

ROYAL PALM CITY HOUSING SCHEME (PHASE-II)

MOUZA MUSA PUR, THATHA PANJHATA, MEHLOWALA, MAIN
GT ROAD, TEHSIL SADDAR, DISTRICT GUJRANWALA

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

PREPARED BY



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GLOSSARY

Air Quality	Measurement of the pollutants in the air; a description of healthiness and safety of the atmosphere.
Area	Area is the quantity that expresses the extent of a two-dimensional figure or shape, or planar lamina, in the plane.
Building	Building is a usually roofed and walled structure built for permanent use.
Compensation	Includes cash payment, deferred payment, a bond, an insurance policy, stipend, payment in kind, rendition of services, grant of privileges and disturbance money, entitlement to special treatment by government and semi government entities, grant of alternative land, grant of import licenses and business, trade and commercial facilities in addition to the rehabilitation and resettlement of an affected person.
Commercial Building	Commercial buildings are buildings that are used for commercial purposes, and include office buildings, warehouses, and retail buildings
Consultation	Consultation refers to two-way transfer of information or joint discussion between project staff and the affected population. Systematic consultation implies a sustained and rigorous sharing of ideas. Bank experience shows that consultation often yields the best resettlement alternatives, fruitful procedures for continued participation, and independent information on actual conditions for implementation.
Coordinates	Each of a group of numbers used to indicate the position of a point, line, or plane to make impure, pollute
Contaminate	
Disclosure	The action of making new or secret information known
Disruption	Disturbance or problems which interrupt an event, activity, or process.
Environmental Management	Attempt to control human impact on and interaction with the environment in order to preserve natural resources
Evaluation	The making of a judgment about the amount, number, or value of something; assessment.
Geology	A science that studies rocks, layers of soil, etc., in order to learn about the history of the Earth and its life

Ground Water	Aquifers currently being used as a source of drinking water or those capable of supplying a public water system. They have a total dissolved solid content of 10,000 milligrams per liter or less and are not "exempted aquifers.
Hazardous	Substance or material, which could adversely affect the safety of the public, handlers or carriers during transportation
Household	People residing under one roof, using the same hearth and operating as a single economic unit.
Impact	Effect on someone or something
Land Acquisition	The process whereby a person is compelled by a public agency to cede all or part of the land a person owns or possesses, to the ownership and possession of that agency, for public purpose in return for compensation.
Lobby	Lobby is a room providing a space out of which one or more other rooms or corridors lead, typically one near the entrance of a public building.
Mitigation	The action of reducing the severity, seriousness, or painfulness of something
Occupational Health	Maintenance of the highest degree of physical, mental and social well-being of workers in all occupations by preventing departures from health, controlling risks and the adaptation of work to people, and people to their jobs
Parking	A parking garage is a building, or an area under a building, where cars can be parked.
Project Area	The area specified by the funding and/or implementing agency according to the Official Gazette Notification and includes the areas within the administrative limits of the Federal or a Provincial Government.
Proponent	A person who advocates a theory, proposal, or course of action.
Rehabilitation	Include all compensatory measures to re-establish; at least lost incomes, livelihoods, living and social systems. It does not include the payment of compensation for required assets.
Resettlement	Means all measures taken to mitigate any and all adverse impacts, resulting due to execution of a project on the livelihood of the project affected persons, their property, and includes compensation, relocation and rehabilitation.
Restaurant	A restaurant or an eatery, is a business which prepares and

	serves food and drinks to customers in exchange for money.
Social Environment	It includes the culture that the individual was educated or lives in, and the people and institutions with whom they interact.
Scope	The extent of the area or subject matter that something deals with or to which it is relevant
Stakeholders	Include affected persons and communities, proponents, private and public businesses, NGOs, host communities and EPA.
Topography	Details of the surface features of land. It includes the mountains, hills, creeks, and other bumps and lumps on a particular hunk of earth.

