

PRIVATE HOUSING SCHEME “PARADISE PALMS”
Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass
Tehsil Sadar District Faisalabad

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

EXECUTIVE SUMMARY

ES.1 TITLE OF PROJECT

This is an Environmental Impact Assessment (EIA) report of the project title **PRIVATE HOUSING SCHEME “PARADISE PALMS”** located at Hadbast Mouza Sahib Nagar, Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad over an area of 350.19 kanals

ES.2 LOCATION OF PROJECT

Project of above said housing scheme falling in Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad



ES.3 NAME OF THE PROPONENT

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WAQAS MAHBOOB BUTT

Chief Operating Officer

“Paradise Palms”

Housing Scheme

Brief Activities

Project is Housing scheme of PRIVATE HOUSING SCHEME “PARADISE PALMS” Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad over an area 350.19 Kanals in Faisalabad. Kohinoor Properties will carry out all necessary acts and activities in relation to the construction and the subsequent operation including procurement and producers to different vendors. Management will take all necessary steps for hiring services of various personal staffs pertaining to project.

ES.4 NAME OF ORGANIZATION PREPARING THE REPORT

In keeping view the regulatory requirement, Kohinoor Properties engaged **Environmental and Social Technical Services (ESTS)** to undertake an Environmental Impact Assessment (EIA) report.

ES.5 BRIEF OUT LINE OF THE PROPOSAL

PRIVATE HOUSING SCHEME “PARADISE PALMS” will provide better and luxurious environment with the opinion that life should not be limited to the confines of house or luxury villa. The infrastructures of location liberate people from all civic issues so that people can share their lifestyle with each other and strengthen the communal fabric. Total area of housing scheme is 350.19 Kanals.

Main Features are as follows:

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- Job and career prospects
- Comfortable and quality living
- Higher Freedom and luxury life
- Quicker, more livable neighborhoods
- Safety and Security
- Sustainability in society development
- Building and infrastructure

The project will operate in compliance with Punjab Environmental Quality Standards (PEQS).

- Noise pollution from construction machineries should be controlled or managed properly.
- It should be done by extensive vegetation of trees and plants.
- Vegetation should be done in surrounding area as it can absorb noise and air / dust pollution.
- All workers should be provided with ear covering and masks during construction phase.
- Medical checkup of all workers should be done after a specific time period (quarterly).
- Extensive plantation shall be done to improve/enhance the environmental scenario of the housing scheme.

According to the Environment Protection Agency, Government of the Punjab, Lahore, the project lie under the Schedule II H (1) Review of EIA / IEE Regulations 2022, project requiring Environmental Impact Assessment (EIA) report. Further, the client

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is required to fulfill the legal requirements of the Section-12 of the Pakistan Environmental Protection Act 1997.

ES.06 THE MAJOR IMPACTS

The overall impacts of the project can be considered positive. However, it may pose some minor and moderate negative social and environmental impacts which will require proper mitigation measures during construction phase.

Therefore, the intended measures are directed towards mitigation of the identified adverse impacts. Because of generation of small amount of wastes, there will not be any significant environmental and social impacts of the project.

- Likelihood of relatively higher local dust levels from engine exhausts of the vehicles employed for transportation of materials and machinery to the project site.
- Likelihood of higher local levels of drag dust blowing off wheels of the moving vehicles on the unpaved and poorly maintained roadway to the project site.
- Likelihood of backend impacts relating to consumption of natural resources including water for various operations within housing scheme.
- Likelihood of impacts relating to generation of sanitation wastewater from toilets and washrooms at the project site only if disposal is improper.
- Likelihood of impacts relating to disorderly stacking of the various building / construction materials.

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- Likelihood of various socio-cultural impacts relating to rights of opportunities of job and employment. Similarly, there could be frictions with the locals from interaction of the laborers with the local community.
- Likelihood of impacts relating to occupational health, worksite safety and non-insurance of the workers against the risks of on site job injury and resultant consequences.

There will be some generation of the ordinary food-based wastes and food residues resulting from consumption of food and eatables by the workers taking their meals at the project site during construction. Additionally, there will be generation of sanitation wastewater from the worksite toilets at the construction sites.

A brief description of the various likely impacts follows hereunder:

- **Impacts of Land Use change:** The project land belongs to management. Therefore, construction of the housing scheme would not involve any land use change. (*Activity devoid of any environmental or social impact*).
- **Impeachment of the Easement Rights of the Local Community:** No impacts relating to impeachment of the easement rights of the neighbours (such as blockage of sunlight, aeration and ventilation), as housing scheme will be constructed deep inside the earmarked land. (*Aspect/Activity devoid of any adverse environmental or social impacts*).
- **Impacts of Inadequate Disposal of the MSW:** No impacts related to generation and disposal of municipal solid wastes (MSW), as there will not be any generation of MSW at the project site at all. The ordinary food will not produce any adverse environmental impacts because of extremely small amount. (*Aspect/Activity devoid of any adverse environmental or social impacts*)

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- **Impacts on Groundwater:** Very minimal and insignificant impacts relating to abstraction and consumption of groundwater. Additionally, small amounts of freshwater will be required for drinking by the staff employed at the project premises or sanitation needs. (*Aspect/Activity devoid of any adverse environmental or social impacts*)
- **Impacts on Surface Water:** No impacts on the nearby surface water as the construction and the subsequent operation of the housing scheme will be devoid of any interaction with the surface waters near the project area. (*Aspect/Activity devoid of any adverse environmental or social impacts*)
- **Impacts of Inadequate Treatment and Disposal of Wastewaters:** No impacts related to generation, inadequate disposal and treatment of the wastewaters as the project activities will not generate any hazardous wastewaters or effluents at all. (*Aspect/Activity devoid of any adverse environmental or social impacts*)
- **Displacement & Resettlement Issues:** Onsite activities relating to project will not cause displacement of any persons or loss of the workplace or above. (*Aspect/Activity devoid of any adverse environmental or social impacts*)
- **Social and Cultural Issues:** The project will not interact with any of the nearby local communities. (*Aspect/Activity devoid of any adverse environmental or social impacts*)
- **Likelihood of Worksite Risks and Personal Injuries:** Non-observance of the standard procedures and steps for carrying out a particular activity and non-compliance of the precautionary measures (like smoking on worksite, wearing loose cloths and avoiding to put on safety equipment) may render the workers prone to higher chances of worksite accidents. All workers performing various

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handling activities must put on safety equipment. (*Aspect/Activity devoid of any adverse environmental or social impacts*)

- **Impacts on Local Ecology, Biodiversity and the Habitat:** No Impacts as this aspect are totally irrelevant to the housing scheme and because of its geophysical location; there is no likelihood of damage to the local flora and fauna. (*Aspect/Activity devoid of any adverse environmental or social impacts*)

Detailed above-referred adverse impacts, their potentiality to affect the environment and the measures for their mitigations has been presented in this Environmental Impact Assessment (EIA) report. However, it would be suffice here to state that if the project activities are carried out in a sustainable manner and in accordance with recommendations of the EMP and other relevant mitigation measures, as are given in EIA study; then the majority of these adverse impacts would become insignificant and of no relevance at all.

ES.7 RECOMMENDATIONS FOR MITIGATION MEASURES

The report details a set of comprehensive mitigation measures and strategies for avoiding the adverse environmental and social impacts of the project. In addition to the preventive measures for warding off the adverse impacts, corrective measures have also been suggested for various project activities at the site to address these adverse impacts. The report contains a set of comprehensive mitigation measures and the strategies for avoiding or for addressing the adverse environmental impacts of the project's construction and subsequent operation phase.

The mitigations relating to construction phase of the project include the following:

- Orderly stockpiling of the construction materials used for housing scheme.

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- Preparation of the tailored checklists for checking propriety of each and every activity in a systematic manner
- Identification of alternate routes in case of temporary blockade of the approach road.
- Preferring to carrying out noisy activities during daytime hours, and
- Ensuring worksite safety during handling of machinery and construction equipment, etc.

ES.8 ENVIRONMENTAL, SOCIAL & DISASTER MANAGEMENT PLAN (ESDMP)

The environmental management plan (EMP), provides a mechanism for implementing the preventive and the corrective mitigation measures along with list of the authorities and the focal persons responsible for their implementation. The mitigation guidelines are the result of lengthy deliberations over various issues made with the relevant stakeholders and the regulatory agencies. The primary objective of the EMP is to prevent and attenuate the adverse impacts to an acceptable level by adopting suitable administrative or technical options.

ES.9 PROPOSED MONITORING

The environmental monitoring is an essential tool for testing environmental performance of the project and ascertaining whether environmental mitigation recommendations are meeting their goals. The prime objectives of the environmental monitoring are:

- To check whether mitigation and environmental enhancement measures are adequate, effective and are actually implemented.

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- To provide the means whereby impacts which were uncertain at the time of preparation of the report, or which could not be assessed, can be identified and steps taken to adopt appropriate corrective measures.
- To ensure compliance with legal and community obligations including observance of safety procedures at the construction sites.
- To improve the approach for a-like projects, i.e. to provide information on the actual nature and extent of the key impacts and effectiveness on mitigation and enhancement measures.

The implementation of the EMMP will be verified through compliance monitoring of the various project activities and the recommendations of the monitoring plan.

The primary purpose of the environmental compliance monitoring or the post project auditing is to ensure compliance of the Environmental Approval issued by the EPA.

ES.10 CONCLUSION

In conclusion EIA of project shows that with adoption of the proper environmental management and mitigation measures, the project will not have any adverse impact on any element of environment or the surrounding communities.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

CHAPTER – 1 INTRODUCTION

1.1 PURPOSE OF REPORT

The main objectives of this Environmental Impact Assessment (EIA) report are to identify the baseline environmental, biophysical and socio-economic conditions, to examine project alternatives including alternate sites, and to study the potential impacts along with formulation of suitable mitigation measures for an environment friendly implementation of the project site and around the project area. The purpose of the EIA study is to identify the possible beneficial and adverse environmental impacts as presently envisaged and propose the practical mitigation measures to be implemented during construction of the project to minimize the negative impacts of the housing scheme.

The specific stages and purpose of EIA are:

- Review of available documents;
- Overview of different Project Alternatives;
- Collection of baseline data related to physical, ecological and social domains of environment;
- Evaluation of project impacts on environment and social settings; Suggesting mitigation measures for adverse impacts;
- Preparation of Environmental Management Plan (EMP); and preparation of Report.
- The report provides relevant information, as required under the officially approved format, to help the decision makers i.e. EPA Punjab before issuing the Environmental Approval.

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1.2 IDENTIFICATION OF PROJECT AND PROPONENT

a. PROJECT SITE

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Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District
Faisalabad over an area of 350.19 Kanals.

b. PROPONENT DETAIL

WAQAS MAHBOOB BUTT

Chief Operating Officer

“Paradise Palms”

Housing Scheme

1.3 DETAILS OF CONSULTANT

Name of Organization	Environmental and Social Technical Services (ESTS)
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Email	<u>hsb.obaid@gmail.com</u>
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Address	215, B-Block, Faisal Town, Lahore Pakistan
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List of team is annexed. Annexure 1

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1.4 BRIEF DESCRIPTION OF NATURE, SIZE AND LOCATION OF PROJECT

The proposed PRIVATE HOUSING SCHEME “PARADISE PALMS” Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad over an area of 350.19 Kanals.

The main features of this Housing Scheme will include 24/7 security, airconditioned mosque, full service hospital, parks, graveyard and solid waste management system.

This housing society will have the eco-friendly environment. It has a priority conservation of natural resources to make it ultimate living. All the surrounding is covered with natural people that assures tranquil and peace of occupants.

1.5 NEED FOR INITIAL ENVIRONMENTAL EXAMINATION REPORT

Pakistan Environmental Protection Act 1997 (PEPA-97) Clause 12, stipulates that the “Proponent of any development project will have to submit Initial Environmental Examination Report (EIA or IEE, whichever is applicable) to the concerned Environmental Protection Agency to obtain its approval prior to start of construction and operation of the project”.

Project lie under the category of Schedule-II H (1) “HOUSING SCHEMES more than 300 kanal” of IEE/EIA Regulations 2022 it requires submission of EIA report. To ensure compliance with the lawful provisions of section 12 of PEPA 1997, rules and regulations made there under, this Environmental Impact Assessment (EIA) report has been prepared for obtaining environmental approval from EPA Punjab.

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1.6 OBJECTIVES AND SCOPE OF WORK

The main objectives of the study are to identify the environmental impacts due to construction of the housing scheme and to suggest appropriate measures to mitigate the adverse impacts of this project. The primary objective of this environmental and social impact study relating to the housing scheme will be to examine, compare, review and analyze the parameters. Another objective is to review the mitigation measures with respect to their relevance, efficacy and adequacy in addressing the identified impacts of the project and to suggest appropriate modifications therein, if so warranted.

Another objective is to carry out a comprehensive and all-encompassing review of the Mitigation Guidelines and the Environmental and Social Management and Monitoring Plan (ESMMP).

The scope of the work for the EIA study can be summarized as under: Identification of the existing physical, biological and socio-economic aspects.

Identification of probable impacts of the project:

- Determination of the significant impacts during construction.
- Recommendations for the implementation of mitigation measures.
- Development of a detailed Environmental Management Plan (EMP)
- Findings of the instant study will help in avoiding and averting the negative impacts of the project to render it an environmental friendly and environmentally compliant facility.
- To ensure persistent and trouble free functioning of basic support and value added services and utilities within the comfort zones of the home and vicinity.

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- Reduction in environmental pollution due to good in-house environmental practices such as solid waste and wastewater management.
- Bringing investors in Private Sector that generates revenue, ultimately it will bring development and facilities in the community.

