium is locally interrupted by rock out crops of a buried hill range drown as Karana hill. This is a range of Precambrian age, which is known on Dehbi Shahpurridge. The soil of project area is saline.

4.2.4 Seismicity

The area has no history of any serious damages due to earthquake. The area lies in Zone2A which is a Minor Hazard Region. Seismic Zoning Map of Pakistan showing Proposed Project site area is presented in Figure 2.



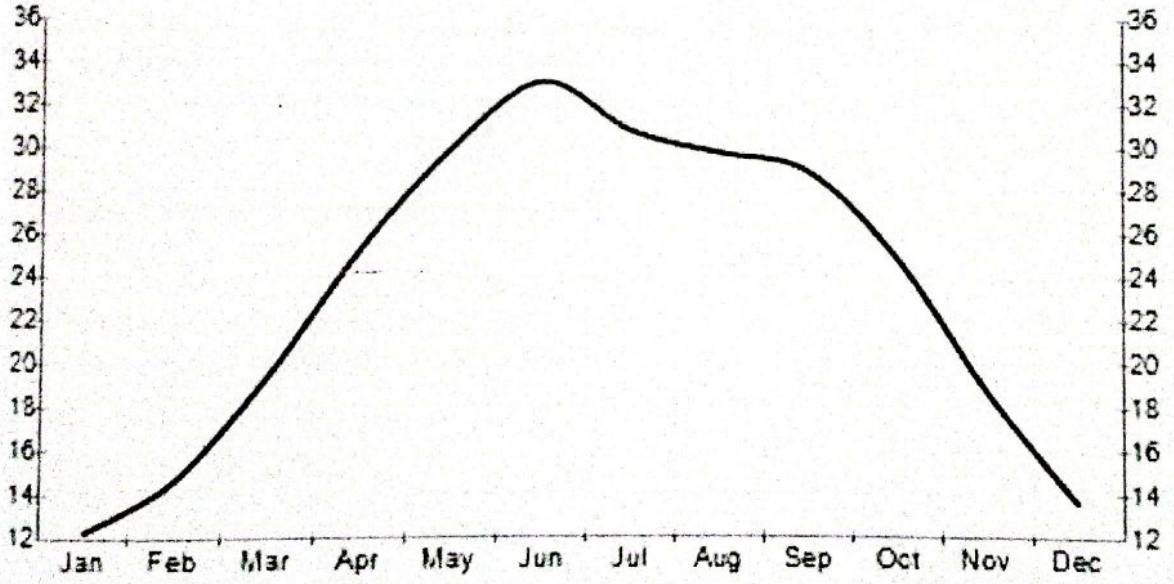
4.2.5 Temperature

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Project area falls in Punjab. Being flat topography, essential climate features are the same. The maximum temperature in summer reaches 50 °C (122 °F) in the summer. In winter, the minimum is 1°C. The mean maximum and minimum temperatures in summer are 41°Cand 27°C; and in winter 19°C and 4°C respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season on the other hand starts from November and continues until March, December, January and February are the coldest months. Detail description of the seasonsis as under:

- Winter (October to February): Moderate to extreme and dry
- Spring (March & April): Pleasant and moderately cold
- Summer (May to September): Very hot to humid
- Monsoons (June to August): Wet. Although the temperatures are milder but due to appreciable humidity, the heat is oppressive; and
- Post-Monsoon Summer (September & October): Moderate and slightly humid
-

Figure 3: Average temperature per month



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4.2.6 Rainfall

The rainy season starts in July and ends in September. More rains occur in July and August than any other months. Most of the winter rains are received in the months of January, February and March. Yearly precipitation is 400 mm.

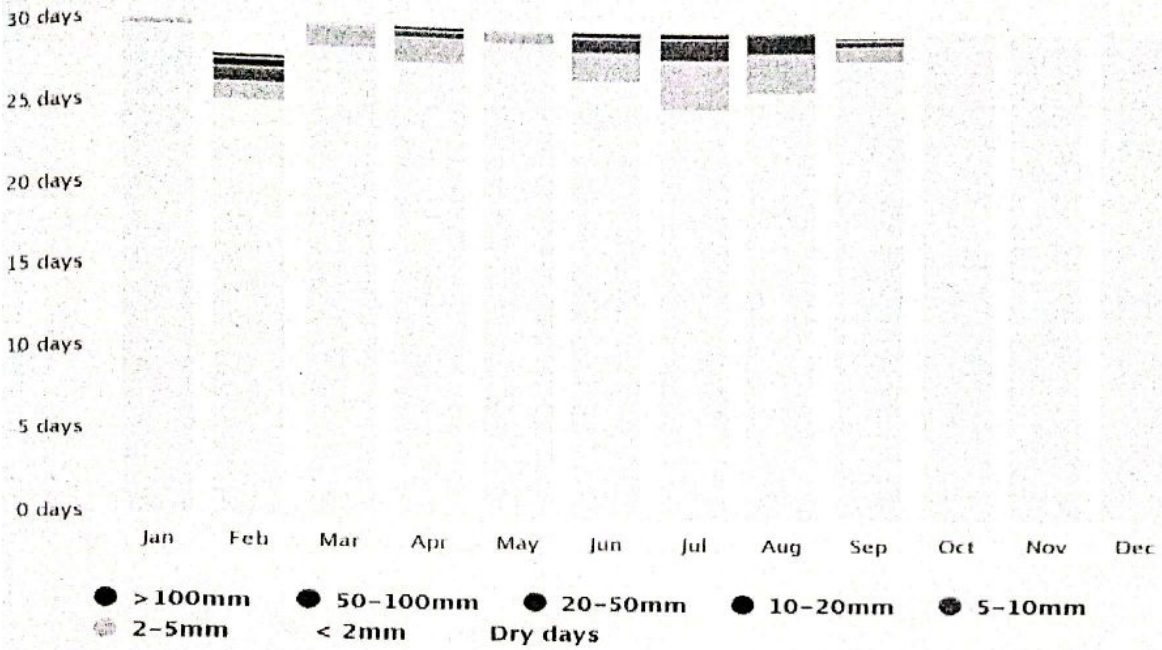
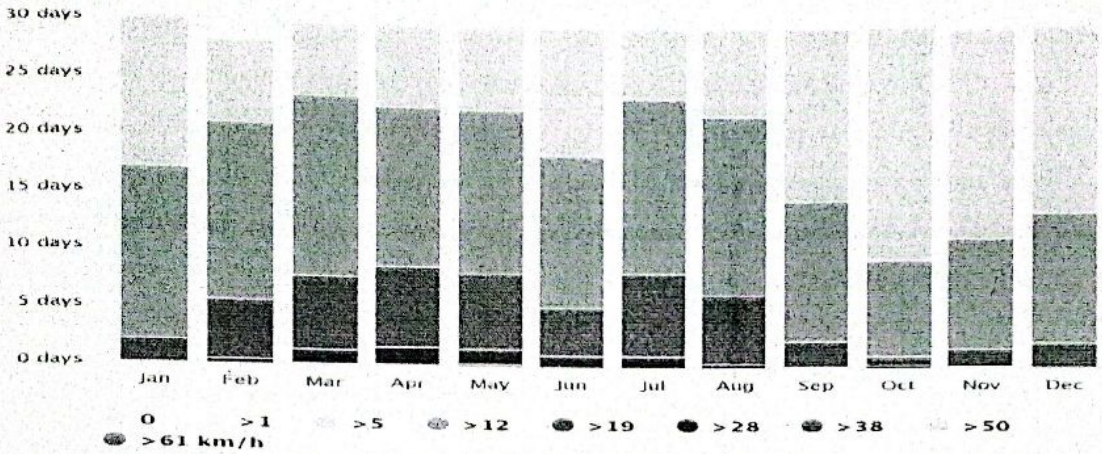


Figure4: Precipitation amounts

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4.2.2 Wind

The Sargodha region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter pickingup during spring season and peaking during the summer months. The prevalent wind speed ranges from 10-25 km/h,



however on some days; there appear storms of 60 km/h.

4.2.2 Noise Level

As per NEQS, permissible noise level is Up to 69 dBA when measured with a sound meter at a distance of 7.5 m from the source. At proposed project the main source of noise emission are the construction activities. Noise from vehicles and other powered mechanical equipment is intermittent. Use of power equipment's at proposed project is just once during unloading of material and is being of temporary nature. Maintenance vehicle came only on requirement basis. As such, there is no noise threat at the proposedsubproject sites, where construction activities are being proposed.

Noise level measurements were carried out at various locations within the Boundary of site. These analyses showed that Leq values much below the 85 dBA limit prescribed under the NEQs established by the. Typical values were average 55 dBA; high 69 dBA;and low 30 dBA. Based on professional experience background daytime noise levels areprobably well below 55 dBA.

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4.2.7 Ambient Air Quality

The primary source of air pollution at the project sites is the vehicular emissions, and the key pollutants likely to be found at project proposed locations are carbon monoxide (CO), oxides of nitrogen (NOX), sulfur dioxide (SO2), and particulate matter (PM). Other source of air pollution is dust arising from construction activities. In order to determine the air quality of the area, air quality monitoring was carried out by the SEAL, Lahore being EPA approved Lab and has the requisite air sampling device and expertise for collection of samples. The project location is well outside the metropolitan center. There does not exist any large industry or any other significant pollution source near these sites/routes. As a result, the ambient air quality of these sites is expected to be well within the acceptable limits, and no major criteria pollutants are likely to be found in excess of the limits prescribed by national and international standards. Copy of detail Report is annexed at the end.