LIST OF ACCRONYMS

EA	Environmental Approval
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Environmental Protection Council
GOP	Government of Pakistan
HSE	Health, Safety & Environment
LAA	Land Acquisition Act
MSW	Municipal Solid Waste
NOC	No Objection Certificate
O&M	Operation and Maintenance
OHS	Occupational Health and Safety
EPCCD	Environment Protection and Climate Change Department
PEPA	Punjab Environmental Protection Amendment Act
PEPC	Punjab Environment Protection Council
PEQS	Punjab Environmental Quality Standards
PIU	Project Implementation Unit
PKR	Pakistani Rupees
PPE	Personal Protective Equipment
RNR	Renewable Natural Resources
SFA	Social Framework Agreement
GDA	Gujranwala Development Authority
GRM	Grievance Redress Mechanism
CSR	Corporate Social Responsibility
AQI	Air Quality Index
HVAC	Heating, Ventilation, and Air Conditioning
SWM	Solid Waste Management
BMP	Best Management Practices
ROW	Right of Way
GIS	Geographic Information System
IEE	Initial Environmental Examination
C&D	Construction and Demolition (Waste)

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EXECUTIVE SUMMARY

Rapid urbanization and population growth in Pakistan have increased the demand for sustainable and well-planned housing developments. Gujranwala, one of Punjab's major industrial and commercial centers, is witnessing continuous urban expansion. To meet this growing demand, the **Royal Palm City Housing Scheme (Phase-II)** has been proposed as an extension of the successful Phase-I project. The proposed project is located at Mouza Musa Pur, Thatha Panjhata, and Mehlowala, Main GT Road, Tehsil Saddar, District Gujranwala. Its prime location offers excellent accessibility to major city areas, transportation networks, and commercial hubs, making it an ideal site for a modern housing community.

The scheme aims to develop a modern, environmentally sustainable residential community that harmoniously integrates residential plots, commercial areas, parks, schools, mosques, healthcare facilities, and community centers. The layout emphasizes eco-friendly design principles, sustainable land use, and efficient infrastructure for water supply, sewerage, solid waste management, and road connectivity. In compliance with the Punjab Environmental Protection Act (Amended 2012), the project prioritizes environmental protection through pollution control, water conservation, and energy-efficient systems. It is expected to create employment opportunities, boost local economic activity, and enhance civic infrastructure while promoting a balanced and sustainable urban lifestyle. Overall, the Royal Palm City Housing Scheme (Phase-II), Gujranwala, represents a forward-looking initiative combining urban development with environmental stewardship — setting a benchmark for future housing projects in Pakistan.

I. Project Need

The Royal Palm City Housing Scheme (Phase-II), Gujranwala, is conceived to meet the increasing demand for organized, secure, and environmentally sustainable residential developments in the city. Gujranwala, being one of the major industrial and commercial hubs of Punjab, has witnessed rapid urbanization and population growth in recent years. This urban expansion has led to significant pressure on existing housing facilities and infrastructure, resulting in overcrowded and unplanned settlements. The proposed project aims to provide a well-planned, modern housing community equipped with essential civic amenities such as water supply, sewerage, drainage, solid waste management, electricity, healthcare, education, and recreational facilities. By offering a planned urban layout and quality infrastructure, the project will help improve living standards and reduce the burden on the city's existing utilities. Moreover, the project supports the Government of Punjab's vision of promoting sustainable urban development through environmentally responsible planning and efficient land utilization. It will also create direct and indirect employment opportunities during the construction and operational phases, contributing positively to the local economy. The Royal Palm City Housing Scheme will thus serve as a model of sustainable residential development, combining modern infrastructure, environmental conservation, and community well-being to foster balanced socio-economic growth in Gujranwala.

II. Objectives of the Project

The main objective of the project is to develop a modern, sustainable, and environmentally friendly housing scheme at Mouza Musa Pur, Thatha Panjhata, Mehlowala, Main GT Road, Tehsil Saddar, District Gujranwala, under the name Royal

Palm City Housing Scheme. The project is designed to meet the growing demand for planned residential communities equipped with quality infrastructure and modern amenities. This development aims to provide affordable and secure housing, improve the living standards of residents, and contribute to the urban growth and socio-economic development of the region. The housing scheme will include well-planned residential, commercial, and recreational zones along with efficient water supply, sewerage, waste management, and road infrastructure systems. Additionally, the project seeks to promote environmental sustainability through the inclusion of green spaces, tree plantation, and modern drainage systems, thereby enhancing the overall ecological balance of the area. In the long term, the project will support economic development, job creation, and improved quality of life for the local population.