1.7 APPROACH AND METHODOLOGY OF EIA STUDY

Environmental Impact Assessment (EIA) report is conducted under the legal framework of Pakistan Environmental Protection Agency (PEPA). As per legal requirements, the project will be reviewed in the light of the provisions of Pakistan Environmental Protection Act, 1997 and Pakistan Environmental Assessment Procedures, issued by Pakistan Environmental Protection Agency (Pak EPA).

Secondary information for this EIA Study was collected from relevant departments/personals and literature to establish physical, socio-economic and environmental profile of the project area. Relevant secondary information available with the proponent on the physical, technical and institutional aspects of the project was also utilized. Engineers of the project were also consulted for obtaining information about various features of the project. Therefore, interviews and direct consultations were conducted with the stakeholders.

1.8 ENVIRONMENTAL, SOCIAL & DISASTER MANAGEMENT & MONITORING PLAN (ESDMP)

The Environmental, Social & Disaster Management & Monitoring Plan (ESDMP) provides a mechanism for implementing the preventive and mitigatory measures in the form of suitable environmental guidelines. The main objectives of the ESDMP

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are firstly to prevent, and wherever it is not possible, to attenuate the adverse impacts to an acceptable level by adopting suitable administrative or technical options. The key components of the ESDMP include the environmental and social guidelines to be implemented by the project authorities, the construction contractor and all other concerned. The ESDMP also outlines the institutional setup for implementing the mitigation guidelines i.e., designating a focal person by the proponent (usually the project’s Environmental Manager) for managing environmental and social impacts of the various project activities at the appropriate managerial levels.

1.9 ESDMP’S IMPLEMENTATION COSTS

Costs involved in implementing the ESDMP will pertain mainly to expenses on training and external monitoring of the project’s environmental and social performance. Because of involvement of number of variables, it is not possible at this stage to work out the exact financial outlay of these activities. However, as a tentative estimate, it is expected that holding of a single 1-day workshop will cost about Rs. 0.11 million. Since, two such works are required.

1.10 REPORT STRUCTURE

The Report is structured as follows:

Chapter 1: “Introduction”;

Chapter 2: “Policy, Legal and Administrative Framework”;

Chapter 3: “Description of the Project”;

Chapter 4: “Environmental Baseline”;

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Chapter 5: “Social Baseline”;

Chapter 6: “Screening of Potential Environmental Impacts and Mitigation Measures”;

Chapter 7: “Environmental Management and Monitoring Program”;

Chapter 8: “Consideration of the project alternatives”.

Chapter 9: “Stakeholder’s consultations”.

Chapter 10: “Conclusions and recommendations”.

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CHAPTER – 2 POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

This section provides an overview of the policy framework and national legislation that applies to the project. The project is expected to comply with all national legislation relating to environment in Pakistan, and to obtain all the regulatory clearances required.

2.1 NATIONAL POLICY AND ADMINISTRATIVE FRAMEWORK

The Pakistan National Conservation Strategy (NCS) that was approved by the federal cabinet in March 1992 is the principal policy document on environmental issues in the country (EUAD/ IUCN, 1992). The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core areas that are relevant in the context of the proposed project are pollution prevention and abatement, restoration of rangelands, increasing energy efficiency, conserving biodiversity, supporting forestry and plantations, and the preservation of cultural heritage.

Two organizations, the Pakistan Environmental Protection Council (PEPC) and the Pakistan Environmental Protection Agency (Pak-EPA), are primarily responsible for administering the provisions of the Pakistan Environmental Protection Act, promulgated by the Government of Pakistan in 1997. The PEPC oversees the functioning of the Pak-EPA. Its members include representatives of the government, industry, non-governmental organizations, and the private sector. The Pak-EPA is required to ensure compliance with the PEQS and establish monitoring and evaluation systems. As the

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primary implementing agency in the hierarchy, it is responsible for identifying the need for, as well as initiating legislation whenever necessary. The PakEPA is also authorized to delegate powers to its provincial counterparts, the provincial EPAs (Environmental Protection Agencies). One of the functions delegated by the Pak-EPA to provincial EPAs is the review and approval of environmental assessment reports of projects undertaken in their respective jurisdictions.

2.1.1 Pakistan Environmental Protection Act, 1997

The Pakistan Environmental Protection Act, 1997 (1997 Act) empowers the Pak-EPA to:

- Delegate powers, including those of environmental assessment, to the provincial EPAs.
- Identify categories of projects to which the IEE/EIA provision will apply.
- Develop guidelines for conducting initial environmental examinations (IEE) and EIAs and procedures for the submission, review and approval of the same.
- Develop environmental emission standards for parameters such as air, water and noise.
- Enforce the provisions of the Act through environmental protection orders and environmental tribunals headed by magistrates with wide-ranging powers, including the right to fine violators of the Act.

Under the provisions of the 1997 Act, the Pak-EPA has empowered four provincial EPAs to manage the environmental concerns of their respective provinces. The provincial EPAs can frame environmental regulations tailored to the requirements of their province, provided these regulations meet or exceed the minimum standards set by the Pak-EPA.

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Provincial EPAs are required to review and approve EIAs of all development projects undertaken in their respective provinces, including those projects implemented by federal agencies.

□ Regulations for Environmental Assessment

Under Section 12 (and subsequent amendment) of the 1997 Act, a project falling under any category specified in Schedule I (SRO 339 (10/2000), requires the proponent to file an IEE with the federal agency concerned (the Pak-EPA). Projects falling under any category specified in Schedule II require the proponent to file an EIA with the federal agency. Within ten working days of the IEE or EIA having been deposited, the federal agency will confirm that the document submitted is complete for the purpose of review. During this time, should the federal agency require the proponent to submit any additional information, it will return the IEE or EIA to the proponent for revision, clearly listing those aspects that need further discussion. Subsequently, the federal agency shall make every effort to complete an IEE review within 45 days and an EIA review within 90 days of filing.

Recognizing that the Pak-EPA has delegated powers to the provincial EPAs to enforce the provisions of the 1997 Act, an EIA must be submitted to one of the relevant Provincial EPA based on the location of the project.

At the time of application, the project proponent is also required to pay a specified fee to the EPAs concerned.

□ Guidelines for Environmental Assessment

The Pak-EPA has published a set of environmental guidelines for conducting environmental assessments and the environmental management of different types of

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development projects. The guidelines that are relevant to the proposed project are listed below, followed by comments on their relevance to the proposed project:

Guidelines for the Preparation and Review of Environmental Reports, Pakistan
Environmental Protection Agency, 1997

The guidelines on the preparation and review of environmental reports target the project proponents, and specify:

- The nature of the information to be included in environmental reports
- The minimum qualifications of the IEE/EIA conductors appointed
- The need to incorporate suitable mitigation measures at every stage of project implementation
- The need to specify monitoring procedures.

The terms of reference for the reports are to be prepared by the project proponents themselves. The report must contain baseline data on the project area, a detailed assessment thereof, and mitigation measures.

- Guidelines for Public Consultation, Pakistan Environmental Protection Agency, May 1997

These guidelines deal with possible approaches to public consultation and techniques for designing an effective program of consultation that reaches out to all major stakeholders and ensures that their concerns are incorporated in any impact assessment study.

- Sectoral Guidelines: Pakistan Environmental Assessment Procedures, Pakistan Environmental Protection Agency, October 1997
- The guidelines for 'Manufacturing plant' are structured to assist in identifying key environmental issues related to Manufacturing Plant, as well as the various

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mitigation measures and alternatives that should be considered and applied accordingly.

2.1.2 Punjab Environmental Quality Standards

The Punjab Environmental Quality Standards specify the following standards:

- Maximum allowable noise levels from vehicles.
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources
- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged into inland waters, sewage treatment facilities, and the sea (three separate sets of numbers)
- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles.

These standards also apply to the gaseous emissions and liquid effluents generated by generator, process waste etc. The standards for vehicles will apply during the construction as well as operation phase of the project. Standards for air quality have not been prescribed as yet.

2.1.3 National Resettlement Policy and Ordinance

There is no such kind of land acquisition or resettlement of Project Affected Persons. Therefore, no further details have been discussed. The provisions of the Draft Resettlement Policy are consistent with the requirements of the World Bank's OP 4.12 on involuntary resettlement. After becoming law, these provisions will apply when addressing the resettlement issues that arise in the project.

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2.2 INTERACTION WITH OTHER AGENCIES

The client is responsible for ensuring that the project complies with the laws and regulations controlling the environmental concerns. This chapter describes the nature of the relationship between the client and line departments concerned.

2.2.1 Federal and Provincial EPAs

The client will be responsible for providing the complete environmental documentation required by the Pak-EPA, and Punjab Environmental Protection Department (EPD) and remain committed to the approved project design. No deviation is permitted during project implementation without the prior and explicit permission of the EPAs concerned.

2.2.2 Provincial Revenue and Other Departments

Since the issue of land acquisition and contacts with Agriculture, Horticulture and Forestry Department are not involved in this project, hence they are not elaborated.

2.2.3 Provincial Governments

The client must ensure that the project meets the criteria of the Punjab provincial government as related to the safe disposal of wastewater, solid waste, and toxic materials. The client will coordinate and monitor environment-related issues.

2.2.4 Local Government and Municipalities

The client will work with local government/administration and municipalities on the resettlement of squatters and removal of encroachments or sources of congestion if any. In such cases, the Client will frame an agreement with the municipality, local

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government, or other service provider concerned on the resettlement of displaced squatters.

2.3 OTHER ENVIRONMENT-RELATED STATUTES

This section outlines statutes apart from the Pakistan Environmental Protection Act, 1997, which are relevant to the project.

Antiquities Act, 1975

The Antiquities Act relates to the protection, preservation and conservation of archaeological/historical sites and monuments. It prohibits construction (or any other damaging) activity within 200 m of such sites unless prior permission is obtained from the Federal Department of Archaeology and Museums. The Antiquities Act also binds the project proponent to notify the department should anything of archaeological value be excavated during project construction.

Provincial Local Government Ordinances, 2001

These ordinances, issued following the devolution process, establish regulations for land use, the conservation of natural vegetation, air, water, and land pollution, the disposal of solid waste and wastewater effluents, as well as matters related to public health and safety.

Pakistan Penal Code, 1860

The Pakistan Penal Code deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. In the context of environment, the Penal Code empowers the local authorities to control noise, noxious emissions and disposal of effluents. The PEQS enforced by the EPAs supersede the application of this legislation on industries and

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municipalities. The Penal Code, however, can provide a basis for the client to coordinate its activities with the local authorities to ensure that its construction activities do not become a cause of public nuisance or inconvenience.

CHAPTER – 3

DESCRIPTION OF THE PROJECT

3.1 TYPE AND CATEGORY OF PROJECT

This project is related to PRIVATE HOUSING SCHEME “PARADISE PALMS” Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad.

Project which falls under the category of under Schedule II H (1) referring to “**HOUSING SCHEMES MORE THAN 300 KANAL**” projects requiring an EIA Report for its environmental approval under section 12 of the Act, referring to the Pakistan Environmental Protection Agency (review of IEE & EIA) regulations, 2022. Thus projects requiring an IEE, the Regulations Governing the functioning of the EPA’s with respect to the IEE and EIA reports.

3.2 OBJECTIVES OF THE PROJECT

The main objectives of the housing scheme are as under:

- To introduce the modern trends in the housing sector.
- To evaluate the suitability of the site in view of social acceptance and environmental soundness.
- To collect available data, reports, drawings and other relevant information about area available for the project.
- To be a part of country's economic development and social prosperity.

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- Housing associations provide a wide range of comfortable houses for families of government employees.
- To provide environmental friendly accommodation for staff of Kohinoor group.
- Review of applicable existing environmental legislation and Punjab Environmental Quality Standards (PEQS).
- To propose mitigation measures to eliminate or to reduce the negative impacts to an acceptable level.
- To ensure persistent and trouble free functioning of basic support and value added services and utilities within the comfort zones of home and vicinity.
- To reduce environmental pollution due to good in-house environmental practices such as solid waste and wastewater management.
- To provide solutions for urban sprawl, this is growing problem of big cities.

3.3 ALTERNATIVES CONSIDERED REALISTICALLY AND REASONS FOR THEIR REJECTION

The consideration of alternatives to any project is one of the key aspects of an environmental study. Consideration of the alternatives provides for the examination of different options to achieve a stated objective and assist the decision makers in the choice of the best option, which has the least adverse and the greatest beneficial environmental, social and economic consequences. Different alternatives sites considered for the project of Kohinoor Properties,

Keep the following points in mind while selection of project site:

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- Free land availability
- Minimum environmental adverse impacts ▪ No resettlement and land acquisition.
- Cost effective solution
- Easily approachable for prospective

Reasons of Rejection

The complete land having all facilities is not available for its project and this site is also located in the vicinity of residential areas.

- Such land is very costly.
- The access to road is not easily available.
- Area was too congested.
- Involved rehabilitation and relocation of the locals.
- Non-availability of communication network and other facilities ▪ Traffic jam issues during peak and rush hours.
- Suitability of land

Basis of Selection of Site

The proposed project site is located along Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad is the best option for project because a critical analysis was made based on the available accessibility with Reference to land availability, accessibility of site, availability of water resources, less damage to existing environment and other environmental problem was made. Finally selected present site of project is more practicable with respect to economic, social and environmental perspective and future development.