4.3 BIOLOGICAL ENVIRONMENT

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

There are however no significant or well-shaped trees and shrubs on the project site. There are some trees only along the main roads.

4.3.1 Flora

Vegetation cover and trees: The district's trees consist of jand (Prosopis spicigera), karir(Capparis aphylla), beri (Zizyphus jujuba), van (Salvadora oleoides), kikar (Acacia nilotica), shisham (Dalbergia sissoo) and aak (Calotropois spp). Various herbs can also be found, including harmal, akrey and bathoo. There is wild growth of Mesquite bushes and some Eucalyptus trees in the areas near the works but natural forest cover has been significantly reduced in the past. Some of the older stands of trees specially fruit trees, still survive the onslaught of urbanization on this previously natural and agricultural area. There is probably little natural vegetation in the project

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4.3.2 Fauna

There is no wildlife except jackals, dogs and snakes etc. Common species of birds found in the project area are sparrows, crows, pigeon, dove, tiliar (starling), parrot, quail, pintail and humming bird etc.

4.4 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.

4.4.1 Demographic Profile

According to the World Bank estimate, the population of district had, a population of 4,665,979 of which 35.96% lived in urban settlements. The predominant ethnic population in the Sargodha District is Punjabi with small communities of Muhajirs and Pashtuns. The people of Sarghoda district are Muslims, with an overwhelming Sunni majority. Population Density is 655 Person /km2. As per the 1998 census of Pakistan, the following are the demographics of the Sargodha district, by spoken language: Punjabi language: 94% & other: 6%. Inhabitants of Sargodha District speak a great variety of Punjabi dialects: which are

- Shapuri (Main dialect of the district)
- Majhi or standard (in cities)
- Puthohari (Northern borders)
- Jhangvi (southern borders)
- Other Languages include: Urdu & English

4.4.2 Health Facilities

Sufficient medical and health facilities are available around existing Grid Station site. District Head Quarter & Taulka Head Quarter hospitals are established at District &

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Tehsil Headquarters respectively. In rural areas, dispensaries & rural health centers are functional. There are also other hospitals of voluntary organizations, which provide health cover to the general public. Table shows the number of health institution in Sargodha District:

Table 6: Health Facilities

Institute	Civil District	Number	Beds capacity
Hospitals	Sargodha	6	1236
Dispensary	Sargodha	49	64
Rural Health Centre	Sargodha	16	320
Basic Health Centre	Sargodha	120	240
T.B. Clinic	Sargodha	1	100
Sub-Health Centers	Sargodha	31	--
M.C.H Centers	Khushab	19	-

4.4.3 Educational Facilities

According to the official website of District Sargodha, the literacy ratio of the district is has increased from 24.9 % (1981) to 46.3% (1988). Number of educational Institutions and their enrolment is given in the table below:-

Table 7: Educational Facilities

Name of Institute	Civil District	Institute		Enrolment		Teaching Staff	
		Male	Female	Male	Female	Male	Female
Primary	Sargodha	952	875	114,012	91,876	2,815	2,522
Middle	Sargodha	115	218	38,538	56,970	1260	2059
High/Secondary	Sargodha	123	83	67,059	48,572	2,191	1,422
Higher Secondary (Class XI-XII)	Sargodha	18	17	1,440	1,222	161	90
Intermediate and Degree Colleges	Sargodha	17	19	25,520	12492	642	363
Intermediate Colleges	Sargodha	3	3	126	343	32	24
Degree Colleges	Sargodha	14	16	12,366	12,715	610	339
Mosque Schools	Sargodha	185	---	8,619	---	259	---

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4.4.4 Transportation and Communication

The mode of transport in the local areas are through vans, motorbikes, chingchi rickshaws, buses etc., people of the areas used all mode of transport for their purposes. Sargodha is linked with Chiniot, Gujranwala, Khushab, Jhang, Mandi Bahudin Districts.

4.4.5 Agriculture

The agriculture is by far the main economic activity in the central/ southern Punjab. The main crops during Rabi are wheat, gram, rape, mustard, barley and oil seeds. In Kharif, cotton, jawar, sugarcane, bajra, maize and rice are grown. In addition, there are subsidiarycrops known as Zaid Rabi like Kharbooza, tobacco and potatoes and Zaid Kharif like potatoes and chilies.

The Sargodha district and region are also famous for citrus fruit; Kino is a newly developedvariety. The main fruits grown are mangoes, date, orange, water and muskmelon, guava, citrus, falsa, jaman and pomegranate. In the beginning of the cultivation era, the inhabitantsused to eat Pilu and Bair, the only wild fruits that grows intermittently. With the introduction of canal irrigation mango and other fruits are being grown on commercial basis. Wheat, cotton, sugarcane and rice are the major crops, whereas mango and citrus arethe major fruits of the area. As per cropping pattern, wheat and sugarcane are the highest grown crops in the area.

4.4.6 Cultural Heritage and Community Structure

There are no official heritage sites or historic, religious or archeologically important siteslocated in the project work area. There are no major historic or archaeological feature ofnote but there a few places of worship i.e. mosques within about 5Km of the site.

4.5 QULAITY OF LIFE VALUES

The population of the district consist of self-employed (including farming and trade), private employees and government employee. The main occupation of women in rural areas are house-keeping which includes attending to the cattle, extracting butter and gheefrom milk, weaving and sewing of family clothes. In addition, they generally help their men-folk on farms with the lighter duties like transplanting of seedlings, threshing and

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winnowing of grains and sometimes they help in harvesting. In city, women are housewives or work as professional's doctors, nurses, teaching and in offices.

4.5.1 HEALTH FACILITIES

Sufficient medical and health facilities are available around project area. District Head Quarter & Taulka Head Quarter hospitals are established at District & Tehsil Headquarters respectively. In rural areas, dispensaries & rural health centers are functional. There are also other hospitals of voluntary organizations, which provide health cover to the general public. There is also a proposed hospital in thee plan of housing society.

SITE SUITABILITY:

The present site for New City Bhalwal Housing Scheme is under the ownership of proponent. All commodities are at a suitable distance from project site as they will not impacted by the construction and operational activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of said project.

All facilities of infrastructure, electricity, roads, and communication facilities are present in current location. The project site is devoid of flora & fauna having significant importance.

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4 IMPACT ASSESSMENT

5.1 Methodology for Impact Identification

The potential impacts due to said housing scheme can be both positive (beneficial) and negative (adverse) depending on the resources and receptors involved along with other parameters such as geographical scope (magnitude and extent), temporal scope (duration) and reversibility.

It is anticipated that this project will have positive impacts on sectors such as the economy, employment and foreign exchange earnings among others. Moreover, the project is expected to result in negative impacts of short-term duration and transient in nature.

Environmental sensitivity of the project area is described through a thorough review of the project activities and the evaluation of significance of impacts is carried out through Environmental Checklists and GIS and computer expert system. In checklists, the impacts have been given magnitude based on their severity. A detailed map of the project area is developed on GIS to study the impacts on nearby environmental settings. This chapter then suggests effective mitigation strategies to help combat the adverse nature of these impacts and delivers a monitoring scheme to manage them.

5.2 Impacts Analysis and Prediction

The impacts on different environmental settings were analyzed by conducting different consultation sessions with environmental experts and individuals. Their views were recorded and incorporated in the report. The list of stakeholders and individuals consulted will be provided in the chapter of Stakeholder's Consultation.

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5.3 Characterization of Impacts

Impacts were characterized on the basis of following parameters:

- Nature
- Duration
- Magnitude
- Spatial Boundaries
- Extent
- Reversibility

The impacts characterization for the project has been given in Table 6-1.

Impact Characteristics	*Air Quality*	*Health*	*Water Quality*	*Flora & Fauna*
Nature	No Impact	Indirect	Indirect	Positive
Magnitude	Low	Low	Moderate	Low
Extent/location	Surroundings	Project area	Surroundings	Surroundings
Timing	Construction & operation	Construction & operation	Operation	Operation
Duration	Intermittent	Short term	Continuous	Continuous
Reversibility	Irreversible	Reversible	Irreversible	Reversible
Likelihood (risk)	Uncertainty	Probability	probability	Probability
Significance	Global	Local	Regional	Regional

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Table 6-1 Characterization of Impacts

Environmental Component	Impacts		Nature of Impact		Duration			Spatial Boundaries			Likelihood			Reversibility	
	Positive	Negative	Direct	Indirect	Short Term	Intermediate	Long term	Local	National	Global	Low	Moderate	High	Reversible	Irreversible
Water Resources	Nil														
Acid Mine Drainage	Nil														
Land Resources	■		■				■	■				■			■
Air Quality		■	■		■			■			■			■	
Climate Change	Nil														
Noise		■	■		■			■			■			■	
Solid waste		■	■		■			■			■			■	
Wastewater		■	■		■			■			■			■	
Flora & Fauna	■		■				■	■				■			■
Community Amenity		■		■	■			■			■			■	
Afforestation	■		■				■	■				■			■
Local Economy, Community Development and Employment	■		■			■		■				■		■	
Resettlement	Nil														
Health & Safety		■	■			■		■				■			■

5. 4 Impact Significance

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After the evaluation of all the potential impacts, the impacts significance is be given using Impact matrix. The impacts significance of Physical importance, Ecological importance, Social importance is given using the matrix approach. The impacts significance is given based on the characterization of impacts. From the Table 6-1 which is showing the characterization of each impact the following significance is given to each physical, biological and socio-economic impact.