III. Policy, Legal and Administrative Framework

The **Royal Palm City Housing Scheme (Phase-II), Gujranwala** is required to comply with all relevant environmental laws, rules, and policies of the Government of Pakistan and the Government of Punjab, along with the applicable provisions of international environmental standards and guidelines. The project will be implemented in accordance with the requirements of the Punjab Environmental Protection Agency (Punjab-EPA) for environmental approval, as stipulated under the Punjab Environmental Protection (Amendment) Act, 2012, and the Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022. These regulations ensure that environmental concerns are fully integrated into the planning, design, construction, and operational phases of the housing project.

The main legal and policy instruments applicable to the project include:

- Pakistan Environmental Protection Act, 1997 (PEPA 1997)
- Punjab Environmental Protection (Amendment) Act, 2012
- Review of IEE & EIA Regulations, 2022
- Punjab Environmental Quality Standards (PEQS) for Air, Water, and Noise
- Punjab Housing and Town Planning Agency (PHATA) Regulations
- Land Use Classification, Reclassification and Redevelopment Rules, 2009
- Punjab Local Government Act, 2019
- National Conservation Strategy, 1992
- Punjab Sustainable Development Strategy, 2019–2030

The project's design and implementation also align with national and international best practices for sustainable housing development, emphasizing environmentally responsible land use, effective solid waste management, water conservation, green infrastructure, and climate-resilient urban planning. Compliance with these frameworks ensures that Royal Palm City Housing Scheme (Phase-II) contributes to sustainable urban growth, improved living standards, and environmental protection in Gujranwala District.

IV. Environment Category of the Project

In accordance with the Pakistan Environmental Protection Agency (EPA) Review of Environmental Impact Assessment (EIA) Regulations, 2022, the proposed Royal Palm

Royal Palm City Housing Scheme (Phase-II)
Environmental Impact Assessment (EIA)

City Housing Scheme (Phase-II), Gujranwala falls under Schedule-II, Category H, which pertains to housing schemes covering an area of more than 300 Kanals. As the total project area is 1,588 Kanal and 11 Marla, it qualifies as a large-scale development with the potential for significant environmental impacts. Therefore, the preparation and submission of a comprehensive Environmental Impact Assessment (EIA) report are mandatory to obtain Environmental Approval from the competent authority under the Punjab Environmental Protection Act, 2012.

V. Title and Location of Project:

Title: Construction of M/S Royal Palm City Housing Scheme (Phase-II)

Location: Mouza Musa Pur, Thatha Panjhata, Mehlowala, Main GT Road, Tehsil Saddar, District Gujranwala

VI. Project Proponent

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Royal Palm City Housing Scheme (Phase-II)
Environmental Impact Assessment (EIA)



Figure 0-1: Location of the Proposed Project

VIII. Brief Outline of Project

The **Royal Palm City Housing Scheme (Phase-II), Gujranwala** is a large-scale residential development covering 1,588 Kanal and 11 Marla, aimed at providing a modern, sustainable, and well-planned living environment. The project includes residential and commercial areas, parks, mosques, schools, healthcare facilities, and community centers, supported by essential infrastructure such as water supply, sewerage, drainage, solid waste management, and electricity networks. With a total estimated cost of PKR 4.767 billion, the project targets middle- and upper-income groups, promoting urban growth and socio-economic development in Gujranwala. Designed in accordance with environmental and regulatory standards, it integrates green belts, landscaped parks, and open spaces to enhance environmental quality and residents' well-being.

IX. Project Impacts and Recommendations for their Mitigation

The table given below shows the project impacts; related with construction and operation of the Project. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development.