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Sources Vulnerability

Some of the factors that were kept in mind during site selection for project are:

- Access to an ample supply of suitable water
- Access to power supply mainline
- Water Access to power and all weather roads.
- Suitability of soils and topography for project construction.
- Location in relation to availability of labor force.
- Access to communication network and other facilities

A suitable site in terms of land availability access basic infrastructure available in the area and potential for future growth along with the level of environmental sensitivity of the area, keeping all these factors in view the site has been selected.

The selected site for the project is well-connected to main road i.e. Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad. Therefore, the land selected is best suitable for the development of project.

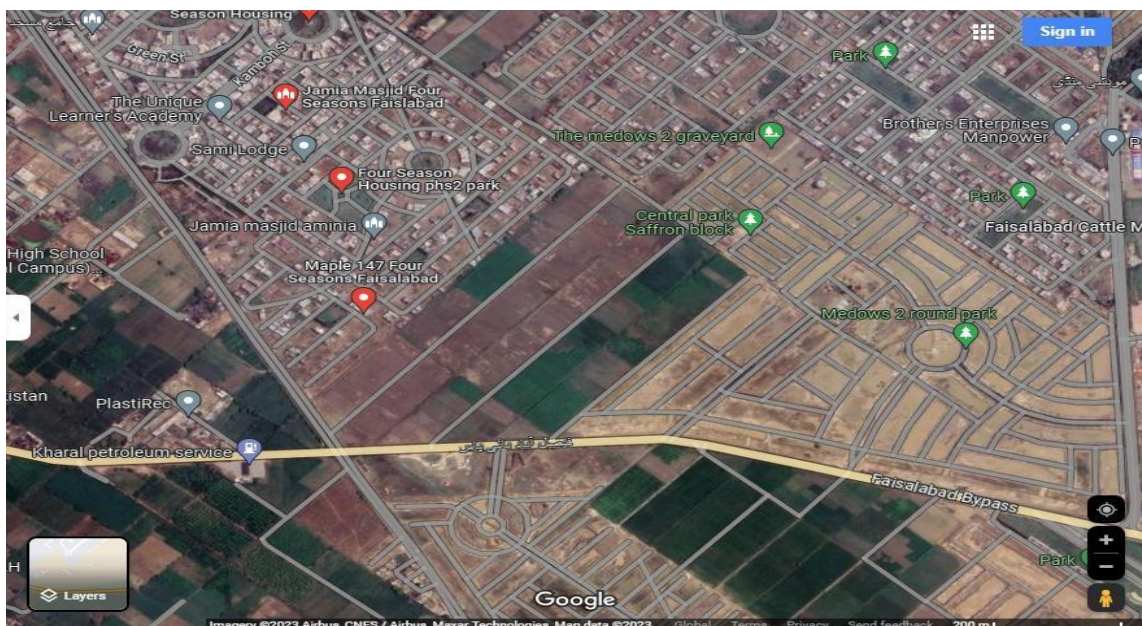
3.4 LOCATION AND SITE LAYOUT OF THE PROJECT

Location of “PARADISE PALMS” is Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad.

The location map and site layout of project is annexed at the end of report.

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3.5 EXISTING LAND USE ON THE SITE

Land is agricultural in nature.

3.6 VEGETATION FEATURES OF THE SITE

There are no natural forest trees, grassland or ecological important place. But the natural vegetation has been replaced by the agricultural crops. So, this sector consists generally of agricultural land irrigated by canals and tube wells. Some of the older stands of trees still survive the onslaught of urbanization on this previously natural and agricultural area. Floral species can be divided into fruiting plants, nonfruiting plants and crops.

Main tree species grown are: *Dalbergia sissoo* (shisham), *Morus alba* (Mulberry),

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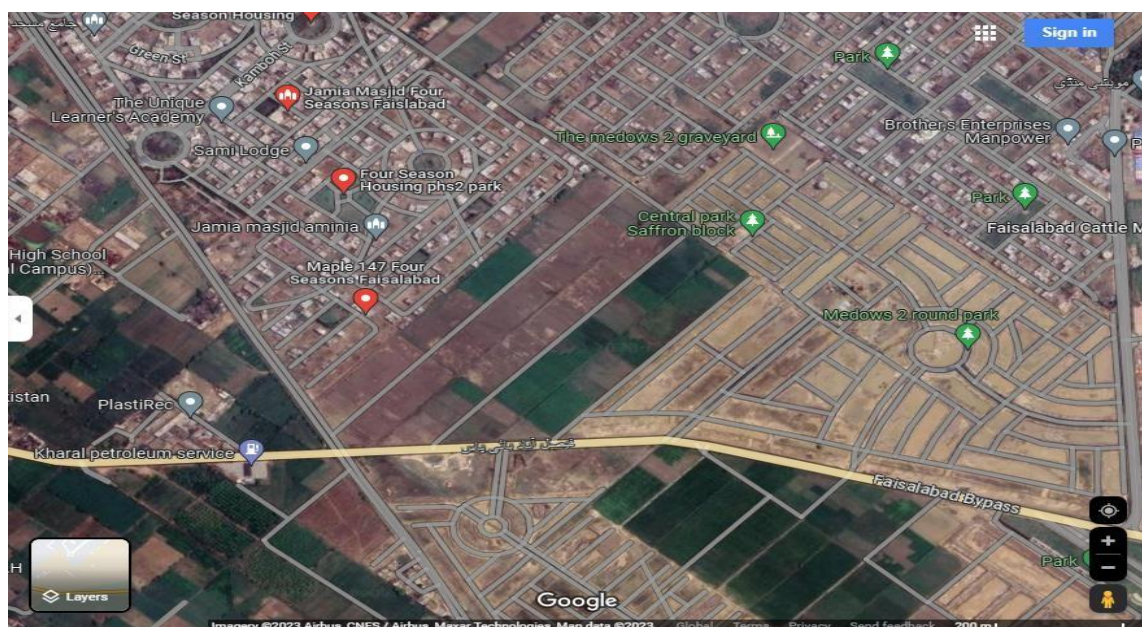
Acacia nilotica (kikar), *Populus Spp.* (Poplar), and *Eucalyptus camaldulensis* (sufaida).

Indigenous flora includes *Prosopis cineraria*, *Tamarix aphylla*, *Capparis aphylla* and *Salvadora oleoides* with undergrowth of *Chenopodium album*, and *Cannabis sativum*.

3.7 ROAD ACCESS OF PROJECT SITE

The housing scheme will be well-connected to Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad.

Road access map is given below:



3.8 SCHEDULE OF IMPLEMENTATION

The implementation stage of project activity is described below:

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1st Stage comprises (Completed):

- The onsite contouring studies and soil investigations.

2nd Stage comprises the following tasks: (3 years) ▪

Site preparation and construction works;

- ✓ Construction of boundary wall.
- ✓ Layout of Sewerage line with septic tank.
- ✓ Layout of Roads.
- ✓ Construction of Park
- ✓ Construction of Mosque
- ✓ Construction of commercial / public buildings

3rd Stage comprises the following tasks: (1 year)

- Installation of poles for electricity, other utilities like gas, water etc.

4th Stage comprises

- It will include commencement of regular operation of the project i.e. occupying of Houses. (2 years)

3.9 COST AND MAGNITUDE OF OPERATION

Development cost of the housing scheme is annexed (cost undertaking).

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Total cost of land will depend on market trends and pace of sale of plots. Cost will include the town planning work, site survey, geotechnical investigations, site clearing work, infrastructure work, road construction work, sewerage system layout, electrical and mechanical works etc.

3.10 DESCRIPTION OF THE PROJECT

The proposed project of PRIVATE HOUSING SCHEME “PARADISE PALMS” Hadbast Mouza Sahib Nagar Chak No. 234 RB, Roshanwala Satiana Road Bypass Tehsil Sadar District Faisalabad will spread over an area of 350.19 Kanals along Roshanwala Satiana Road. As the general public becomes increasingly knowledgeable, housing and construction in society are increasingly focusing on high-end and high-quality deluxe housing, where profits are also better.

The housing scheme will be featuring 5, 7.5 and 10 Marla and 1 Kanal houses, commercial areas and public parks. It will provide area of 1 kanal for solid waste management and 1 Kanal for Disposal Station within the housing scheme.

This Housing Scheme will be facilitated with residential and commercial plots within the project area. The total area of the project site will be 350.19 Kanals.

The said Housing Society will have the eco-friendly environment. It has a priority conservation of natural resources using to make it ultimate living.

3.10.1 Project Features

The features that will be provided to the people in this Housing Scheme are as follows:

Best Location

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- Master-Planned Community
- Apartments
- Commercial Areas
- Roads, Parking, Passages and Setback
- 24/7 Security
- Air-Conditioned Mosque
- Full Service Hospital
- Water-Filtration
- Parks / Open Space
- Solid Waste Management System
- Disposal Station
- Graveyard
- Electricity , Sui- Gas etc all facilities availability

3.10.2 Land Use Distribution

SR NO.	DESCRIPTION	AREA (KANAL)	PERCENTAGE	TOTAL
1	Residential	175.47	50.10	537
2	Commercial	17.46	4.99	43
3	Parks / Open spaces	24.51	7.09	05
4	Public Buildings	5.25	1.50	02
SR NO.	DESCRIPTION	AREA (KANAL)	PERCENTAGE	TOTAL
5	Public Buildings for FDA	5.25	1.50	01
6	Graveyard	6.99	2.00	01
7	Parking	7.59	2.17	02
8	WASA plots	1.50	0.43	01
9	Society office	0.50	0.14	01
10	Solid Waste Plot	0.50	0.14	01

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11	Roads	105.17	30.03	
	Total area	350.19	100.00	

List of Khasra number

Sq. No	Khasra Number
18	16, 17, 18, 19, 20, 21, 22, 23, 24, 25
19	16/1, 17, 18, 19, 20, 21, 22, 23, 24, 25/1
24	1/2/1, 2/1, 3/1, 4/1, 5/1, 6/2, 7/2, 8/2, 9/2, 10/2, 11, 12, 13, 14, 15
25	1/1(Min) , 2 (Min) , 3 (Min), 4, 5, 6, 7 (Min), 15
26	16,25/1

3.10.3 Facilities in housing scheme

Main facilities that will be going to offer are as follows:

- Job and career prospects
- Comfortable and quality living
- Higher Freedom and luxury life
- Quicker, more livable neighborhoods
- Safety and Security
- Sustainability in society development
- Building and infrastructure

3.11 COMPONENTS OF THE PROJECT

The designing of the Housing Scheme has been carried out in such a way that it should be remarked as one of the most modern and beautiful housing scheme.

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The overall description of housing scheme will be:

- Residential Plots
- Commercial Plots
- Public Building
- Masjid
- Parks
- Area for Graveyard
- Area for Solid Waste Management
- Area for Disposal Station

3.12 NUMBER OF EMPLOYEES DURING CONSTRUCTION & OPERATIONAL PHASE

About 10 construction labour will be engaged during its construction phase. About 5 skilled & unskilled workers will be engaged during its operational phase.

3.13 SOURCE OF ELECTRICITY CONNECTION

The electricity for proposed housing scheme will be fulfilled from Faisalabad Electric Supply Company (FESCO).

3.14 RESTORATION AND REHABILITATION PLAN

During entire construction period, necessary precautions will be taken to ensure that no damage is done to the basic infrastructures. Cleaning and restoration will be carried out during and immediately after each phase of construction and will be the responsibility of each team in their respective area.

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After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spill ever of these materials will be cleared adequately. The land, if and where near vicinity will be made neat and clean. In the event that the facility becomes redundant rehabilitation plan will be produced and will be provided to the Director General, Environment Protection Agency at least three months prior to decommissioning.

3.15 GOVERNMENT APPROVALS

Faisalabad Development Authority is applied for. Correspondence with Faisalabad Development Authority is annexed. See annexure 6

3.16 SOLID WASTE DISPOSAL

The estimated amount of solid waste generated is 0.24kg/cap/day from each house. Solid waste will be sold to local contractor, his contract will be drawn in operational phase of the housing scheme.

The site for Solid Waste collection is shown on the approved plan layout, annexed at the end of the report.

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CHAPTER— 4

SOCIAL BASELINE CONDITIONS

4.1 SOCIAL AND CULTURAL ENVIRONMENT

4.1.1 Administrative Setting

Faisalabad District comprises of 6 Tehsils, 289 union councils, and 482 villages. Project site is located in Jaranwala Tehsil. Tehsil has got literacy rate of 44.9%, out of which female rate is about 40%. Housing style of the area is 68% pakka buildings. 92.3% houses are electrified and average household size is about 7 marlas. The statistics also indicate that in rural areas the labour force is mostly attached with agriculture and allied occupations, while in urban areas it is attached with industries, trade and services. Faisalabad is the city having maximum industrial expansion.

Out of total labour force of 13.4 million in the province about 68.7 percent comes from rural areas and 31.3 percent from urban areas. Proportion of female labour force comes to about 4 percent only, out of which about 2 percent is rural and 2 percent urban. Fuel wood source is mainly being used for cooking etc.

4.1.2 Settlement Pattern

The settlement pattern of the Project area and its vicinity is all rural. No urban settlement exists in the close vicinity of the Project site. This was one of the major reasons to choose the Project site in this location that it is far away from urban developments.

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4.2 DEMOGRAPHIC CHARACTERISTICS OF THE POPULATION IN THE STUDY AREA

An effort was made to collect the socio-economic information through structured questionnaires relating to the demographic features of the population resided in the study area. The demographic features include the information on ethnicity/tribes, size of households, gender composition, and literacy status of the population in the project area.

4.2.1 Family Size

In the proposed project study area, the population is living in an extended, joint and nuclear family system. An extended family system refers to the house where parents and grand parents are living together in a house, while joint family system includes the house where, parents, brothers, sisters, sons, daughters are living together. The nuclear family includes only a single family, i.e. husband, wife & kids.