Table 6-2 Significance of Environmental Impacts

Environmental Parameters	Significance
Water Resources	None
Land Resources	None
Air Quality	Require mitigation
Climate Change	None
Acid Mine Drainage	None
Noise	Require mitigation
Solid waste	Require mitigation
Wastewater	Require mitigation
Flora & Fauna	Acceptable
Community Amenity	Acceptable
Afforestation	Acceptable
Local Economy, Community Development and Employment	Acceptable
Health & Safety	Require mitigation

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SCREENING OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

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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

Impact Analysis and Prediction

In order to give correct categorization to the present project Rapid Environmental Assessment Procedure was followed. It revealed that there some major impacts of the project have identified which will be controlled by adopting proper mitigation measures. These impacts are mainly attributed to solid waste & wastewater during the operational phase of this institute but most of the impacts are projected as moderate/minor impacts although project has many positive impacts on local public and economy. M/s New City BhalwalHousing Scheme will adopt proper procedures to carry out the operation in environmental-friendly way.

Meetings:

For the impact analysis and predictions detailed meetings were held with the proponent, management of New City BhalwalHousing Scheme Faisalabad and with other stakeholders. Issues were discussed that may affect the environment and also the implementation of said project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Consultations

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders, inhabitants of the villages, shopkeepers and workers in the area.

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These included local educational institutes, health departments, public representatives and local residents. The purpose of such consultations is to obtain the feedback from the relevant persons.

The environmental issues have been identified during literature review, consultation with stakeholders, relevant reports and visits to project site. Various types of environmental issues likely to crop up during the life cycle of project are grouped in the following stages:

- ***Project location***
- ***Project design***
- ***Construction stage***
- ***Operation stage***

Environmental Parameters

5.1 Environmental impacts due to Project Location

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

Project Location

The said project is located at SQ NO: 75, 112, 113, 114, CHAK NO: 9 N.B, TEHSIL BHALWAL DISTRICT SARGODHA .

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

- The site is undisputed and under the ownership of the proponent.

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- There is no fauna flora (particularly belonging to an endangered species) on the site
- Main road (Kot Momin-Bhalwal 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.

5.2 Impacts Associated with Design Phase

At the design phase, considerable impact can occur on land, soil, topography, ground water, and on people of the area. The design has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards.

Mitigation Measures at Design Phase

At design phase special attention should be given to the design of the project in the sense that it has been designed in such a way as to cause minimum disruption and deterioration of environment and surroundings. However, in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the said New City Bhalwal Housing Scheme will be 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). 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.

5.3 Impact during construction / development phase

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

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5.3.1 Physical Environment

The main impacts of the project during development / construction of the new roads, civil works, development of parks, installation / laying pipelines, sewer system and installation of utility and equipment's will be the dust and noise from transportation of construction materials and equipment's. Standard Engineering Practices will be enforced on the construction / development site.

5.3.1.1 Seismic Hazard

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

Mitigation

All the foundations of the structure will be designed to withstand even moderate to large earthquakes. For seismic hazard analysis updated structural and seismic evaluations will be consulted.

5.3.1.2 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 Natural Habitats and Endangered Species:

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No aquatic life exists near the said New City Bhalwal Housing Scheme. The flow of sediments into seasonal streams will not pollute any fresh water body. As no endangered species are reported during the visit. No adverse impact to the existing species of birds will occur during the construction period. The anticipated impacts will be indirect of low significance, locally confined and short-term.

5.3.1.3 Impacts on Air Quality

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

(a) 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.

5.3.1.4 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; which may effect to health of workers, pollution of soil, surface or groundwater.

Mitigation

Spoil generated will be safely disposed and managed with minimum environmental damages. The Proponent will use environmental friendly approach for construction, such as

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balanced cut and fills, re-use of excavated materials etc., and aim for minimum quantity of earthworks. . Temporary erosion control plans will be put in place for New City Bhalwal Housing Scheme, such plans should include:

- Temporary silt fencing,
- Temporary pending or silt trap basins,
- Short term seeding or mulching of exposed soil areas and particularly on sloping land,
- Ultimately used for filling

5.3.1.5 Noise and Vibration

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

Mitigation

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

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

5.3.1.6 Traffic Congestion and Disturbance to People

Impact

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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.

5.3.1.7 Occupational Health & Safety

During construction phase, the working personnel will be exposed to various health risks and hazards. The workers will receive injuries while working in the subproject, if adequate safety measures and equipment's are not adopted. Other potential impacts to health are respiratory and eye disease due to exposure to dust and smoke. Unsafe water sources and unhygienic conditions bear the risk of additional endemic diseases, such as dysentery, diarrhea and cholera.

Mitigation

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

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- 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.
- Improper sanitary practices of workers such as open urination or defecation can cause sanitary problem in construction sites. To avoid this practice the worker should be provided with special separate area for latrine and bathrooms.

Said 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 said mitigation measures are listed below:

- Appropriate waste disposal mechanism should be followed during the construction phase. The construction waste would be disposed in a manner that does not contaminate surface or groundwater.
- The construction waste generated will be used for earth filling within the project site premises.
- The Contractor needs to make sure that their machinery and equipment are properly tuned and serviced and there is no leakage of oil from construction equipment'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.

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- 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

5.4 *IMPACTS DURING OPERATIONAL PHASE:*

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

1.4.1 Noise:

Noise issue could be resulted from the operation of this Housing Scheme. The main sources of noise that are associated with the operation of this Housing scheme are:-

- Movement of vehicles
- Electric motors and Generators

Mitigation:

- Prohibition of using horn by vehicles and equipment near the settlement, school area and Masjids.
- Use of silencers in vehicles if needed
- Green/tree belts along the street and roads already said (bio-engineering measures)

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5.4.2 Air Quality

During operational stage of this housing society, the continuous operation of generators may affect air quality. However emissions from vehicles can also cause impact on environment. increase in traffic volume during office/school starting and closing times will also deteriorate the air quality.

Mitigation:

- The generators will be used having inbuilt technology to control emissions. Regular monitoring and checks will be performed to ensure the compliance with the regulations.
- Plantation will be done which will minimize the impacts of the emissions and add significant aesthetic beauty to the area. It will generate fresh oxygen. Regular monitoring and checks will be performed to ensure the compliance with the regulations. Generators, air conditioners will be properly tuned and maintained to minimize the exhaust emissions. 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).
- Prohibition of open storage and spillage of loose soil in and around construction site near the settlement. Covering of the stock piled spoil.

5.4.3 Depletion & Pollution of local ground water:

In order to provide drinking water facilities to the inhabitants of the newly planned New City Bhalwal housing Scheme, a complete water supply system has been said. The system will mainly consist of tube well, high level overhead reservoirs and a network of distribution pipeline. In the system the overhead reservoir shall be filled through M.S rising main extended from specially located tube wells. The rising main is also to be connected directly to the system so that supply is not interrupted during cleaning or repair of the reservoirs and also to ensure full supply at peak demands. During low and average demands, reservoirs will be filled and during peak demands, water, both from the tube wells and reservoirs will be flowing into the system.

• Excessive pressures in parts of the system are avoided, which may cause leakage and breakage of the supply system.

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• Uniform pressures in the system could be maintained, as far as possible.

• Keeping in view the climatic conditions and social habits of the same class of the society that is expected to be inhabiting in the town, the following figures shall be adopted for the design of the system, considering that the population will be served through house connection

• a) Domestic demand: 30 gallons per capita per day

• b) Non domestic demand: 3000 gallons per acre per day

Therefore, it is concluded that there shall be no depletion of water resources for the said Housing Scheme, both during the Construction and operation Phase of the project. In addition there was no perennial source of water like stream or river which may be contaminated by the use water of New City Bhalwal Housing Scheme.

5.4.4 Drainage & Downstream Water Pollution Impact:

The development of a town like New City Bhalwal Housing Scheme, the protection of environment, in order to promote the public health, should be of great concern. This requires apart from other activities, proper collection, treatment and safe disposal of waste water of the town. Sewerage system performs the vitally needed function, collecting waste water of occupied areas and conveying them to a safe disposal point. The liquid wastes will require treatment before they can be charged into a body of water or otherwise disposed without endangering the public health or causing offensive condition. The system will be designed so, that not only the self-cleaning velocity is maintained at design flow but also scouring velocity is controlled, which might occur due to steep slopes. Manholes will have to be provided in the system at all junction points and where there is a change of direction or size of the sewer.

A storm water management plan was put in place which considers strategies such as:

• minimize impervious areas,

• increase infiltration to the soil by the use of recharge areas,

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• use natural vegetation swales instead of pipes or use retention facilities with graduated outlet control structures, •

Use soft engineering techniques for soil and bank stabilization using vegetation rather than built structures. Similarly sewage treatment facilities are planned carefully to allow adequate treatment and disposal to protect downstream water quality values and rights of downstream users. The impacts of extra drainage runoff and the use of water downstream particularly for drinking purposes were assessed and it was concluded that both the design and construction phase were properly managed for the drainage and downstream water pollution by their proper drainage plan.