Table 0-1: Screening of Possible Impacts during Pre-Construction / Design Stage

S/No.	Potential Issue	Likelihood	Consequence	Risk Level	Residual Impact (After Mitigation)
1	Land acquisition and ownership verification	Low	Delay in approvals and disputes	Medium	Negligible
2	Conversion of agricultural land to residential use	High	Loss of productive land	High	Low
3	Site clearance and vegetation removal	Medium	Loss of local flora	Medium	Minor
4	Design of drainage and stormwater system	High	Risk of flooding or waterlogging	High	Low
5	Utility and infrastructure planning (water, sewerage, power)	Medium	Inefficient service delivery	Medium	Negligible
6	Community and stakeholder consultation	Medium	Social resistance or concerns	Medium	Negligible
7	Integration of green/open spaces	Medium	Reduced aesthetics and air quality	Medium	Negligible
8	Compliance with regulatory approvals (EPA, TMA, etc.)	High	Delay in project commencement	High	Negligible
9	Soil and topography	Medium	Minor loss of	Medium	Negligible

S/No.	Potential Issue	Likelihood	Consequence	Risk Level	Residual Impact (After Mitigation)
	disturbance during survey		topsoil		
10	Inclusion of safety and environmental safeguards in design	High	Potential environmental non-compliance	High	Low

Table 0-2: Screening of Possible Impacts during Construction Phase

S/No.	Potential Issue	Likelihood	Consequence	Risk Level	Residual Impact (After Mitigation)
1	Dust emissions from excavation, filling, and transport	High	Short-term air quality deterioration	High	Low
2	Noise from machinery and vehicle movement	High	Disturbance to nearby communities	High	Low
3	Solid waste generation (construction debris, packaging)	Medium	Land and aesthetic pollution	Medium	Minor
4	Soil erosion and contamination from fuel/oil spills	Medium	Soil and groundwater degradation	Medium	Low
5	Increased water demand for construction activities	Medium	Pressure on local water resources	Medium	Negligible
6	Occupational health and safety risks to workers	High	Accidents or injuries	High	Low
7	Traffic congestion due to material transport	Medium	Temporary obstruction and safety risks	Medium	Negligible
8	Community disturbance from dust, noise, and movement	Medium	Temporary inconvenience to residents	Medium	Negligible
9	Loss of vegetation and habitat	Medium	Minor ecological disturbance	Medium	Negligible
10	Improper disposal of hazardous or non-recyclable waste	Medium	Environmental contamination	Medium	Low
11	Groundwater	Medium	Pollution from	Medium	Negligible

S/No.	Potential Issue	Likelihood	Consequence	Risk Level	Residual Impact (After Mitigation)
	contamination from improper sanitation		worker camps		
12	Site aesthetics and landscape degradation	Medium	Poor visual appearance post-construction	Medium	Negligible

Table 0-3: Screening of Possible Impacts during Operational Phase

S/No.	Potential Issue	Likelihood	Consequence	Risk Level	Residual Impact (After Mitigation)
1	Solid waste generation from residential and commercial areas	High	Land pollution, health risks if unmanaged	High	Low
2	Wastewater generation from households	High	Groundwater contamination risk	High	Low
3	Air and noise emissions from vehicular traffic	Medium–High	Localized air and noise pollution	High	Low
4	Energy consumption (electricity, generators)	High	Increased GHG emissions	High	Low
5	Stormwater runoff from paved surfaces	Medium	Local flooding or drainage issues	Medium	Negligible
6	Maintenance activities (oil leaks, material handling)	Medium	Soil and water contamination	Medium	Negligible
7	Waste mismanagement in parks and public spaces	Medium	Aesthetic degradation and littering	Medium	Negligible
8	Water supply demand for residents and landscaping	High	Pressure on local groundwater sources	High	Low
9	Traffic congestion from increased vehicle movement	Medium	Safety and access issues	Medium	Negligible
10	Community health and safety	Medium	Public exposure to pollution and waste	High	Low
11	Positive socio-economic development	High (positive)	Job creation and improved living standards	Positive	Long-term benefit
12	Green space and tree plantation maintenance	High (positive)	Enhanced air quality and aesthetics	Positive	Long-term benefit

X. Proposed Monitoring

The monitoring program for the Royal Palm City Housing Scheme (Phase-II), Gujranwala is designed to ensure full compliance with the environmental approval conditions to be granted by the Punjab Environmental Protection Agency (EPA). This program will serve as a vital tool for effective environmental management by providing continuous feedback on the performance of mitigation measures throughout the project cycle. Regular monitoring of key environmental and social parameters during the pre-construction, construction, and operational phases will help evaluate the project's impacts on the surrounding environment and community.