In the survey, it was observed that in the project corridor; mostly the population is living in a joint family system. As depicted in **Table 4.1**, the average size of the population residing in the Faisalabad District is 6.03 members.

As regards the gender composition, on the whole, the proportion of male and female population in the ratio of 48.55 percent and 51.45 percent males and females respectively residing along the project corridor.

Table 4.1: Demographic Analysis of Sample Population

Study Area	Average Family	Gender Composition

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	Size (No.)	Male (%)	Female (%)
Sampled Population	6.03	48.55	51.45

4.2.2 Education Status

Literacy is not just attaining the skills of reading and writing but providing people with the skills to learn, protect and empower themselves in society and effectively contribute in decision making at various levels. The general disparity in education exists in low-income communities. **Table 4.2.**

The overall literacy rate of the selected population was 56.20 percent. Illiterate people are 43.80 percent and rest of them is literate ranging to primary to masters as given below:

Table 4.2: Percentage of Educational Status

Educational Status	Number		Percentage	
	Male	Female	Male	Female
Primary	11	9	8.03	13.43
Mid	56	28	40.88	41.79
Matric	42	18	30.66	26.87
FA	18	9	13.14	13.43
BA	6	3	4.38	4.48

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MA	4	-	2.92	0.00
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4.2.3 Nature of Occupation

In the study area, the major occupations include business (shops, stores etc.), service (government, private), drivers, labour (skilled & unskilled) etc. The socioeconomic baseline survey results summarized in **Table 4.3** reveal that on overall basis in the study area, 4.41 percent operates business (general stores, shops etc); 10 percent are labourers, etc. 3.86 percent are Govt servants and 14.60 percent are in private service and rest of them are in other professional as tabulated below:

Table 4.3: Percentage of Occupations of Sample Population

Occupation	Percentage
Govt Servant	3.86
Private	14.60
Shop	3.58
Driver	3.31
Laborer	10.74
Student	9.92
House Maid	9.09

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House Wife	32.51
Jobless	8.82
Old / Retired	2.75
Business man	0.83

4.2.4 Household Expenditure

The annual expenditure and pattern of expenditure provides an indication for assessing the standard of living of a household. The expenditure on food items includes cereals, pulses, flour, sugar, cooking oil/ghee, milk etc., while the non-food items consist of expenditure on education, medical treatment (if any), clothes etc., electricity and gas etc. In this respect, survey results are depicted in **Table 4.4**.

Table 4.4: Average Annual Food and Non-Food Expenditure per Family

Item	Annual Expenditure		Occasional Expenses last year	Average Annual Bills			Avg. Annual Expenditure on Health Rs	Avg. Exp Per family (Rs.)
	Food	Non Food		Electricity	Gas	Communication		

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Sample Population	42050	14500	49770	4147	4674	398	3181	6083
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4.2.5 Housing Conditions

Housing conditions are also one of the indicators for the assessment of living standard/ household well-being. It was observed during the field survey that 85.0 percent of the sample respondents had their own houses under a status of simple ownership outside the project corridor.

As far as the housing conditions are concerned, it was assessed during the field survey that 4.0 percent are katcha, 32.4 percent katcha+pacca and 69.6 percent are pacca houses in the project area. The details of houses characteristics outside/inside the corridors are given in **Table 4.5**.

Table 4.5: Housing Characteristics in/out the Project Area

Study Area	Housing Conditions		
	Katcha	Pacca	Katcha + Pacca
Living Room	0.0	68.2	31.8
Animal Shed	4.0	-	-
Bathroom	-	0.6	0.4

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Latrine (Flush)	-	0.8	0.2
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4.2.6 Extent of Credit Utilization

Generally, the credit is obtained to supplement the income to meet routine and some occasional expenditure of the household including investment, social needs and other unforeseen situations. Credit is obtained from formal (banks/institutions) and informal sources (friends, relatives, land owners etc.). Mostly people do not like to get credits from the government saying that the mark up rate is very high.

4.2.7 Physical Infrastructure and basic Amenities

Generally, in the study area, drinking water is available to the population through hand pumps, electric motors or shallow wells. As depicted in **Table 4.6**, it was observed that on the whole, majority of the population has access to drinking water and most of them has facility of electricity. Rest of the amenities is tabulated below:

Table 4.6: Access to Social Infrastructure along the Project Corridor

Study Area	Access to Social Infrastructure			
	Available	Satisfactory	Non Satisfactory	No Access
Electricity	50.6	35.3	13.2	0.9

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Sui Gas	12.4	10.9	1.5	75.2
Water Supply	0.9	0.9	0.0	98.3
Telephone	50.2	26.8	20.9	2.1
Sewerage/Drain age	1.7	0.0	0.0	98.3
Health Unit	49.6	34.0	16.0	0.4
School	50.6	42.1	7.2	0.0

4.2.8 Gender Analysis and Issues

Overall about one-half (51.45 percent) of the total population are women. Women are participating to alleviate poverty and enhance economic growth and human well-being of the families. Women participation relating to the income generation/development activities and decision-making remained commendable with respect to the different development projects/ program:

It can be concluded that along the project corridor the women are heavily involved in several households and income generation activities. Some of the major activities are as below:

- Agricultural/Farming Activities - Wheat harvesting, rice transplanting, harvesting and threshing, and vegetables picking.

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- Livestock rearing - Collection of fodder, grazing, washing buffaloes, processing the milk products.
- Poultry - Cleaning cot, supervise hatching, feeding & health care
- Other Activities - washing clothes, fetching water, cooking, child caring, cleaning and repairs of household items, participation in social obligations/gathering etc.

Thus keeping in view the above discussion regarding women development in the project area, their role should not be underestimated. Furthermore, the women activists after providing necessary training and capacity building can facilitate the rural women/ women-farmers in the following activities:

- Interaction/coordination & understanding amongst the women
- Social /community mobilization, training & capacity building of women
- Fund raising for the community development
- Educating to other women to make the best use of available resources
- Enhance the household savings and investment on some development works in the area.
- There is a need to address gender-related issues at all levels of the project design, implementation and operation.

4.3 PROJECT AFFECTED PERSONS

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There is no Project Affected Persons.

4.4 CULTURAL, RELIGIOUS AND OTHER STRUCTURES

No cultural structures are located in side the proposed project area. No graveyard was located within the proposed Project boundary.

4.5 INDIGENOUS AND WOMEN HEADED HOUSEHOLDS

During the social field survey of the project, efforts were made to identify the indigenous and women headed families along the Project boundary. Similarly no women headed household was identified in the Project area.

4.6 HISTORICAL AND ARCHEOLOGICAL SITES

No site of historical and archeological importance was observed within the Project as well as study area.

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CHAPTER – 5

DESCRIPTION OF ENVIRONMENT

5.1 GENERAL

This section describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Project Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other agencies.

Information regarding physical environment is collected within project area as well as study area. While incase of biological and social environment, efforts were made to collect the information in 0.5 km around the project area and even upto 1 km incase of any direct or indirect impacts were envisaged.

5.2 PHYSICAL ENVIRONMENT

5.2.1 Geology

The land of Pakistan provides a fascinating exhibition of geological evolution. It is a bonanza of different lithospheric plates, which have been accreted together in such a way that has a rare parallel in the world with respect to its structure, relief, rock types and landscape. It has an assemblage of rocks, which probably has a complete succession of rocks ranging from the deep mantle of the earth to rock of the upper lithosphere.

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Punjab Province mostly comprises of plain areas lying in Indus Basin formation. Faisalabad District lies in this Indus basin formation which is alluvial deposit formed due to river action. The project area lies on un-deformed Indian plate rock with a recent sedimentary cover.

5.2.2 Land Use

Major portion of the Punjab Province falls in the Indus Plain, which geologically originated in Late Pleistocene period by deposition of sediments from the Himalayas into abyssal sea. In early days the sediments were carried by two river systems, viz., Indus and Ganges. Later in the geological history, the Ganges River changed its course from westward to eastward. Later, the Indus River and its five major tributaries, viz., Jhelum, Chenab, Ravi, Bias and Sutlej, carved the deposits of the early river systems. These river systems are spread in the Punjab Plains like fingers of a hand, consequently dividing the whole province into four masses of lands called Doabas (meaning the lands between two rivers). Faisalabad District situated in Sandal Bar area of Rachna Doab lies in between Chenab and Ravi rivers.

In spite of level differences between the various landforms, the land area falling within one landform is nearly level. The soils generally range from loamy sand to clay loam. The lands are extensively cultivated under irrigation from canal systems offtaking from various rivers. Groundwater is also extensively exploited for irrigation purposes by installing deep and shallow tubewells.

5.2.3 Water Resources

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i) Surface Water

The social and economic life of the province mainly revolves around Indus Basin plain as it generates about 90% of the Punjab’s total agricultural income

The Indus Plain does not have a well-defined natural drainage. The introduction of irrigation system therefore resulted in surface and subsurface drainage problems resulting in water logging and salinity, which has continued to aggravate over the period. This has adversely affected the socio-economic conditions of the large rural population by impairing agricultural production and also creating health hazards. Massive efforts have been undertaken since 1960 to overcome this problem by implementing a large number of surface and sub-surface drainage projects.

ii) Ground Water

The ground water resources are available in abundance in the Project Area. Ground Water Table (GWT) exists at a depth of about 40 to 50 ft below natural Ground Level (NSL). To meet the agriculture and drinking requirements, number of tubwells has been installed all over the tract.

5.2.4 Climate

i) Temperature

In the Project area, January is the coldest month with mean daily minimum temperature 4.1°C and the June is the hottest month with mean daily maximum temperature of 40.5 °C and 48 °C a maximum daily temperature. However, in the Project area summer is very hot and winter is very cold. Temperature variations are tremendously high in the Project Area.

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ii) Wind

The wind direction in winter months is north-west and in summer south-east with average yearly speed varying from 0.5 to 1.1 knots.

iii) Rainfall

Out of the eight climatic zones of Pakistan, Faisalabad district is located in hot arid climatic zone, associated with 125 – 255 mm rains. 100% of the site falls in this zone.

Broadly, there are four well marked seasons in Pakistan. These are:

1. Cold season (December to March)
2. Hot season (April to June)
3. Monsoon season (July to September)
4. Post-Monsoon season (October and November)

5.2.5 Ambient Air Quality and Noise Level

Information on ambient air quality in rural areas is totally missing. This is mainly because air pollution is primarily a hazard for urban areas where the increasing number of industries and vehicles is increasingly concentrating the pollutants in air and also prevents them from being dispersed. As far as rural areas are concerned the air

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quality has not been a problem, except near sources of noxious and large emissions, such as industries. Therefore, no attention has been given in that direction.

5.3 BIOLOGICAL RESOURCES

5.3.1 General

Once rich in natural vegetation the land use pattern of the Indus Basin and other areas has greatly been modified for want of land for cultivation. This has changed the pattern of flora wherever irrigation was possible.

The total geographic area of Faisalabad District is 14,43,703 acres out of which 12,78,198 acres is cultivated and 65,505 acres is uncultivated. 90% of the area is canal irrigated and rest of it is Tubewell irrigated. Forest area is 3328 acres and orchards are 19612 acres. Vicinity of project Area is 60-65% cultivated and rest of it is lying as barren.

No wild life sanctuaries, forest areas etc. are located in or near this site.

5.3.2 Tropical Thorn Forest

Most of this region has been cleared for cultivation. Remnants of the original flora are almost vanished for need of fuel wood, grazing, timber, and felling by charcoal burners. The Project area falls in this vegetation zone. About 20% of the project area has still original flora existing over it.

5.3.3 Flora

After clearing the Tropical Thorn Forests, using canal water irrigation, better areas were cultivated.

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Main tree species grown are: *Dalbergia sissoo* (shisham), *Morus alba* (Mulberry), *Acacia nilotica* (kikar), *Populus Spp.* (Poplar), and *Eucalyptus camaldulensis* (sufaida).

Indigenous flora includes *Prosopis cineraria*, *Tamarix aphylla*, *Capparis aphylla* and *Salvadora oleoides* with undergrowth of *Chenopodium album*, and *Cannabis sativum*.

5.3.4 Fauna

Due to thickly populated project area, wildlife except jackal, porcupine, wild cat and hare have vanished. Mammals and reptiles are seen at very rare places. With the development of site as Energy Plant, these will no significant effect on them.

5.3.5 National Parks, Reserved Forest Wild Life Sanctuaries

In the Project Area or in its close vicinity or even upto 10 km from Project site, no national park, reserved forest and wild sanctuaries were observed.

5.3.6 Migratory Birds

As no major water body exist in close vicinity of the Project Area, so no migratory birds were observed in the area.

5.3.7 Endangered Species

No floral and faunal endangered species were observed in the Project premises.

CHAPTER – 6

SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.0 ENVIRONMENTAL PARAMETERS

This section identifies the potential impacts related with construction and operation of the project on the physical, ecological and socioeconomic domains of the environment. Accordingly mitigation measures have also been reported to manage the environment and for sustainable development. The project activities will neither adversely affect the population nor the environment around the project site.

6.1 ENVIRONMENTAL PARAMETERS ASSOCIATED WITH LOCATION OF PROJECT

Environmental problems related to the location of the project are mostly in the areas of physical setting, socioeconomic setting, ecological and special areas. Field survey revealed that impacts of the current project due to its location are insignificant in nature. As discussed earlier that there is no physical setting, socioeconomic, ecological and special areas around the project. Because of their very nature, the majority of the frontend (construction phase impacts) are likely to abate with the completion of the project's construction e.g., generation of undue noise, exhaust emissions etc.