5.4.5 Solid Waste

Activities within the Housing Scheme premises may generate significant volumes of solid wastes. For example, cooking activities could generate both organic and non-organic solid wastes. These wastes require proper handling and disposal as they may give rise to sanitary nuisances, such as odors, flies, rodents and other pests. Solid waste produce during the operation phase of the Housing Society will comprise of domestic solid waste such as paper, rags & *food waste*. It could disturb the scenic beauty of the area & may spread diseases if not managed properly.

Mitigation

The solid waste management is a basic health requirement. If the solid waste is not properly collected and disposed off, it may create indiscriminate and much serious health hazard to the inhabitants of the society/colony. The total solid waste of the "New City Bhalwal Housing Scheme" Housing would be dumped into a dump place. The structure of the dump place is so design that there shall be no seepage to the natural ground, in case of rain or any liquid disposal to the dump. In general the following measures will be taken for solid waste:

* Segregation at door step at house hold level
* Recycling material will be sold to the concerned industry
* Organic wastes, after composting will be used as fertilizer

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- Small waste storage bins will be installed inside the boundary wall for the collection of domestic solid waste. The waste from these bins will be collected by the sanitary workers and will shift it to a marked solid waste collection point. The food waste produced from this college will be disposed off properly at designated site of district council.
- No significant impact on the environment is anticipated from solid waste generation at the project site as the generated solid waste is managed efficiently.

5.4.5 Traffic & Transport Issue:

There is no high traffic associated with the project and there will be no impacts on local and regional traffic flow which will have effects on traffic congestion, air pollution, smog and noise.

The effects on traffic congestion, smog and noise are properly assessed. Such measures are generally regarded as more environment friendly..

5.4.7 *Eco-friendly Measures and Sustainability*

The design, construction and maintenance of buildings have a tremendous impact on energy consumption, water consumption, productivity and health of people and nature. Best environment friendly practices and initiatives need to be adopted during the construction and operation phase of this Housing Scheme, such as:-

- Adoption of sustainable building designs (provision of sunshades/ awnings to prevent heating of the buildings, provision of double glazed openings to promote insulation for buildings, esp. with metal roof).
- Provision of adequate green spaces /areas, planting of trees/ ornamentals on site.
- Renewable energy source (solar water heaters and photovoltaic cells); energy efficient appliances (fridges, ovens, Air Conditioners); energy-saving devices (LED lamps).
- Waste segregation for recycling and composting.
- Rain water harvesting for washing of premises.

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5.5 Potential Environmental Enhancement Measures

Tree plantation and cropping within the premises have been planned by the proponent for environmental enhancement. The Proponent will also make arrangements for protection and maintenance of trees.

Names of Trees, Plants etc.

The following plants are recommended for this project, however other trees will be consulted with gardening experts and other endangered trees will also be planted.

Local Name	Scientific Name
Cono Tree	*Conocar pieceo*
Arabic Gum tree	*Acacia nilotica*
Golden Shower tree	*Casia Fistula*
Indian Beech tree	*Pongamia Pinata*
Kachnar	*Bauhinia variegata*
Jasmine	*Jasminum*
Lilly	*Lilium*
Lotus	*Nelumbo Nucifera*
Rose	*Rosa Indica*

Excavation for planting shall include plant pits and planting beds. The minimum depths of plant pits or beds shall be measured from Premises the grade. Plants beds and pits shall be tested for drainage before planting by filling with water twice in succession.

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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.

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ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

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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.

6.1 Institutional Capacity

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

- Site activities are well managed
- All environmental safeguards are carried out correctly
- 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 10-15 workers during construction phase and 8-10 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

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phase. It is the responsibility of management that contractor and supervisor should implement safety procedures of health and environmental safety.

6.2 Training Schedules

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

1.1.1 Health Safety & Environment Awareness Session

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

1.1.2 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.

1.1.3 Fire Safety

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

6.3 Summary of Impacts and Mitigation Measures

When all impacts are considered, the impacts of highest significance are those that will affect the natural environment. Although there will be a number of social impacts of high significance, the majority of the impacts on social conditions are of moderate significance. Furthermore, it is clear from the description of the existing environment in **New City Bhalwal Housing Scheme**, Housing Scheme that the disruption to social conditions and the existing social impacts are already of very moderate, and the project will not add any substantially new negative impacts to those that are already present.

The positive economic impact of the project is highly significant, and the revenue from taxation that will accrue to government provides resources that can be used to significantly improve the conditions in the region in particular and Pakistan in general. The economic benefit to the local economy is also significant, since the project will not only support several hundred employees directly, but it will also support significantly more of their dependents. It is estimated that, on average, each employee will support five to six dependents or family members. This should result in a general improvement in standards of living in the study area and provides an alternative livelihood.

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5.1 OBJECTIVES

An Environmental Monitoring Plan (EMP) was outlined alongside Environmental Management Plan to ensure all the corrective actions to counter adverse impacts which gives a detailed EMMP. The EMMP will serve as a principal execution module of the project that would not only mitigate adverse environmental impacts during the installation and the operational phase of the project but also ensures that environmental standards and good in-housekeeping are being practiced. Continuous environmental monitoring is exercised to ensure that preventive measures are in place and effective to sustain environmental integrity. The key objectives of EMMP are:

- To outline functions and responsibilities of persons associated with the commencement of the project
- To state and implement standards and guidelines which are required under environmental legislations particular in context to the project commencement
- To facilitate the implementation of the mitigation measures by providing the technical details of each Project's impact and proposing implementation schedule of the mitigation measures
- Define a monitoring mechanism and identify monitoring parameters to ensure that all mitigation measures are completely and effectively implemented
- Identify the resources required to implement the EMMP
  financing arrangements

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MITIGATION ACTIONS AND MONITORING PROGRAM

The purpose of the environmental management and monitoring framework is to facilitate the implementation of environmental commitments, included in the environmental impact analysis study. The proponent is committed for the environment and to the sustainable management of its

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 owned by proponent and there is no settlement 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*
Wildlife protection	Biological	Accidents/ Dangers to fauna	Less/ Adjacent area	**Avoidance** • No-hunting, no trapping, no harassment' policy will be strictly enforced. • Trading of wild animals or birds by project personnel will also be prohibited.	Contractor	Proponent*
CONSTRUCTION						

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Civil works	Physical, Social, Biological	Soil Erosion, Emissions, Water Contamination, Noise &Vibration, Wildlife	More/ Adjacent area	**Minimization:** • Dust emission from soil piles and aggregate storage	Contractor	Proponent*
	Aesthetical	affected, Employment, Health &Safety of Workers		stockpiles will be reduced by keeping the material moist by sprinkling of water at appropriate frequency **Avoidance:** • Covering the pile, for example with tarpaulin or thick plastic sheets to prevent emission. • Noise control measures should be implemented • Off-road driving should be minimized in order to avoid accidental killing of fauna.		

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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 should not be operated. • Vehicles should not be washed or serviced in the field. • No vehicle-related waste such as oils, filters, old tires or parts should be left in the field • All vehicles should be maintained in good working condition	Contractor	Proponent*
				• All vehicles will have properly functioning silencers (mufflers).		

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Transportation of construction material	Bio-physical	Dust and Particulate Emissions, Noise Generation, Safety and Health Effects	Moderate/ Adjacent area	**Minimization:** • Excessive use of horns should be avoided • PPE's should be provided to workers **Avoidance:** • Covering of transporting material trucks. • Nighttime driving of project vehicles should be limited where possible. • Low speed limit should be maintained on the section of the access road that is adjacent to the community and site. • The fence surrounding the site should be put in on during the construction to prevent access to the construction site	*Contractor*	*Proponent**
OPERATION						

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Wastewater Management	Physical /social	Degradation of water quality	Moderate/ local	**Reduction:** • Domestic wastewater should be handled using ASP. Treated water should be used for horticulture activities in the vicinity and for irrigation purposes on the land adjacent to project site .	Contractor	Proponent *
Air Quality Management	Physical	Dust and PM	Moderate/ adjacent areas	**Avoidance:** • No waste should be burnt at the premises. **Reduction:** • Tree plantation should also be done.	Contractor	Proponent*
Noise Generation	Physical, social, biological	Psychological and hearing problems	Moderate/ local	• There should be ban on the use of horn in the scheme. • Proponent has planned a proper plantation plan which should also act as barrier for noise.	Contractor	Proponent*

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Solid Waste Generation	Physical, Biological, Social	Soil Contamination, effecting GW Quality, vectors production, odor, Health, Welfare	Severe/ local and global	**Avoidance:** • The solid waste from the project should not be allowed to pile up. **Reduction:** • Solid waste should be managed entirely by the solid waste management contractor. • Provision of separate waste bins for each house • Quantities of waste disposed, recycled, or reused will be logged on a waste tracking register.	Contractor	Proponent*

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5.2 SCHEDULE OF IMPLEMENTATION & ENVIRONMENTAL BUDGET

This project will be completed in 12 months after getting Environmental Approval. The total cost of the project is PKR 300 Million approx. which includes; land cost, purchase & installationof machinery, implementation of mitigation measures, site rehabilitation, etc. The environmentalbudget for the project is PKR 0.5 million annually which will be used for on-site tree plantation at various designated sites, substitution of dead trees, , monitoring of environmental parameters (such as ambient air, noise and wastewater) and environmental consultancy fee.