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6.1.1 Impact Assessment Methodology

A comparative analysis of both the negative and the positive impacts has been carried out with respect to the existing baseline conditions. The said comparison followed a parametric and a non-parametric scheme i.e., how and to what extent various environmental quality parameters (e.g., relating to soil, air, water, and aesthetics) and non-parametric aspects (economy, social value system, employment, lifestyles, and behavioural patterns) will be influenced by the various project activities within the project's radius of influence.

6.2 PROJECT DESIGN

The design of project has sought to minimize any environmental potential impacts by ensuring that the project should be in accordance to the environmental standards. Local aesthetic value, wind direction, human settlement was also considered during project design.

Some impacts that occur during design or setting of housing scheme are as follows:

- Loss of prime agricultural land
- Contamination of soil, surface water and ground water from poorly planned sewage and solid waste management.
- Change in traffic pattern and increased traffic load on roads that were designed for smaller traffics volume.
- Increase in storm water runoff from the site and consequent increase in downstream flooding caused by excessive pavement and compaction of site

6.3 IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION AND OPERATIONAL PHASE

The issues and mitigation measures related to housing scheme are as follow:

- Groundwater and surface water contamination due to absence or inadequate maintenance of sewerage system within housing scheme.
- Soil and land contamination caused by absence or inadequate maintenance of Solid Waste Management System.
- Siltation of surface water due to absence or inadequate maintenance of vegetation cover.

Mitigation Measures:

- Most of the environmental issues associated with the development of housing scheme can be addressed if the scheme is designed on the principle of good environmental and engineering practices.
- Avoid steep slopes
- Avoid cutting and damaging of plantation as much as possible.

6.3.1 AIR QUALITY

Construction Phase

Dust is likely to be generated due to excavation activities, during building construction and deliveries of sand. The contaminants investigated in any housing scheme are respirable particulates and gaseous emissions. There may be minimal air pollution due to combustion of fuel expected from construction machinery. The proponent will ensure that plant and equipment which will be acquired for on site preparation of pre-

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cast materials and concrete mixing will utilize the latest technology to have minimum emission.

Operational Phase

During operational phase, air quality is not likely to be affected.

Mitigation Measures

- Provision of full protective gear for workers. Workers will also be sensitized on hazards encountered in such working environment and will undergo regular health check-ups.
- Water sprinkling on roads and on the surrounding project area to suppress dust.
- Covering truck loads using tarpaulins.
- Personnel will be provided with dust masks to avoid inhalation of the dust generated in the project surroundings.
- The area under construction will be covered with adequate screens to contain dust.
- Stock piles of construction material, solid waste or any other waste will also be covered with tarpaulins.
- Planting sufficient and fast growing trees around the houses/ building to filter some of the dust.

6.3.2 SOIL EROSION

Construction Phase

The activities involved in the site preparation and construction phase of the development may have a major negative and moderate impact on soil and geology of

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the project site. This is due to the removal of vegetation from the area which will leave considerable areas of soil exposed to the elements, which may result in soil erosion.

Heavy machinery will be traversing the site due to the construction activities this may lead to soil compaction and erosion of the soil. Uncontrolled soil erosion can have adverse effects on the local water bodies.

Operational Phase

The building roofs and pavements will lead to increased volume and velocity of storm water or run off flowing across the area covered by the buildings. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the neighboring areas.

Moreover, soil contamination will be caused by absence or inadequate maintenance of solid waste.

Mitigation Measures

- Excavation should be done under controlled conditions which will include minimizing the vegetation removal, avoid creating large open expanses of bare soil, creating wind breaks, installation of silt traps near the water body, use of single or few designated tracks to bring vehicles into the area and watering the area using water.
- Landscaping should be done on the land during the operation phase and decommissioning phase to ensure that the same is returned to its original state.
- The contractor should provide adequate soil conservation structures to ensure that areas prone to soil erosion are protected from runoff.

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6.3.3 SOLID WASTE

Construction Phase

A significant amount of solid waste will be generated in this phase through the clearing of vegetation. The other activities that will generate related solid wastes include stones, wood, broken glasses, containers, rods of metal, sharp objects (nails) etc. This will therefore have a major negative short-term impact on solid waste collection in the area.

Mitigation Measures

- The proponent should take the initiative of removal of the solid waste which is expected to be generated during this phase of the development.
- A specific site will be designed for the disposal of the waste in the housing scheme.
- Materials from excavation of the ground and foundation works will be reused for earthworks and landscaping.
- All garbage or other construction waste should be wrapped in recyclable bags for proper disposal.
- The contractor and proponent will work hand in hand with private refuse handlers and municipal authorities to facilitate proper solid waste management.

Operational Phase

The project is expected to generate enormous amounts of solid waste during its operation phase. Solid waste will be generated from the residential houses and the associated facilities. The accumulation of solid waste can cause the proliferation of

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domestic pests such as rats or other insects. These vermin are very destructive and can rapidly multiply especially where garbage collection is infrequent and therefore food is abundant.

This phase may also encourage stray animals such as dogs which can be nuisance species because it may bring with them parasites such as fleas and ticks which can create health problems for domestic pets. The bulk of the solid waste generated during the operation of the project will consist of paper, plastic, glass, metal, textile and organic wastes. If the solid waste is not properly collected and disposed off, it may create indiscriminate and such wastes can be injurious to the environment through blockage of drainage systems, choking of water bodies and negative impacts of health hazard to the inhabitants of the society/colony.

Some of these waste materials generated from the project especially the plastic / polythene is not biodegradable which may cause long term injurious effects to the environment.

Mitigation Measures

- The wastes will be properly segregated and separated to encourage recycling of some useful waste materials i.e. some demolished stone and concrete materials can be used as backfills.
- The conditions for properly disposal of solid waste will be put in the contract that before the contractor is issued with a completion certificate that he will clear the site of all debris and restore it to a state acceptable to the supervising architect and environmental consultant.

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- Bins/ receptacles will be placed at strategic locations within the site as collection centers to facilitate handling, separation and sorting of various types of wastes.
- Use of an integrated solid waste management system through a hierarchy options i.e. source reduction, recycling, composting and reuse will be encouraged. This will facilitate proper handling of solid waste during operation stage.
- Establishment, implementation and maintenance of solid waste segregation will be aimed at enhancing recycling.
- Arranging awareness training programs for all personnel on how to handle solid wastes.
- All debris, spoilt materials, and other wastes will be cleared regularly from the site and disposed at approved dump sites operated by designated waste disposal authorities.

6.3.4 NOISE POLLUTION

Construction Phase

This phase of the development may likely have the most negative impact to the ambient noise and vibration in the construction area. A number of measures may be undertaken by the developer to reduce the impact of noise on the existing and potential residents as well as the workers involved in the project.

This is temporary; however, the aim at this point is to make the increase in noise as low as possible until this phase is complete. The cumulative impact of the construction

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activities occurring simultaneously with the other developments for the area may increase the noise and vibration levels in the area significantly.

Operation Phase

This phase is not likely to cause noise pollution as residential activities do not cause any significant noise.

Mitigation Measures

- Equipment to be used should be selected on the basis of the noise minimization.
- Equipment should be properly maintained while in use during the construction phase.
- The equipment to be used should be located far away from the nearby community and also to prevent interference.
- The proponent should measure the noise levels during construction and install appropriate noise barriers and acoustic screens.
- Buffer zones of undeveloped land should be maintained between the project area and the neighbors.

6.3.5 INCREASED WATER DEMAND

Construction Phase

This phase of the development might place a strain on an already limited supply through the construction of buildings and other infrastructural works for the development. This will create additional demand to the water supply within the project vicinity.

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Operational Phase

The operation phase of the housing scheme might place a strain on the water availability near the project area because adequate quantities of water will be required for healthy living of the community for drinking, cooking and washing, in green areas and for domestic usage etc.

However, even with the use of recycled water for irrigation, the current supply will have a cumulative major negative impact on already limited supply. The housing scheme will pollute the ground water resource of the nearby area if waste water will be disposed off untreated, as decreasing the clean water availability.

Therefore, this phase of the development will therefore have a major negative longterm impact on the water availability in the area.

Mitigation Measures

Water conservation is the practice of using water efficiently to reduce unnecessary water usage. The mitigation measures relating to conservation of water within housing scheme is as follows:

- Provision of notices and information sign boards within the project site to notify on means and needs to conserve water resources.
- Installation of water conserving taps will be done.
- Encourage water recycling during both construction and operational phases of the project.
- Practice rain water harvesting to supplement the borehole water.
- Prefer septic tanks near each housing unit.

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- Water distribution system of the housing scheme has very few water main breaks that result in water loss. Thus, fix all leaks immediately after pointing them out.
- It will be recommended for the housing scheme to use only low flow and low flush water saving plumbing fixtures and automatic level controllers at water tanks to reduce/optimize the demand side of water resource. This will also optimize the chain of environmental infrastructure to be set up on the site.

6.3.6 SURFACE DRAINAGE

Construction Phase

Clearance of land and excavation works will lead to increased soil erosion at the project site and release of sediments into the drainage systems.

Operational Phase

The building roofs and pavements will lead to increased volume and velocity of storm water or runoff flowing across the area covered by the buildings. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems.

Mitigation Measures

- Terracing and leveling the project site to reduce run-off velocity and increase infiltration of rain water into the soil.
- Drainage channels will be installed in all areas that generate or receive surface water.

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- The channels will be covered with gratings or other suitably approved materials to prevent occurrence of accidents and dirt entry that may compromise flow of run-off.
- The channels will be designed with regard to peak volumes. Paving of the sidewalks, parking and other open areas will be done using pervious materials i.e. concrete blocks to encourage water percolation thus reducing run-off volume.

6.3.7 SITE SECURITY

Security of the site and those working within it is of utmost significance and those operating within the housing scheme must be assured of their security at all times. Security lapses that may lead to injury of occupants of the building and loss of personal property should be taken care of.

Mitigation Measures

- The management will strategically install lighting as well as security alarms and backup systems including surveillance of the area on 24 hours basis.
- Security guards will keep check on the project area in a 24-hour basis and document any suspicious movement within the housing scheme and its environs.

6.3.8 FIRE HAZARDS

The operations that lead to fire outbreaks include poor handling of electricity systems, faulty electrical equipment, carelessness etc. These should be avoided both during construction and operation phases of the project.

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Mitigation Measures

In this regard, the design of the housing scheme has provided and recommended implementation of firefighting measures and control facilities to avoid emergency accidents.

These include the following:

- Installation of an automatic fire alarm system for the building.
- Display fire excavation procedures and emergency at the commercial buildings.
- Regular maintenance of fire electrical and first aid equipment.
- Provide personal protective equipments (PPEs) i.e. safety boots, hand gloves, face mask etc. to the workers during construction phase to avoid any accidental damage.

6.4 BIOLOGICAL ENVIRONMENT

The impact on flora and fauna and corresponding mitigation measures are described in the following paragraphs:

6.4.1 Impacts on Flora and Fauna

(a) Flora

Trees & Shrubs

The site has fewer trees and has walled boundary.

Main tree species grown are: *Dalbergia sissoo* (*shisham*), *Morus alba* (*Mulberry*),

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Acacia nilotica (kikar), *Populus Spp.* (Poplar), and *Eucalyptus camaldulensis* (sufaida).

Indigenous flora includes *Prosopis cineraria*, *Tamarix aphylla*, *Capparis aphylla* and *Salvadora oleoides* with undergrowth of *Chenopodium album*, and *Cannabis sativum*.

(b) Fauna

Project site is located within and along outer boundary. Fauna consist of jackal, house rat, jungli cat, house crow, myna and house sparrow etc.

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6.4.2 Mitigation Measures

(a) Flora

Trees and Shrubs

The plantation program for the vacant sites has been proposed and it will be implemented.

(b) Fauna

As already mentioned, there will be no affect on fauna of the project site.

6.5 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section describes the impact of the project on local communities, construction workers, indigenous and vulnerable people as well as on structures or sites of cultural and religious significance.

6.5.1 Social Impacts

(a) Impacts on Local Communities/Workforce

- Community will have to face the noise and dust problems during the construction phase. Moreover, air and noise emissions during operation stage.
- Theft problems to the community by the contractor workers and vice versa.
- Pollution of community resources during construction and operation stages.
- Increment in traffic congestion within the project area

(b) Gender Issues

- As the project area lies close to the rural areas and rural community, women activities in the field may become affected due to the construction activities.

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- The rural women normally use the open field latrines and their privacy may suffer due to the project activities.

(c) Indigenous, Vulnerable and Women Headed Households

- During the social field visit of the project, no indigenous group of people was identified. So, no impact on the indigenous people is envisaged due to the implementation of the project.

(d) Safety Hazards

- Occurrence of accidents/ incidents during the construction and operation stages may occur to the workers.

(e) Religious, Cultural and Historical Sites

- No such site will be adversely affected.

(f) Sensitive Areas, Game Forest Reserves

- No such site will be adversely affected.

6.5.2 Mitigation Measures

(a) Local Communities/Workforce

The presence of migrant construction workers inevitably causes some degree of social unease and even active disputes with the local community as a result of cultural differences.

Potential social conflict will be contained by implementing the measures listed below:

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- The Proponent will be required to maintain close liaison with the local communities to ensure that any potential conflicts related to common resource utilization for the project purposes are resolved quickly.
- Proponent will take care of the local community and sensitivity towards the local customs and traditions will be encouraged.
- Effective construction controls by the proponent to avoid inconvenience to the locals due to noise, smoke and fugitive dust.

(b) Loss of Income

- No such problem is foreseen. Rather income source will increase.

(c) Gender Issues

- The Proponent will have to select the specific timings for the construction activities so as to cause least disturbance to the local population particularly women considering their peak movement hours.

(d) Indigenous, Vulnerable and Women Headed Households

- As referred earlier, no indigenous people have been identified in or along the Project corridor, so no mitigation is required.

(e) Safety Hazards

- Complying with the safety precautions for construction workers as per International Labour Organization (ILO) Convention No. 62, as far as applicable to the project contract.
- Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets,

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gloves, and protective masks and monitoring their proper and sustained usage.

- Contractor will ensure the provision of medicines, first aid kits, vehicle, etc. at the campsite.
- A contingency plan will be prepared by the Contractor to handle any abnormal situation like fire, storm, etc.

(f) Relocation of Private/Public Infrastructure

- No such issue will arise.

(g) Religious, Cultural and Historical Sites

No such site is located in near vicinity of 5kms radius.

6.6 ENVIRONMENTAL AND SOCIAL EMERGENCY CONTINGENCY PLAN

During construction and operational period of project, natural disasters, serious accidents, serious environmental pollution and other emergencies occur, if without a comprehensive pre-made emergency plan, those emergencies will not be efficient controlled or even has an irreversible negative impact on the environment and nearby areas. Thus, it is important to establish and execute the environmental and social emergency plan for environment, safety, firefighting, health, security, labor standards etc.

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Therefore, to cater for the environmental and social issues during construction and operation stage, special emergency contingency plan will be prepared by the contractor at construction and operation stages respectively.

The plan will be prepared for the following main items:

- Availability of ambulance, first aid box, etc at project site for carriage of workers to the hospital in case of any accident / incident.
- For firefighting arrangements during construction and operation stages in case of any emergency.
- Arrangements for leakage of any harmful emissions / gases from commercial / household during operational activities.
- Arrangements to cater for any storm or natural disaster like earthquake, thunderstorms etc.
- Arrangements for any safety and security risks, etc.

6.7 ENVIRONMENTAL MATRIX FOR CONSTRUCTION PHASE

Name	Impact			Magnitude	
	Positive	Negative	No	Minor	Moderate
Soil Erosion		✓		✓	
Land Contamination		✓		✓	

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Land Acquisition			✓		
Soil Contamination		✓		✓	
Natural Drainage		✓		✓	
Solid Waste		✓		✓	
Air Pollution		✓		✓	
Ground Water		✓		✓	
Dust	✓				✓
Noise	✓				✓

6.8 ENVIRONMENTAL MATRIX FOR OPERATIONAL PHASE

Name	Impact			Magnitude	
	Positive	Negative	No	Minor	Moderate
Atmospheric Pollution		✓		✓	
Noise		✓		✓	

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Solid Waste Generation		✓			✓
Wastewater Pollution		✓			✓
Groundwater Pollution			✓	✓	
Increment in Water Demand		✓		✓	
Employment Opportunities	✓				✓
Socio-Economic Benefits	✓				✓

CHAPTER – 7

ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAMME

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7.0 OBJECTIVE OF ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) is the integral part of environmental assessment report. The primary objectives of the EMP are to:

- Define responsibilities of project proponent, contractors and other role players and effectively communicate environmental issues among them;
- Facilitate the implementation of the mitigation measures identified in the EIA by providing the technical details of each project impact, and providing an implementation schedule;
- Define a monitoring mechanism and identify monitoring parameters to ensure that all mitigation measures are completely and effectively implemented;
- All environmental safeguards are carried out correctly.
- Adverse impacts on environment are minimized.
- The project is monitored for environmental impacts

7.1 STRUCTURE OF EMP

The structure of EMP should:

- Identify key monitoring parameters and schedule of monitoring of these parameters.
- Identify training requirements at various stages of the development of the project.
- Identify the resources required to implement the Environmental Management Plan (EMP) and outline relevant expenses arrangements.

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- Propose environmental control methods to be used to prevent or minimize environmental impacts.
- Assign responsibility for each control measures to specific staff member.

7.2 INSTITUTIONAL CAPACITY

The following organizations would be involved in the implementation of the Environmental Management Plan (EMP);

- Proponent of the project
- Project Contractor, as the executor of the EMP during construction stage of the project Environmental Manager / Supervisor to monitor and execute the EMP during construction and operation stage.
- Environmental Protection Agency (EPA) Punjab, as Government Department to review and monitor the implementation of remedial and mitigation measures as given in EIA Report.

7.2.1 Specific Implementation Responsibilities

The implementation of the EMP will be the prime responsibility of the project proponent. He will designate responsibilities and obligations to its selected contractors and Environmental Manager / Supervisor. Specific responsibilities of key role players are illustrated hereunder:

7.2.2 Proponent

Proponent will be responsible for ensuring overall implementation of the EMP during construction as well as operational stages of the project. He will provide the requisite

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financial resources to the contractor and Environmental Manager / Supervisor to implement the EMP.

Key responsibilities of proponent are:

- Coordinate with regulatory agencies of the District and EPA
- Communicate with local community and Regulatory Authorities in order to get time to time feedback of the stakeholders on various social and environmental concerns.
- Make sure liaison between the Contractor / Environmental Manager / Supervisor and environmental consultant to check environmental compliance with EPA requirements.

Contractor will be responsible for the implementation of all measures necessary to ensure that environmental impacts during construction phase should be minimized.

In order to fulfill these requirements, Contractor will carry out the following:

- Implement environmental good practice measures outlined in the mitigation measures.
- Provide, to extent practicable, environmental training to the work force and promote environmental awareness.
- Coordinate with local authorities as appropriate.
- Facilitate consultants during environmental monitoring. **7.2.3**

Environmental Manager / Supervisor

The principle responsibilities included:

- To monitor on daily basis whether operational activities are carried out in an environmentally sound and sustainable manner.

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- Coordination with provincial and local officials, community groups, government departments, etc. on environmental issues.
- Monitoring of the environmental aspects of project during operation to ensure that the environmental impacts and the mitigation measures in the Environmental Management Plan (EMP) are implemented.
- Undertake critically important routine and visual monitoring of waste disposal and overall environmental management practices adopted.

7.2.4 Environment Protection Agency

The Role of EPA is on the apex and includes checking:

- Whether requirements of the Environment Approval awarded by the EPA against EIA report are met.
- The implementation of mitigation recommendations in Environmental Impact Assessment (EIA) report Approval for starting actual project operations is obtained from EPA and Orderly review of audit reports prepared internally or by a third party monitor.
- Carry out environmental monitoring on quarterly basis and advise any changes in the structure or implementation method of the Environmental Management Plan (EMP).
- Suggest or order any appropriate solutions.

7.2.5 Auditing

The Audit will be carried out internally by the Proponent, Contractor and Environmental Manager / Supervisor. The primary aim of the auditing is to assess compliance and effectiveness of the EMP as well as alternative environmental and social objectives, and

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to assess the effectiveness of corrective actions. Audit will also suggest remedial measures to overcome the environmental and social problems.

The external auditing will be carried out by the EPA, Punjab, in order to check compliance and implementation of EMP. The Environmental Protection Agency (EPA) will check various parameters with reference to various sections of Pakistan Environmental Protection Act PEPA- 1997 (amended 2012) and standards specified by Punjab Environmental Quality Standards (PEQS) there under.

7.3 TRAINING SCHEDULES

TRAINING SCHEDULE OF CONSTRUCTION PHASE				
Activity	Duration	Trainer	Venue	Addressee / Participants
Work at height	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.
Excavation Work	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.
Emergency Drills	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.

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Health and Safety	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.
Water Sprinkling	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.
Briefing about EMP of construction phase	1 Day	Environmental of Specialist Contractor	Onsite	20 Workers of Construction phase.

7.4 EQUIPMENT MAINTENANCE DETAILS

Equipment maintenance details are given below:

- | | | |
|--|---|--------------|
| i. Maintenance of Vehicles | = | Daily basis |
| ii. Maintenance of Firefighting Equipment's | = | Weekly basis |
| iii. Maintenance of Equipment and Machinery | = | Annually |
| iv. Maintenance of Generator | = | Weekly basis |
| v. Maintenance of Trees Plantation and Grassy Area | = | Daily basis |

7.5 ENVIRONMENTAL BUDGET

Sr. No.	Activity	Budge (PRs)
1	Personal Protective Equipment's	1,00,000

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2	Water Sprinkling	1,00,000
3	Tree Plantation and Grassy area	2,00,000
4	Fire Fighting	1,00,000
5	Housekeeping	1,00,000
6	Training of Workers	50,000
7	Vehicle Maintenance	50,000
8	Solid Waste Disposal	1,00,000
9	Wastewater Disposal	1,00,000
	Total	9,00,000 (Nine Lac Pak Rupees)

7.5.1 Mitigation and Impact Assessment

What is the problem	When will problem occur and when it should be addressed	Where problem should be addressed	How the problem should be addressed
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Dust Pollution	During operational phase, it should be addressed during operational phase	During operational activities	Water Sprinkling
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The following organizations would be involved in the implementation of the Environmental Management Plan (EMP);

- Proponent of the project
- Project Contractor, as the executor of the EMP during construction stage of the project Environmental Manager / Supervisor to monitor and execute the EMP during construction and operation stage.
- Environmental Protection Agency (EPA) Punjab, as Government Department to review and monitor the implementation of remedial and mitigation measures as given in EIA Report.

7.5.1.0 Mitigation and Impact Assessment

Purpose of Mitigation Measures should include:

- What is the problem i.e. in terms of “major environmental impacts” which may arise by the subject project activity?
- When the problem will occur and when it should be addressed.
- Where the problem should be addressed.
- And how the problem should be addressed.

The major impacts may arise by the subject project are dust, noise, solid waste and waste water. Other impacts are of minor importance. These impacts can arise during operation

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but precautionary measures have been adopted prior to start the operational activity, during the activity and post activity.

Any impact that would arise due to the subject project activity will be addressed through proper channel and on site. Trainings will be conducted regarding Health, Safety and Environment (HSE), firefighting, best work practices etc. while other precautionary measures are also adopted to make the project safe and environmental friendly.

Project proponent will be responsible for the implementation of EMP along with site manager to assess any impact that could be arisen during operational activities of the project. He is responsible to address the problem and to mitigate it.

Whys of achieving Mitigation Measures By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed in previous chapters.

7.5.1.1 And how the problem should be addressed

The major impacts may arise by the subject project are dust, noise, solid waste and waste water. Other impacts are of minor importance. These impacts can arise during operational phase but precautionary measures have been adopted prior to start of operational activity, during the activity and post activity. Any impact that would arise due to the subject project activity will be addressed through proper channel and on site.

Trainings will be conducted regarding HSE, firefighting, best work practices etc. while other precautionary measures are also adopted to make the project safe and environmental friendly.

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Project proponent will be responsible for the implementation of EMP and he has appointed as a Project Manager / Environmental Manager along with site manager to assess any impact that could be arisen during operation of the project.

7.5.1.2 Ways of Achieving Mitigation Measures

Adopting proper mitigation measures any anticipated major or minor environmental impact could be controlled or mitigated. Thus, the details of impacts and mitigation measures have been discussed in previous chapters. The proponent of project has been taking appropriate measures to provide pollution free and safe environment during the project activity by implementing improved management. Practices and monitoring techniques suggested in EMP. Management will further take necessary actions to mitigate any residual impacts. The management of housing scheme will adopt such plan that will assure the minimum impact on the environment and health by implementing proper mitigation measures. There was no dispute arose at the time of purchase the land and the land is the property of project proponents and if in future, there would arise any issue regarding environment degradation, the project proponents will compensate in terms of money as they has assured to achieve PEQS and compliance to other regulations made under PEPA 1997 (Amended 2012).

Plantation will be done within the project site and for this area is reserved. Project proponent will further develop Restoration / Reclamation or Tree Plantation Plan to restore the project area. Plantation will be enhanced with native species within the housing scheme, along the boundary wall and along the road side as per direction by EPA Punjab.

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7.5.1.3 Improved Monitoring and Management Practices

The aim of improving monitoring is to enhance the environmental performance of the project through its enforcing the PEQs at all stages of activities as well as dealing with an emergency as and when it may occur. The objective of exercising by the management of the housing scheme is to ensure prevention of occurrence of any situation of emergency and in case of development of such a situation, steps required to be taken to manage the situation. This section also contains a set of environmental guidelines for avoiding or preventing the adverse environmental impacts of the project. The monitoring will be carried out in accordance with PEQs by the management. The proponent along with management will undertake monitoring of the Safety, Health and Environmental aspect, it will be the best tool for achieving mitigation measures.

7.5.1.4 Compensation in Money Terms

There is no affecting of the project because the land of project is owned by the proponent. The construction and operational activities at the project site will not damage inflict to any of the private properties, of the neighboring communities. Hence, no need of any sort of compensation. Not applicable in case of current project.

7.5.1.5 Replacement, Relocation and Rehabilitation

The management carrying all responsibility for cleaning and restoration will be carried out immediately after each phase of construction and will be responsibility of each team in their respective area of operation, if relocation of any public utility will involve, it should be carried out well ahead the start of construction to avoid disruption of service to the user-community. Once the phase will be over, efforts for restoring normalcy and

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rehabilitation should be initiated under instructions of the appropriate authorities or project management, if any existing.

The following measures will be taken in this regard.

- All pin flags, stakes, signs and refuse will be removed.
- All concrete slabs will be broken and shipped to an appropriate site outside the project.
- Area for proper disposal.
- Site will be cleaned so that no refuse or wastes are left behind; the waste will be properly disposed off.
- All ditches and sumps will be backfilled.