5.3 ROLES & RESPONSIBILITIES ALONG WITH REPORTING PROCEDURES

Following are the designated roles and responsibilities of the employees involved in themonitoring and management of the adverse impacts:

Table 13: Roles and Responsibilities

Sr.No.	Concerned Persons	Duties
1	Project Manager	Following will be the responsibilities of the Project Manager • Ensure that the contractor is aware of all specifications, legal constraints, standards and procedures pertaining to the project specifically with regards to environment. • Ensure that all stipulations within the EMMP are communicated and adhered to by contractor(s). • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents. • Ensuring project execution within defined budget and timeframe. • Conducting regular check of the project status and meetings with project team. • Provide support and guidance to team members as and when needed. • Project Manager is expected to continually monitor and improve the overall performance of their operation

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2	**Site Engineer**	Following will be the responsibilities of the Site Engineer during the installation and operational activities: • Be fully conversant with the EIA Study and conditions of its approval. • Be fully conversant with the EMMP. • Be fully conversant with all relevant environmental legislation, policies and procedures and ensure compliance with PEQS. • Have overall responsibility for the implementation of EMMP. • Conduct audits to ensure compliance to the EMMP. • Liaise with the Project Manager or his delegate, the Environmental Officer and relevant discipline Engineers on matters concerning the environment. • Prevent actions that will harm or may cause harm to the

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		environment and take steps to prevent pollution on the site. • Confirm activities to the demarcated project site.
		In addition to the health and safety responsibilities held by staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes:

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3	**Environmental Officer**	• Ensuring that staff is appropriately trained and supervised. • Identifying, assessing and managing health and safety risks. • Consulting with workers (including staff, affiliates and contractors): i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, research and consulting functions and work environment. • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents & incidents and taking action to control the risk. • Assisting with the development, implementation and maintenance of a return to work program for injured staff. • Be fully conversant with the EIA Study and conditions of its environmental approval. Be fully conversant with the EMMP. • Be fully conversant with all relevant environmental legislation, policies and procedures and ensure its compliance. • Convey the contents of this document to the contractor site staff and discuss the contents in detail with the Project Manager and Contractor. • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP. • Take appropriate action if the specifications contained in the EMMP are not followed. • Monitor and verify that adverse environmental impacts that are likely to be occur should be kept to a minimum level, as far as possible. • Ensure that activities on site comply with all relevant environmental legislation. • Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final audit before starting the operation at site. • Liaise with the Site Manager regarding the timely monitoring of the site. • Report any non-compliance or remedial measures that need to be applied. • Reports on such problems will be submitted to the Project Manager by the Site Manager.

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5.4 TRAINING AND CAPACITY BUILDING

Training is an integral part of a preventive strategy. Environmental and disaster management training will be required to ensure proper implementation of effective environmental management and monitoring plan; and disaster management plan. However, training could be organized by owner involving relevant staff. As a trainer, competent Consultant can be outsourced. Important training under the spectrum needs to include:

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

Proposed MONITORING PROGRAM TO ASSESS PERFORMANCE OR OUTPUT OF EMP

The implementation of EMMP should be carefully coordinated with the design and operational program of the project. This will ensure the implementation of relevant mitigation measures at the appropriate project stages. It will also ensure that adequate resources are properly allocated to achieve the desired results. The EMMP for development phase of the project includes following:

- Air quality management & monitoring plan
- Noise management & monitoring plan
- Solid Waste management & monitoring plan
- Health and safety management & monitoring plan

SAID EMP REPORTING AND REVIEWING PROCEDURES

During construction, EMP reporting, and reviewing will be done by the contractor/HSE department. Regular monitoring will be done, and reports will be submitted in EPA as per condition of Environmental Approval of construction phase.

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- Monitoring reports will be reviewed by EMP team and New City BhalwalHousing Scheme management and then will be shared with EPA.
- Photographic records will also be maintained
- Recorded data will be reviewed by supervisory contractor/proponent so that it can be further improved if required.

ANY TRAINING NEEDS REQUIRED ENSURING IMPLEMENTATION OF EMMP:

The detail of training needs & EMMP is given above.

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MITIGATION AND IMPACT ASSESSMENT

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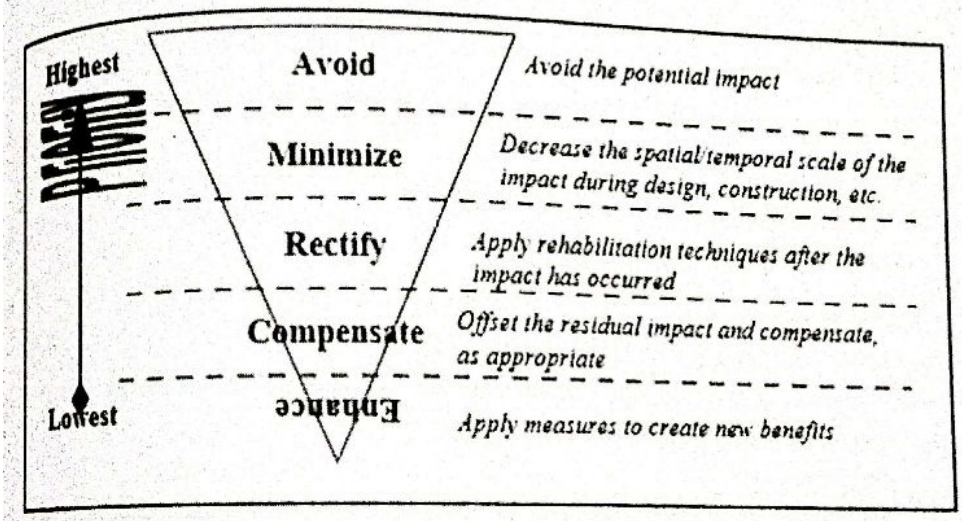
The impact assessment methodology is discussed below:

- **Screening of Potential Impacts**

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

- **Identification of Mitigation Measures**

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



- **Evaluation of the Residual Impacts**

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of the 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.

- **Identification of Monitoring Requirements**

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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 whether the impacts are within the prescribed limits and to provide timely information if acceptable limits are being breached.

1- What is the Problem

The project in question is of New City Bhalwal Housing Scheme. All the impacts due to construction and operation of this project have been discussed in Chapter 5 of this report and mitigation measures are also suggested there. However, the main problems which can occur due to this activity are given below:

- Deterioration of Air Quality due to use of Construction Vehicles
- Health & Safety Issues for Workers in Construction Phase
- Deterioration of Environment due to Production of Wastewater in Operational Phase
- Deterioration of Environment due to Production of Solid Waste in Operational Phase.

2- When will problem will occur and when it should be addressed

Sr. No.	Problem	When Problem Will Occur	When Problem will be Addressed
1	Deterioration of Air Quality	Due to use of Construction Vehicles in Construction Phase	This problem will be addressed before start of construction activities by providing all the required measures
2	Health & Safety Issues for Workers	Construction Phase	This problem will be addressed during construction activities by providing PPE's
3	Deterioration of Environment	Production of Wastewater in Operational Phase	This problem will be addressed in operational phase of the project
		Due to Production of	This problem will be

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		Solid Waste (Soil Contamination, effecting GW Quality etc.)	addressed in operational phase of the project

- **Where problem should be addressed**

e impacts associated with this project would be addressed at different stages of this project as entioned below:

- **Planning Phase**

e impacts related to human resettlement (if any occurs) would be addressed in planning phase.

- **Design Phase**

design phase special attention should be given to the design of the project in the sense that it as been designed in such a way as to cause minimum disruption and deterioration of vironment and surroundings.

- **Construction Phase**

e impacts related to Health and Safety of Workers, Air Quality, Soil Quality etc. will be dressed in construction phase.

- **Operational Phase**

e impacts related to Water Quality, Air Quality, Traffic Management etc. would be addressed operational phase.

- **How the problem should be addressed**

l the problems arising in terms of environmental impacts would be addressed in different ases of the project as mentioned above.

- **Ways of achieving mitigation measures**

e potential negative impacts during construction and operational stage of the project should be itigated to an acceptable level. Following environmental protection measures are adopted to minate adverse environmental impacts or to reduce them to an acceptable level within the gislative and regulatory framework. The said 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.

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- Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- Separation of recyclable material will be done.
- The solid waste produced in operational phase would be disposed off as per TMA procedures.
- The construction waste generated will be used for earth filling within the project site premises.

- **Changing in Planning and Design**

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

- **Improved Monitoring and Management Services**

The EMP will ensure that even all type of pollutants from project is within the prescribed limiting values of the NEQS. Thus the environment and human health around the project will be safeguarded.

Regular monitoring of all the significant environmental issues is essential to check the compliance status of EMP.

The main objective of the monitoring will be:

- To verify the results of the environmental study with respects to the said project.
- To estimate the trends of concentrated values of the issues.
- To assess the efficiency of pollution control mechanism
- To ensure that any additional parameters, other than those identified in the EIA report, do not turn critical after the commissioning of said project.