7.6 SUMMARY OF IMPACTS AND THEIR MITIGATION MEASURES

Summary of impacts and their mitigation measures are presented below in Environmental Management Plan (EMP) of construction and operation phase.

IMPACTS	MITIGATION MEASURES
Noise from construction machinery / equipments and vehicles	Use of Personal Protective Equipment' s (PPEs)
Noise by generator during functioning of the project	Sound proof room for generator. Regular maintenance and vehicles monitoring

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Wastewater generation during construction and operation phase.	Wastewater from domestic sources will be treated in septic tank prior to use and then drained out during construction. During operational activities, waste water from domestic sources will be treated in septic tank and drained out.
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	Monitoring.
Gaseous Emissions / Particulate matter during construction and operation phase	Covering of construction material to avoid dust. Installation of canopy or other equipments at the stack of generator in case of any emission. Use of PPEs. Maintenance and inspection of vehicles and generator
Construction, or project domestic related Solid Waste	Utilize the construction waste for road filling and maintenance. Solid waste bins will be placed at all suitable places. Moreover, disposal facility and proper management system will be provided.

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Land or Soil Erosion	Removal of less vegetation. Restoration of land by plantation and maximum plantation will be done.
Health and Safety Issues	Use of PPEs. Installation of firefighting system and equipment at project site. Training regarding Health & Safety, firefighting and Medical First Aid. Proper housekeeping at work place.
	Never left machinery unattended. Well management practices will adopt.
Socio-Economic	Provide employment opportunity. Prefer local people for jobs.

7.7 ENVIRONMENTAL MANAGEMENT PLAN

Below shows the environmental impacts and the related mitigation measures to be carried out in order to minimize / reduce its negativity to the minimum, taking in consideration that no whatever developmental project of the housing scheme operates without at least generating one negative impact on at least one of the environmental elements (the 4 well-known environmental elements are *soil cover + air + water + life* forms including human being). It is a matter of innovation to find a mechanism that balances between implementing developmental projects with the least harm to any of the environmental elements.

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7.7.1 Environmental Management Plan for Design Stage

Sr. No.	Aspect	Environmental / Social Impacts	Mitigation Measures	Responsibility
1	Inadequate Design	Inadequate design may not meet the quantity of sewage generated, pumping	Generation of wastewater will be correctly calculated by considering population corresponding to	Management
		equipment and accessories, selection of proper material of pipe	the project area. The selection of machinery will be for at least 10 years for smooth functioning of disposal station.	

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			▪ The number of considerations for selecting design period of sewers and allied civil work, which includes expansion trends and financial position of the sponsoring/ client institution.	
2	Selection of poor construction materials	Poor construction material will lead to environmental damage	▪ Selection of construction material that will be safe for human use. ▪ The construction material selected will be of good quality.	Management

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3	Inadequate Buffer Zone	Noise and vibration due to running of heavy duty pumps resulting in inconvenience to local people.	▪ Provision of buffer zone in the form of raised boundary walls. ▪ Tree plantation around the project site will be preferred to reduce noise problems of nearby resident community. Oiling of parts of construction machinery that will ▪ cause noise and vibration.	Management
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7.7.2 Environmental Management Plan for Construction Phase

Sr. No.	Aspect	Environmental / Social Impacts	Mitigation Measures	Responsibility

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1	Improper construction techniques and	Public inconvenience, traffic jams, unmanaged excavated	▪ The supervisory/monitoring staff should be experienced and qualified enough to	Management
	monitoring	material and dust problem due to excavation work within project site	handle the excavated material and its disposal in designated places without harming local environment. ▪ Additional training will be provided. ▪ Supervision and training for the contractor's staff will also be required.	

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2	Air Pollution	Dust and exhaust emissions may cause nuisance to the local residents.	Gaseous Emissions ▪ All vehicles, machinery, equipment and generators, used during construction activities, will be in good condition and properly tuned and maintained in order to minimize the exhaust emissions. ▪ Open burning of solid waste from contractor’s camps	Management
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			will not be allowed. Dust Emissions ▪ The construction contractor will ensure regular spraying of water on all temporary service and access roads to minimize the dust generation.	
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3	Noise and vibration	Disturbances to local residents in the form of increased noise levels and vibration due to movement of construction machinery.	▪ Selection of up to date and well-maintained equipment with reduced noise levels ensured by suitable in-built damping techniques with appropriate muffling devices. ▪ Providing the site workers with suitable hearing protection like ear caps, or earmuffs and training them in	Management
			its use. ▪ Preferably, restricting construction vehicle movements during night time.	

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			▪ Machinery with low noise level or machinery with noise shielding and absorption should be used. ▪ Equipment used for construction will strictly conform to noise standards specified in the Punjab Environmental Quality Standards (PEQS). ▪ Vehicles and equipment used will be fitted, as applicable, with silencers and properly maintained ▪ Hedges and high	
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			boundary walls should be used as noise barriers in sensitive areas such as commercial buildings, hospitals and mosques.	
4	Disposal of Soil	Negative impacts including change of land use and loss of aesthetic values may be caused on the receiving lands due to improper disposal of soil.	▪ The soil will be disposed off in an environment acceptable manner by transporting it in an enclosed containers and dumping at sites. ▪ Where possible, material should be reused on site to minimize the amount of soil used and soil disposed off.	Management

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5	Accidental damage to utilities in excavated	Damage to existing utilities like sui gas, telephone etc.	Coordination between different utility departments will be maintained	Management
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	areas	causing inconvenience to the local people.	to get details of existing underground utilities before starting construction of the project. Compensation will be provided in case of loss to local people.	
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6	Transportation and Access to construction material	Disruption of traffic flow	▪ Construction activities will be phased to confine the disruption of traffic. ▪ Traffic diversion/ re-routing plans, if found necessary, will be made with the help of traffic police for smooth flow of traffic.	Management
7	Employment and Economic Impacts	Direct employment impacts during construction and	▪ Impacts to employment and economics during construction will be	Management

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		increase in local expenditure of worker incomes	▪ helpful for the local people The construction work of housing scheme will provide job opportunity for the local people.	
8	Solid and Construction Waste	Construction activities generating waste materials like excavated soil and domestic waste from workers will be the source of pollution for the environment.	▪ Construction debris and demolition material will not be allowed to accumulate during construction phase. All such material will be disposed off on daily basis.	Management

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9	Fauna	Construction area may represent a barrier to the species and result in the splitting up of populations.	▪ Staff working on the project should be given clear orders, not to shoot, snare or trap any bird. ▪ The contractor will make arrangements to minimize the	Management
			vibration, noise pollution through good engineering practices.	

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10	Flora	Loss of habitat	▪ It will be appropriate to collect seed and samplings from the plants growing within the project site prior to site clearance. ▪ Flora will be planted in areas within the disposal station to create areas of natural vegetation as part of overall landscaping design.	Management
11	Health and Safety of Workers	Construction machinery and equipment may cause minor and severe injuries to workers	▪ Well-maintained construction machinery / equipment will be used within the project site. ▪ Training of the workers in the safety zone will be preferred.	Management

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			▪ Provision of protective clothing for laborers handling waste materials, e.g. helmet, adequate footwear, protective goggles, gloves etc. ▪ Firefighting equipment (hydrants) will be placed at an easily accessible place and inspected regularly.	
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7.7.3 Environmental Management Plan for Operational Phase

Sr. No.	Aspect	Environmental / Social Impacts	Mitigation Measures	Responsibility

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1	Operation & Maintenance deficiencies	Communicable diseases in the project area, which will be a major public health hazard.	▪ Regularly checking of the water quality at source. ▪ Leaking pipes will be immediately repaired by the management. ▪ Pumping machinery	Management
			will be maintained properly. ▪ Stagnation of water will be prevented at the project site. ▪ Generators will be maintained and tuned properly so that emissions can be controlled.	

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2	Air Pollution	Minor significance of impact on air quality generating from standby generators or machinery	Air quality monitoring will be carried out on regular basis for parameters like CO, CO₂, NO₂, SO₂, PM₁₀	Management
3	Groundwater	Contamination of groundwater source may occur in case of corrosion or leakage.	- The impact should be minimized by regular checking of leaks and corrosion etc. - Maintenance of damaged pipes should be done periodically.	Management
			Monitoring of groundwater will be conducted.	

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4	Surface Water	The surface water may get contaminated by disposal of wastewater from the disposal station.	▪ The wastewater must be treated before disposing according to Punjab Environmental Quality Standards ▪ (PEQS). Wastewater will be disposed off in environmental friendly manner after proper treatment (if required).	Management
5	Energy Consumption	Loss of natural resource	▪ Regular maintenance of all construction machinery should be ensured to avoid excessive fuel consumption or leaks. ▪ Switch off machinery/appliances when not in use.	Management

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6	Noise and Vibration	Nuisance to the local population	▪ Maintenance of vibrating parts through a well-coordinated operation and maintenance procedure periodically.	Management
7	Solid Waste	Solid waste generating from residential area and surroundings	▪ Regular inspection and maintenance will be scheduled and implemented to ensure the removal of solid waste and sludge when accumulated. The solid waste will ▪ be disposed off safely. Dumping or burning of municipal solid waste in the ▪ surroundings should be strictly prohibited.	Management

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9	Occupational Health and	Operation of machinery and	▪ The issues related to operation of machinery and	Management
	Safety Issues	equipment	equipment will be controlled by efficient management, staff training, maintenance of machinery and equipment and other preventive measures ▪ First Aid Kits should be provided. ▪ Provision of safe drinking water. ▪ Provision of Personal protective Equipment's (PPE's) to the employees including masks, gloves, safety boots, face shield, goggles etc.	

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			▪ Periodic medical checkup of workers will be done by the management.	
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7.8 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

i) Design and Planning Stage

Environmental Guidelines

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Design Aspects (1) Project’s Design and Layout should: a) Have architectural features, to the extent possible, in conformity to general landscape of the area. b) Be in consonance with local climatic, environmental, and meteorological conditions. c) Prefer local construction materials to the maximum extent possible. d) Incorporate proper ventilation of the structures and provide for sunshine, air movement, and maximum usage of the daylight. e) Provide adequate space for movement of the workers around process machinery and installations. f) Make provisions for collection, treatment, and disposal of process wastes (solid wastes) in an environmentally sound manner by providing a well-designed process wastes handling system of appropriate capacity. g) Provide adequate arrangements for community toilets for the workers at convenient locations within premises of project site. h) Provide construction of septic tank system for collection, treatment and disposal of toilet wastewater and other	• Proponent • Project Consultant / • Architect/ Design Constantan / • Project Engineer
Environmental Guidelines	

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process wastewater all during the construction phase. i) Provide for availability of safe drinking water for the workers at convenient locations within the project promises both during construction and operation phase.	
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ii) Construction Stage

Environmental Guidelines	
Air Quality Concerns (1) The dust producing activities (operating the machinery, loading/offloading the material) be preferably carried out at evening hours to minimize exposure of the persons working onsite and in the vicinity to high levels of dust emissions. (2) All the machinery and equipment that run on fuel oil and the vehicles engaged in connection with project construction be adequately tuned up and well serviced to avoid emission of smoke and the particulate in their exhausts. (3) Only new and unadulterated fuels and lubricants be used in the machinery and vehicles. Spent oils be avoided. (4) Operation of the fuel powered machinery and equipment be avoided in windy conditions to prevent spread of the exhaust fumes. (5) All loose materials (e.g. sand, soil) be kept covered with canvas/plastic sheets while staked onsite or being transported	• Consultant • Architect/ Design Consultant / • Project Engineer

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Environmental Guidelines	
on a carriage vehicle to avoid their flying off with air currents or vehicular movement. If sheeting is not possible, then their top layer/surface layer be lightly sprinkled with water. (6) All vehicle drivers be instructed to lower down the speed particularly on the earthen and narrow rural roads and at road bends to reduce blowing of the drag dust. (7) The active constructional areas be obscure and isolated from the exterior by vertical shields / blinds, where necessary to avoid entry of particulate dust from them into the environment.	

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Water and Wastewater (1) No water for constructional needs be drawn from the shared community water source (e.g. a canal or a community well) except with consent of the community to avoid any chances of friction with the community. (2) No raw wastewater be disposed of onto land, into a drain, into a watercourse, or used for irrigating the crop field unless it has been appropriately treated to conform to the untended usage. (3) All effluents and wastewaters be compulsorily subjected to treatment before their final release into the environment. (4) Throwing of the liquids / chemicals / paints / effluents into nearby water bodies or onto land be avoided. (5) Washing the machinery, vehicles, construction implements into nearby surface waters be avoided. (6) All the freshwater and the wastewater pipelines be buried (or well secured if open) to avoid their accidental or mischievous	• Consultant • Architect/ Design Consultant / • Project Engineer
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Environmental Guidelines	
damage by vehicles, animals, and or miscreants. (7) Rainfall containment structures or storm water diverting channels be provided all around the project structures to avoid direct hit of the water to the building / sensitive structures.	