Recommended Activities of Environmental Monitoring Protocol

Parameter/ Receptor	Location	Monitoring	Mechanism Monitoring and Reporting Frequency

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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 and Selected Locations along 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 of PM_{10}, NO_X, SO_X, CO VOCs during the operation stage.

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Cutting of trees	In all project area during the construction stage and operation stage.	Periodic visits at 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 to	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 periods.

- **Compensation in money terms**

The project will not include any activity due to which compensation to public will be required in money terms.

- **Replacement, Relocation and Rehabilitation**

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 or restoration and rehabilitation is required

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CHAPTER 8: STAKEHOLDER CONSULTATION

Public consultation refers to the process by which the concerns of various stakeholders and local community who have a plausible stake in the environmental management & associated 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 Review of IEE/EIA Regulations, 2022 public consultation is mandatory for any socio-environmental study for the commencement of any project.

6.1 GENERAL

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the project commencement were carried out. The consultation process was carried out in accordance with the guidelines laid by EPA, Punjab. The objectives of this process were to:

- Share information with stakeholders for implementation of project.
- Access the impacts on the physical, biological and socio-economic environment.
- Understand stakeholder concerns regarding various aspects of the project commencement.
- Note valuable suggestions of local stakeholders to improve the project.
- Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area.
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the project.
- Invite people to express their views about the positive/negative impacts on their lifestylesand environment.
- Disclose information about contact offices/officers for any complaints/queries.

It is envisaged, there will be no social impact being foreseen due to the commencement of aforesaid project at aforesaid location. This EIA Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept forthe development of project. Public consultation performas are attached as Annex-IX.

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6.2 PROPONENT'S ENVIRONMENTAL MANAGEMENT TEAM

During construction skilled or semi-skilled labor will be hired whereas proponent's environmental management team during operation is given below in Table 14.

Table 14: Proponent's Environmental Team

Sr.#	Environmental Management Team
1.	Fakhar
2.	Muhammad Rehman
3.	Asif Ali
4.	Muhammad Nazeer

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6.3 OTHER DEPARTMENTS & AGENCIES

NOCs obtained so far by the proponent are attached as Annex-VI.

6.4 ENVIRONMENTAL PRACTITIONERS & EXPERTS

Following experts worked on said project:

Sr.#	Name	Qualification	Roles
		Team Leader	
1	Muhammad Rehman	M.Phil Env. Sci.	Report Writing
		Environmental Scientist	
2	Ammara Anwar	M.phil. Env. Sci. (Scholar)	Report Reviewer
3	Muhammad Shehzad	PH.D Scholar Env. Sciences.	Baseline Monitoring & Social Survey
		Environmental Engineers	
4	Umar Fiaz	M.Sc. Env. Engr. (Scholar)	Technical Input

6.5 AFFECTED & WIDER COMMUNITY

6.5.1 Participants of Nearby Residential Area Contacted

For the stakeholder's consultation, the nearby residential area was visited & the concerns were noted:

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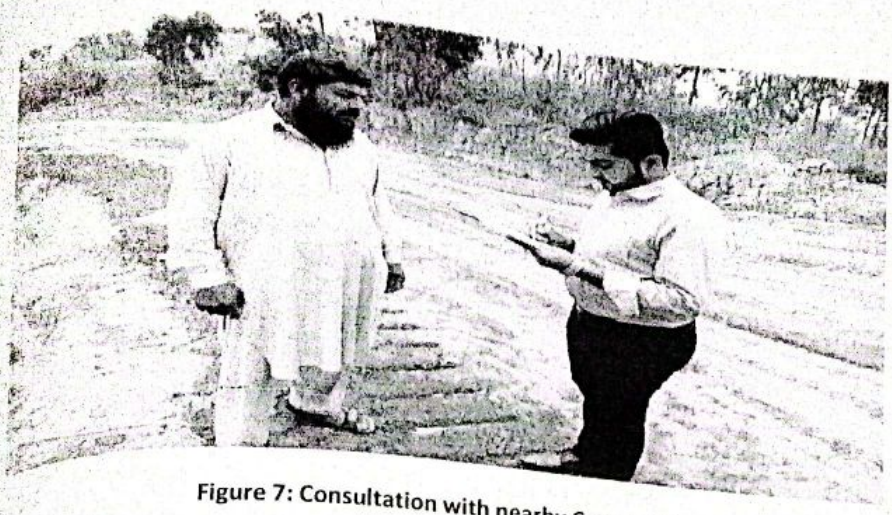
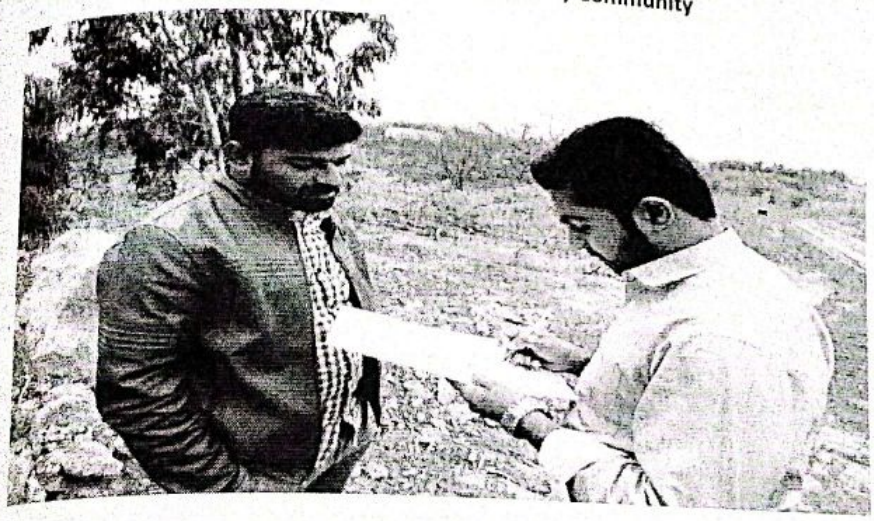


Figure 7: Consultation with nearby Community



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

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participants expressed their views freely. Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders.

Consultation Areas:

1. **Chak No: 7 SB**
2. **Chenab Bazaar/Kot Momin Road**

1.1.4 List of people consulted

Name of individuals	Feedback
Syed Mubashir	Environmental Enhancement measures should be taken
Muhammad Naveed	Tree plantation should be ensured
Aamir Hussain	To avoid any damage proper firefighting equipment should be installed
Sufyan tariq	Tree cutting should be avoided
Aslam Bhatti	Waste management should be done Properly
Anas Ghulam Nabi	Local people should be preferred for employment opportunities
Shehbaz	Project enhance socio-economic status of area
Ashraf	Project should be environment friendly
Muhammad Safraz	Waste management should be done Properly
Nazakat Ali	Appropriate Fire & Safety Measures should be ensured
Naeem Awan	Tree Planation & proper landscaping should be done
Zeshan Arshad	Nuisance should be avoided
Raheel	Wastewater should be managed
Muhammad Saleem	No problem will occur as many housing scheme developed
Rauf Ali	Wastewater should be disposed properly

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Rahat Baig	Green Belt should be developed
Haseeb	Local should be preferred for job opportunities
Iqrar Ali	Waste Should be managed properly

Awareness Regarding the Project

Out of total 20 respondents, 76% knew about the project whereas 24% were not aware of the project planning and implementation.

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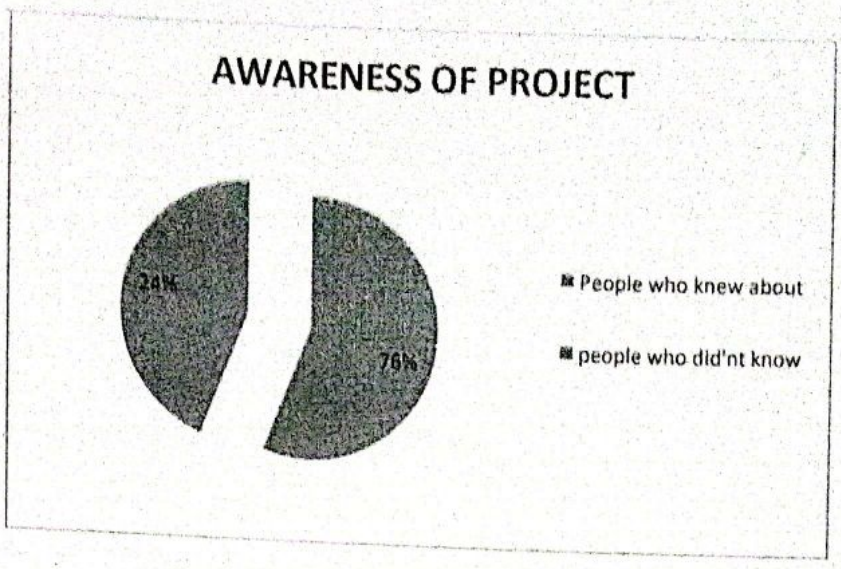


Figure 6-6: Awareness of project

1.1.5 Acceptability of the Project

Majority of the respondents, 99% favored the construction of the project keeping in view its importance. People had following comments regarding project:

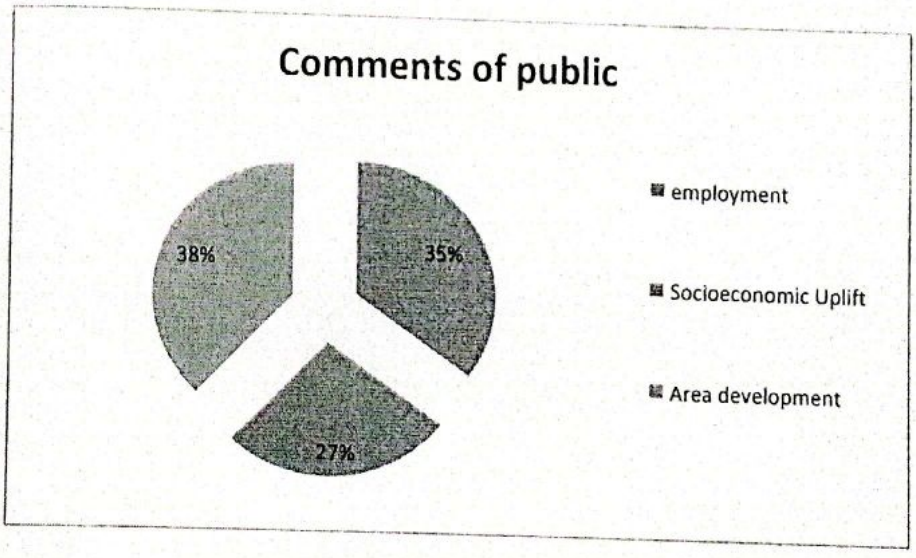


Figure 6-7: Comments of public

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1.1.6 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 Housing society will helps to control noise & 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 project.
Solid Waste	Proper disposal of solid waste should be practiced	• A designated area have been planned to establish in the scheme for the collection of solid waste. Solid waste will be disposed of regularly from the site as per practice.

Stakeholders Consultation

S #	Participant	Designation	Concerns/Remarks
Responsible Authority			

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1	Muhammad Naveed	AD Environment Sargodha	• Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured • Septic Tank should be constructed • Preventive measures should be adopted to avoid any unfortunate incident • Tree plantation must be ensured • Monitoring of site & implementation of EMMP
Other Departments			
1	Syed Mubashir	BI Local Government Development Department	• Site is brown area suitable for project • However, plantation should be done to enhance environment
Proponent's Environment Management Team			
1	Proponent and Environment Management Team	Manager (Fakhar Irshad) of New City Bhalwal Housing Scheme	• He will act as team lead. • Interact with other executives, mine staff and community residents. • Effectively motivate staff to follow protocols and to work productively. • Look after the Health and Safety Related issues. • Responsible for scheduling staff and ensuring that supplies are stocked. • He will play a direct role in developing business goals for the mine they run, and he will help to produce a business plan to ensure that those goals are met. • Appropriate leakage mitigation measures at place
Environmental Practitioners and Experts			
1	Dr Afzaal	PhD. Environment	• Wastewater disposal arrangement's • All type of waste should be managed to avoid nuisance
2	DR Umar	PhD. Environment	• No waste will be dumped improperly • Quality will be ensured • Tree Plantation
Affected and Wider Community			
1	Mr. Khurram	Local NGO	• Local employment should be ensured • Proponent shall work for betterment of community

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Reporting

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Sr. No		Detail
5.1	Clear reporting style supported by maps or other descriptive details	The said instructions have been followed in this report.
5.2	Specific term of references should be present in report	This is attached with this report.
	Appendices	
	Glossary	This is attached with this report.
	1- List of Abbreviations	This is attached with this report.
	2- List of individuals or organizations consulted along with their written feed back	This is attached with this report.
	3- Sources of data and full list of all reference material used	This is attached with this report.
	4- Terms of references for environmental reports	This is attached with this report.
	5- List of names, qualifications and roles of team members carrying out the IEE/EIA study	This is given at Page 15 of this report.

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APPENDICES

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REFERENCES

- SMEDA pre-feasibility report for establishment of housing schemes
- Guidelines for Preparation and Review of Environmental Reports
- Guidelines for Public Consultation
- Labor Laws
- Meteorology Department Data (from website)
- Meteo Blue
- 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
- Punjab Environmental Protection Agency (Review of IEE/EIA) Regulations, 2022.
- The Land Acquisition Act, 1894
- The Punjab Local Government Ordinance, 2001
- Punjab Environmental Protection (Amendment) Act, 2012

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GLOSSARY

Words	Dictionary
Domestic wastewater	Wastewater from sanitary uses
Residential	For living of people
Economically viable	Suitable in monetary terms
Endangered species	Which will extinct in near future
Threatened species	Those in danger of extinction
Aesthetic beauty	Scenic beauty of the area
Ambient	Surrounding of all sides
Topography	Physical features of the site
Silence zone	Where transmission/sound cannot be received
Anticipated Impacts	Expected Impacts
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
Orientation Session	Direction Session
Nuisance	Annoyance

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pH	Negative log of hydrogen ion concentration
Potential Issue	Problems likely to arise
Project	Planned activity
Residual Impacts	Impacts left behind after implementation of the mitigation measures
Significant	Important

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LIST OF ABBRIVIATIONS

CO	Carbon monoxide
CO_2	Carbon dioxide
NFPA	National Fire Protection Association
SO_2	Sulphur Dioxide
°C	Degree Celsius
PM10	Particulate Matter >10
EIA	Environmental Impact Assessment
EMMP	Environment Management & Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environment Protection Department
PEQS	Punjab Environmental Quality Standards
SPM	Suspended Particulate Matter
HSE	Health Safety and Environment
UDT	Urban Development and Tourism
SEP	Standard Engineering Practices
ERP	Emergency Response Plan
SWM	Solid Waste Management
IEE	Initial Environmental Examination
Km	Kilometer

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CUM	Cubic Unit per Meter
GWT	Ground Water Table
Ltd.	Limited
HC	Hydrocarbon
Mm	Millimeter
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
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 Equipments
Pvt.	Private
SFT	Square Foot
SOPs	Standard Operation Procedures
SO_x	Oxides of Sulphur
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority

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WASA	Water and Sanitation Agency
WHO	World Health Organization

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DETAIL OF TEAM CONDUCTING EIA STUDY WITH QUALIFICATION AND POSITION IN TEAM.

Name	Qualification	Position in the EIA/IEE Team
Muhammad Rehman Majeed	M.Phil (Environmental Science) GCU Lahore	Project Incharge And Supervisor
Muhammad Shahzad	M.Phil Environmental Science GCU Lahore	Team Leader and Coordinator (Author of the Report)
Mohsin Ali	M.Phil Environmental Science GCU Lahore	Senior Environmentalist (Field Analyst)
Ammara Anwar	MS (Hons) Environmental Science (PU- Lahore)	(Author of the Report)
Anum Waheed	BS (Hons) Environmental Science (GCU Lahore)	Research Associate (Author of the Report)

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SOCIAL SURVEY FORM

Questionnaire for the project of

M/S "NEW CITY BHALWALHOUSING SCHEME"

STAKE HOLDER'S INFORMATION:

1	Name	
2	Father's Name	
3	CNIC Number (Optional)	
4	Age	Years
5	Gender	Male Female
6	Qualification	Under matric Matriculation Graduate Post graduate
7	Marital status	Married Single
8	Employment status	Employed Unemployed
9	Income group	Below Rs: 20,000 / month Between 20,000- 30000 Above Rs: 30000 / month
10	Do you know about said housing scheme establishment at proposed site	Yes No
11	Should it be done?	Yes No
12	What social change it will result?	Improvement No change Deterioration
13	What economical change it will result?	Improvement