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Noise Pollution (1) The noise producing constructional machinery be operated preferably during daytime so that quietness of the night is not impeached and nearby community is not disturbed. (2) The night time operation of the constructional machinery, welding activities, and movement of the vehicles be avoided to the maximum possible extent. (3) All the machinery, equipment, generators, and the vehicles, which are a source of noise, be kept well maintained. Consider fitting a silencer to reduce noise generation, wherever required.	• Consultant • Architect/ Design Consultant / • Project Engineer
Public Utilities (1) The excavation and digging activities be carried out only after ascertaining that no gas, oil, or public utility lines are passing through or underneath the area to be excavated refer to local utilities layout map) (2) A standard operating procedure be devised for dealing with accidental damage to utilities along with an immediate restoration plan well ahead of undertaking the excavations. (3) If relocation of any public utility or facility (e.g. electricity poles) is involved, it should be carried out well ahead of start of construction to avoid disruption of service to the user-	• Consultant • Architect/ Design Consultant / • Project Engineer

Environmental Guidelines

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community.	
Cultural and Archaeological Heritage (1) The discovery of any remnants / relics of historical, cultural, or archaeological importance during excavations or diggings be immediately reported to concerned authority / archaeology department.	• Consultant • Design Consultant • Project Engineer

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Social Environment / Worksite Safety (1) All the working staff at the project site be made aware of the risks of personal injuries associated with constructional activities and the ways of avoiding them (e.g., wearing helmets, breathing masks, earmuffs, safety goggles, gloves, etc.) (2) A first-aid box be always kept handy at the construction site all during construction and if needed an appropriate medical care unit be setup during construction of the project. (3) The heads/supervisors of the various sections be made aware of the standard operating procedures for dealing with emergencies and for appropriate hazard management. (4) Indicative signage and warning boards be affixed at appropriate locations at the premises for information and guidance of the workers / employees. (5) The labour should be paid wages according to Government’s notified minimum wage rates and not less than that to avoid labour disputes and unrest. (6) Employing of children as laborers is avoided.	• Consultant • Architect/ Design Consultant / • Project Engineer
Environmental Guidelines	
(7) Fire fighting arrangements are always kept ready at the worksite all during construction. (8) Lighting of matchstick or lighters and the cigarette smoking be strictly prohibited at or the workplaces.	

7.9 ENVIRONMENTAL TECHNICAL ASSISTANCE AND TRAINING PLAN

In order to raise the level of professional and managerial staff, there is need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key-Roll in this respect and arrange the training program. Project Manager will provide training to staff and workers about the best EPA management practices at the project site and effective implementation of EMP.

CHAPTER 8

CONSIDERATION OF THE PROJECT ALTERNATIVES

8.1 SIGNIFICANCE OF THE ALTERNATIVES

The consideration of alternatives to a proposed project is one of the key aspects of an Environmental Impact Assessment (EIA). Consideration of alternatives assists the decision makers in the choice of an alternative, which has the least adverse and greatest beneficial environmental, social and economic consequences.

The most pertinent question to assess feasibility and propriety of a developmental project, from environmental impacts perspective, is to ask whether an alternative option would be better than the project proposal. The comparative analysis of the environmental and economic impacts of all the possible alternative question has been objectively and analytically examined in this EIA in the light of the impacts on the physical, biological, ecological, health, and economic environment as well as views and reservations of the stakeholders (proponent and the likely beneficiaries / losers).

8.2 NO PROJECT POSSIBLE ALTERNATIVES TO THE PROJECT REASONS

In the light of the views of the stakeholders and other objective evidence:

- The site Abandonment of the project on financial and technical grounds and maintenance of the existing position (i.e., status quo or no project option).
- Changing the size and operational scope of the proposed project site (Reducing & downsizing; or enhancing & upsizing).
- Shifting the project area to some other locations (site shifting).

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- Construction of alternative network of smaller independent units at different locations in a much wider coverage area.

The above-mentioned possible alternatives are discussed below briefly:

8.2.1 Abandonment of the Project (No Project Option)

The first alternative option could be to abandon the project altogether and continue with the existing situation. This option is not supported by objective conditions & population size of the district.

8.2.2 Changing the Scope

The second alternative could be change in the scope of the proposed project, i.e., either reduction and downsizing the size of the projector, the scope of the services or enhancing and upgrading the same. The downsizing or upsizing would include both the area of the project. The physical constraint in upsizing the project is nonavailability of additional clear land at the site. On the other hand, downsizing is likely to jeopardize economic viability of the project.

According to the proponent, both these factors have been taken into account while designing the project. As such, the object evidence does not support downsizing. Since additional land is not available at the proposed site, the upsizing option automatically becomes irrelevant, at least for the time being. Therefore, the option of change in the scope of the project is found not feasible.

8.2.3 Relocating the Project

The third possible option could be shifting, either a part or the entire project, to some other location. As mentioned in earlier, due to space constraints the project is being the

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undertaken at this site primarily because land is available with all the facilities at this proposed site.

Therefore, shifting of the project to some other place in or around the city is not possible because it will be firstly non-feasible and secondly, it will not serve objectives of the projects.

8.3 SUMMARY OF THE PROJECT ALTERNATIVE OPTIONS

Based on the objective analysis, views, and opinions of the stakeholders, as detailed above, various alternative options are found not feasible. Furthermore, the net socio-environmental impacts of the project are positive. Therefore, consideration of the above-discussed alternative option is not relevant to the instant project.

8.4 FINAL SELECTION OF SITE

A critical analysis was made based on the available accessibility with Reference to land availability, accessibility of site, availability of water resources, less damage to existing environment and other environmental problem. Finally selected present site of proposed project is more practicable with respect to economic, social and environmental perspective and future development for proposed project.

CHAPTER– 9

STAKEHOLDER’S CONSULTATIONS

9.1 GENERAL

This chapter describes the process and outcome of the consultations held with the relevant stakeholders and the neighboring community over environmental aspects of the proposed project.

Public discussions were held with the inhabitants of the surrounding area. Public consultation was conducted at site to know the point of view of the people. Majority of the people observes strong positive impacts regarding employment, business and structural development due to this proposed project. Audit report findings depict that people perceive overall positive social and economic impacts by the proposed project. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility. Moreover, management admitted to adopt all the measures to control any impacts resulting from the subject project.

9.2 WAYS OF PUBLIC CONSULTATION

Public Consultation was done by Scoping sessions, focused group discussion, small group meetings and way side consultations with the relevant stakeholders. Multiple fieldstrips and site visits were arranged. These visits were arranged by the environmental consultant for the collection of baseline data and public consultations to know the point of views of different stakeholders regarding the proposed project. There is no affected community present in the radius of the study area. Team visited the proposed site, had discussions with stakeholders and consulted with the local people to evaluate the project socio-economic impacts.

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

9.3 OBJECTIVES AND RATIONALE OF CONSULTATIONS

The primary objective of the stakeholders’ consultations was to learn and know the apprehensions, concerns and opinions of the key stakeholders over environmental implications of the project. The consultations sessions also served as a source of first-hand information about expectations of the community and beneficiaries of the project. Dialogue with the stakeholders and recording their concerns at appropriate stages of the project can help to tailor the project in line with stakeholders’ aspirations and therefore likely to promote public acceptance of the project and its sub-components.

9.3.1 Summary of Issues Raised by Stakeholders

A summary of the key issues raised by stakeholders and how these are being addressed by project proponent is provided in Table below:

During consultation it was observed that majority of the respondents were in favor of proposed project as the wastewater is disposed off into channel and by reducing the pollution load in wastewater it will be reusable by consumers. The other related issues and concerns raised by general public are discussed. However, during the social survey following concerns of the local community were noted:

- Nuisance must be controlled at source.
- Locals should be preferred for the job opportunities.
- Wastewater should not be disposed off in open lands.

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- Solid waste should be managed effectively by adopting the standard practices of the area.
- Cleanliness of the area should be ensured.
- Extensive tree plantation should be done
- An effective EMMP should be designed and enforced with true spirit.
- Health and safety of the workers should be ensured.
- Plantation of indigenous species must be carried out at extensive scale.

Table 1: Summary of Issues and Commitments by Proponent

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for locals as they generally have less skills and training.	Mostly, local skilled and unskilled labor will be prioritized and also there will be job in executive level.

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Training Opportunities	People are keen to consult with management if the project offers training and upgrading opportunities to enhance their trade or professional skills during construction activities.	Development of the Training Strategy, including commitment of allocation of budget investment for design, training infrastructure, and delivery.
Health & Safety	Truck traffic is a main concern because the road used by the project passes through a number of small communities and there will be a high volume of trucks transporting during construction activities.	Traffic advisory signs will be installed along proposed project site and all nearby specific areas.
Local Economy and Business Development	Local service providers are keen to participate in providing services during construction activities.	The management has main focus that all the material regarding construction will preferred to buy from the local market.

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Environ mental Issues	Dust and noise impacts, from the construction activities and in operation of mechanically un-fit construction machines are of concern to other residents. Loss and change of vegetation due to soil degradation.	Implementation of control under the Environmental Management Plan, including on and off site dust and noise monitoring.
Water Quality and Quantity	Water quality and quantity and impacts from the wastewater disposal are all key concerns for nearby residents.	Implementation of consultation in relation to water use and development of Environmental Monitoring Program.

9.3.2 Stakeholder’s Feedback

In consultation process, the stakeholders were briefed during scoping sessions about the objectives of the project. At the consultation meetings, the stakeholders and village representatives were informed about the project and project requirements. During the consultation meetings, all the stakeholders appreciated the project and expressed full support to management.

A detailed consultative process was carried in the form of official meetings, letters, and/or telephonic discussions, to consult the stakeholders.

Remarks given by stakeholders during the field survey are listed at the end of the report.

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9.4 IDENTIFICATION OF THE RELEVANT STAKEHOLDERS

The consultation process began with identification of the most pertinent stakeholders. Efforts were made to identify the relevant stakeholders through systematic process based on the nature and degree of their actual and perceived stake in the project.

9.5 CONSULTATION METHODOLOGY

Onsite consultations were held with representatives of the various categories of the stakeholders as were available during field visits of the proposed site. Additionally, wherever found feasible, general public visit in the vicinity were also conducted to know their views and concerns over the project activities. The majority of these consultations were either one to one meetings or small and focused group discussions.

9.5.1 Outcome of the Consultations

The neighborhood communities did not express any specific or significant concerns. Interestingly, different stakeholders had different perceptions and different concerns about the proposed project. Some of the concerns and apprehensions relating to various aspects of the project are reproduced below:

9.5.2 Design Aspects

The design aspects need to take into account the relevant building codes, byelaws, and the applicable governmental policies.

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9.6 CONSTRUCTION ASPECTS

- Delays in construction and completion of the proposed project are likely to result into escalation of construction costs.
- Construction related noise could be troublesome for the community.
- Delays in payments to the contractors, sub-contractors, suppliers and the labour can cause delays in the project implementation.
- Interference by the local regulatory agencies and the municipal authorities are also likely to cause delays in completions.
- Delays in handing over the sites and later changes in the drawings and scope of work result into slow progress of the construction under the proposed project.
- Generations of dust and its deposition on exposed surfaces would require frequent dusting.

9.7 OPERATIONAL ASPECTS

- There could be blackish air emissions laden with harmful particles.

9.8 PROPONENT

Possible impacts and mitigation measures related to the proposed project were discussed with the project proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environmental friendly.

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9.9 OTHER DEPARTMENTS AND AGENCIES

Detailed meeting were held for the impact analysis with the management of project and local community. Issues were discuss that may affect the environment and also the implementation of the proposed project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan (EMP). Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultations is to obtain the feedback from the relevant persons.

9.10 AFFECTED & WIDER COMMUNITY

There is no affected community present in the radius of the study area. Team has consulted with the inhabitants of different villages. They provided positive remarks regarding the subject project and in the favor of the proposed project activities. Stakeholders participation Performa's and socioeconomic questionnaire were get filed by the locals to evaluate the project socio-economic impacts.

CHAPTER – 10

CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

Based on the preliminary design, environmental and social field surveys and impacts assessment of the proposed project, it may be concluded that although there are some significant negative impacts but would be of short term during the construction stage. However, there are a few negative impacts that would be expected during the operational stage but their intensity can be reduced by taking appropriate measures. The environmental issues related with the project activities are summarized as under:

Environmental Impacts

During operation stage, disposal of waste will become a problem. Therefore, proper mitigation measures may be adopted in the preliminary design including safe and environmental friendly disposal of solid waste.

Physical Impacts

Physical impacts like soil contamination, water contamination, air pollution, high noise level, etc. are of temporary nature during the construction stage. However, during operational stage by adopting abatement technologies such as de-dusting system with bag filters and development of buffer zones and green areas intensity of negative impacts can be minimized.

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Biological Impacts

No forest area or wildlife sanctuary exists within the vicinity of the proposed project area, which may be affected by the project. Few reptiles like lizards and snakes and few birds like Mynah and house sparrows will be disturbed by the project activities and may have to move into nearby areas. This will be a temporary insignificant impact.

Social Impacts

The other social issues like safety of general public and workers, security problems, community accessibility issue, etc. will be of temporary nature.

10.2 RECOMMENDATIONS

Although comprehensive mitigation measures have been suggested in the report to minimize the negative impacts and to enhance the positive impacts of the proposed project, however, major recommended mitigation measures are summarized as under:

1. All appropriate environmental management measures detailed in this report, together with any other environment management commitments should be implemented throughout the entire life of the project.
2. Water contamination, air pollution and high noise levels will be controlled with the use of good engineering practices.
3. Environmental Management Plan (EMP) recommended will be implemented in the true spirit.
4. First Aid measures, Health & Safety Equipment (PPEs) will be provided to the workers.

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5. Personal Protective Equipment's (PPEs) will be provided and ensured that they are used by the workers during working hours.
6. Transportation vehicles will be maintained and tuned well.
7. No parameters above Punjab Environmental Quality Standards (PEQS) will be allowed in any case.
8. The parameters of the effluent will be within the permissible limits defined in the PEQS.
9. Any seepage and leakage will be controlled through proper mitigation measures.
10. Regular monitoring and auditing will be taken by the management to ensure the compliance of all the mitigation measures.
11. Proper solid waste management system must be adopted.
12. Plantation campaign will be initiated.