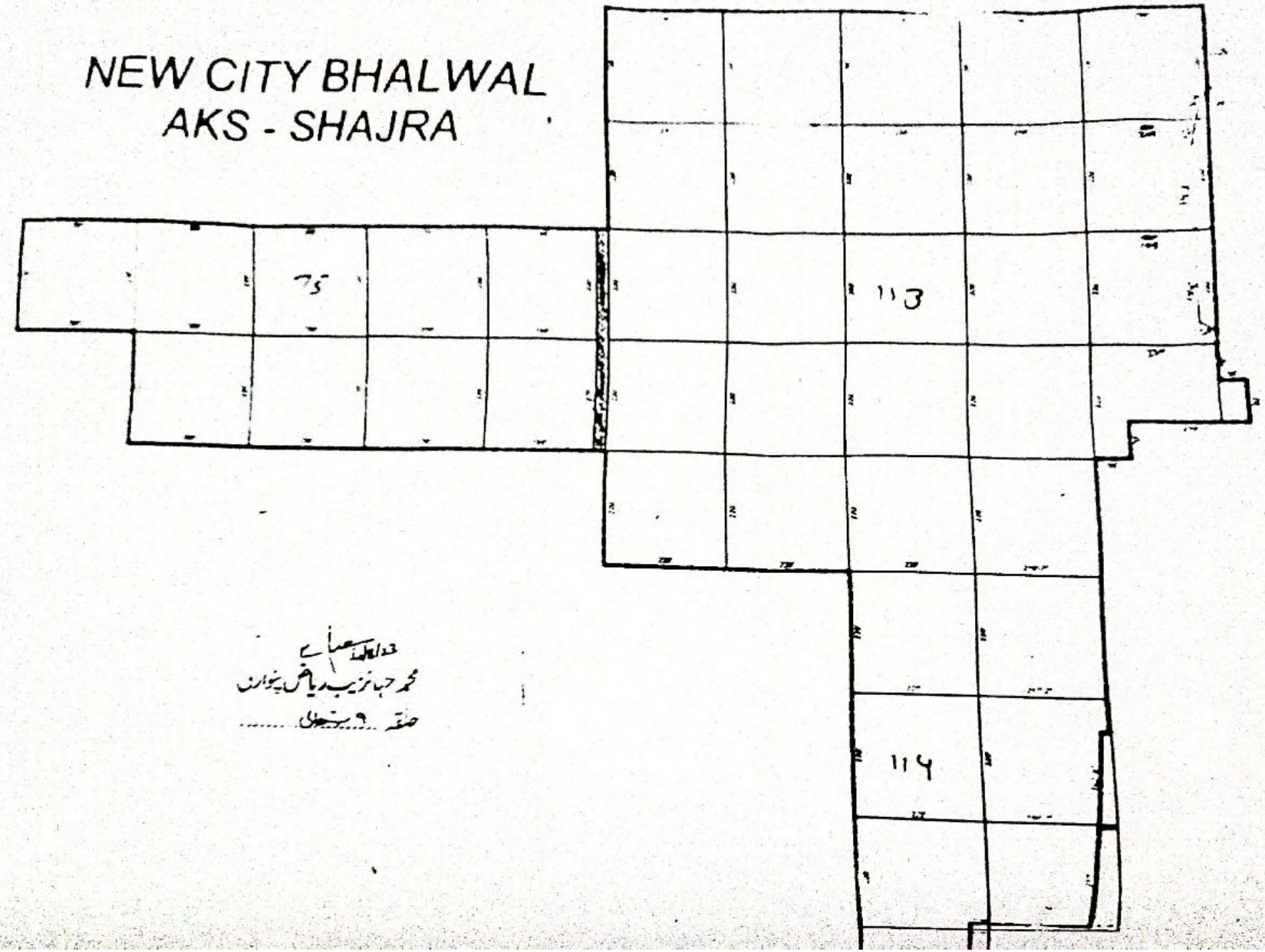
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			No change Deterioration
14	What environmental change it will result?	Without precautionary measures	Improvement No change Deterioration
		If adequate precautionary measures are adopted	Improvement No change Deterioration
15	Your suggestions to care for Environment		
16	Any other suggestion for benefit of the community?		

Signature:_____

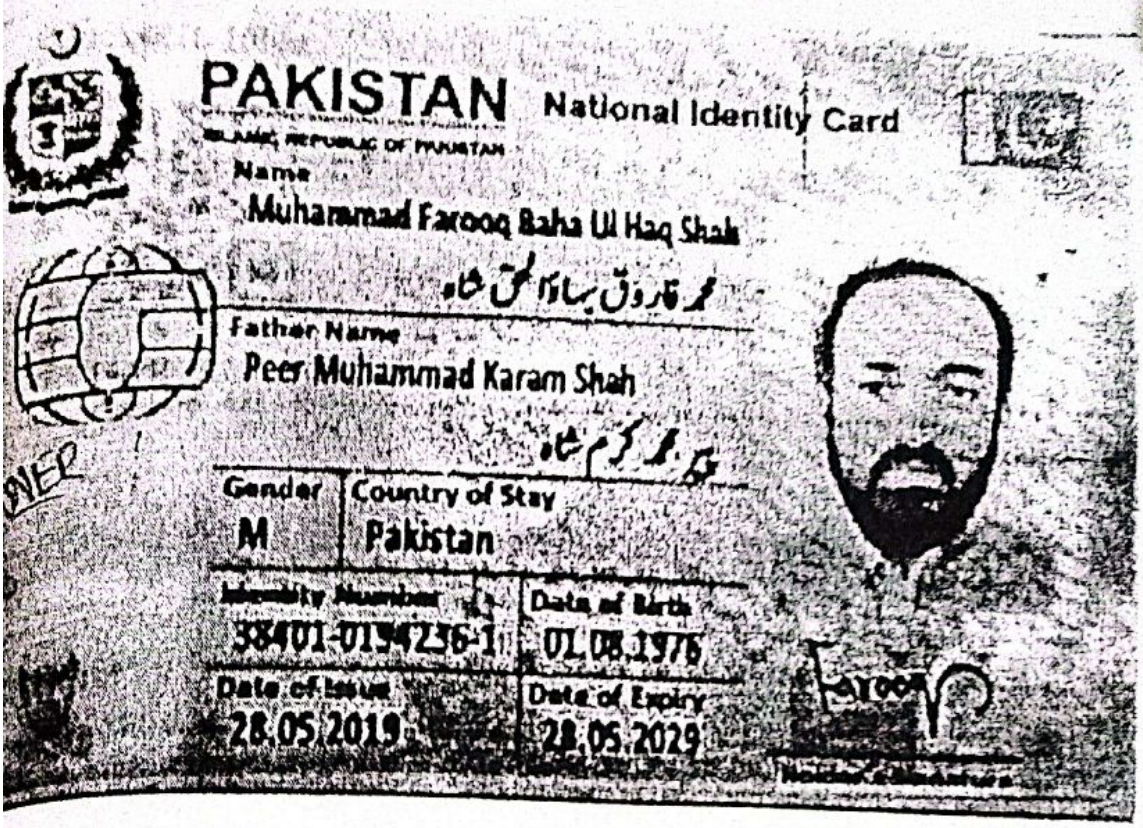
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NEW CITY BHALWAL
AKS - SHAJRA



محمد جہانزیب ریاض پنوار
حلقہ ۹ بھلوال

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PAKISTAN National Identity Card

ISLAMIC REPUBLIC OF PAKISTAN

Name

Muhammad Farooq Baha Ul Haq Shah

محمد فاروق بہاء الحق شاہ

Father Name

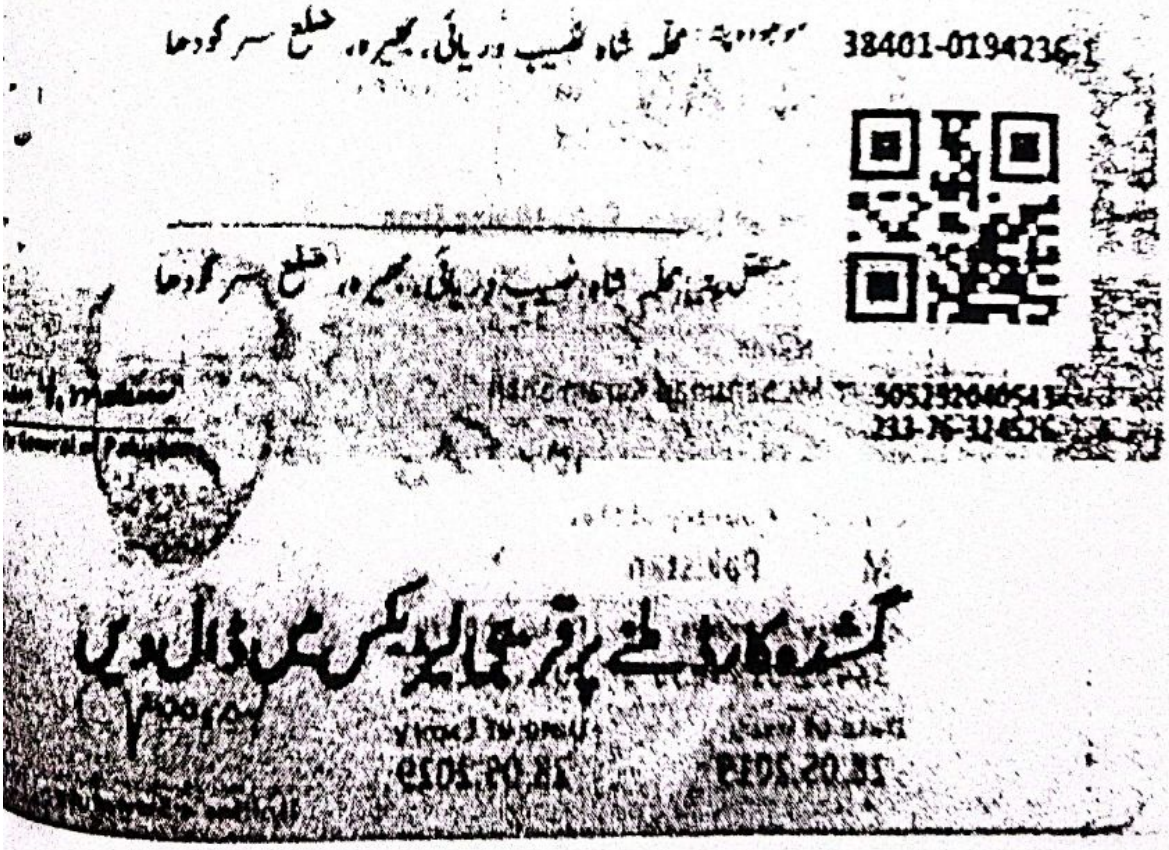
Peer Muhammad Karam Shah

پیر محمد کرم شاہ

Gender	Country of Stay
M	Pakistan

Identity Number	Date of Birth
38401-0194236-1	01.08.1976

Date of Issue	Date of Expiry
28.05.2019	28.05.2029



38401-0194236-1

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