Table 0-4: Environmental Monitoring Plan

Environmental segment/element	Monitoring parameters	Reference location/monitoring point	Monitoring frequency
CONSTRUCTION PHASE			
Water Quality	As prescribed by the Punjab environmental Drinking Water Quality Standards	Main Drinking Water Source	Quarterly
Ambient emissions air	Dust, smoke, PM, VOCs, SOx, NOx, CO, O3	Use of generators, movement of materials, digging or excavation.	Quarterly
Waste water including Sewage	Ensure that all wastewater is treated to the level set by the PEQS-Pakistan.	The sewage or sanitary wastewater by the campsite and use for other construction activities.	Quarterly
Noise	The Levels prescribed as in Punjab environmental quality standards	The noise produced by the machinery during construction work.	Quarterly
Solid Waste Disposal	Ensure that all wastes are disposed of according to legal requirements of the country.	The waste material, rubble and solid waste produced by the camp site	Quarterly
OPERATIONAL PHASE			
Water Quality	As prescribed by the Punjab environmental Drinking Water	Main Drinking Water Source	Monthly

Environmental segment/element	Monitoring parameters	Reference location/monitoring point	Monitoring frequency
	Quality Standards		
Ambient emissions air	Methane and carbon dioxide, PM, VOCs, CO, O ₃	Generator Area	Quarterly
Waste water including Sewage	Ensure that all wastewater is treated to the level set by the PEQS-Pakistan.	Main Disposal Site	Monthly
Noise	Noise levels	Generators use in parking and in commercial area	Once monthly at all involved places
Solid Waste Disposal	Ensure that all wastes are disposed of according to legal requirements of the country.	Residential and commercial areas.	Regularly in connection with environmental and safety rounds.

Table 0-5: Environmental Management Cost

Environmental Component	Amount PKR	Details	Remarks
A. Environmental Management Cost			
Health and Safety Measures and Provision of PPEs	300,000	The workers are required to provide the PPEs for work site safety precaution and to avoid any safety hazard.	Amount to be included in the Project Budget.
Environmental Trainings	350,000	Trainings will be provided to workers.	Amount to be included in the Project Budget.
B. Environmental Monitoring Cost			
Air, Water and Noise Monitoring	400,000	Monitoring will be performed as per PEQs Standards	Amount to be Included in Project

Environmental Component	Amount PKR	Details	Remarks
			Budget
Tree Plantation Tree Plantations of Endemic / Local Species	2,500,000	Landscaping around the project site.	Required for implementati onof true spirit of EMP
Total Environmental Management and Monitoring Cost in PKR (A+B)	15,550,000	Summing up A,B,	Amount to be included in the Project Budget.

XI. Stakeholder Consultations

Public discussions were held with the inhabitant of the surrounding area. They are quite positive about the project and see the project as growing the business and accomplishing towards the positive development in the area at local and in the country as a whole. The people observe strong positive impacts regarding employment, business and structural development due to this project. EIA findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility.

XII. Conclusion and Recommendation

The report provides a conclusion based on the impacts assessed and mitigation measures suggested. The report recommends that EMP will be made a part of all contract documents. The design of the scheme should meet the PEQS parameters in all aspects. The contractor will be bound to completely implement relevant mitigation measures set out in the EMP during construction phase while during regular operation of the project. The proponent will be responsible to ensure all the compliance of PEQS. If there are any changes in the design/ layout, or any other changes in project description then changes should be carried out through amendments in environmental assessment report and EMP of the EIA.

1 INTRODUCTION

In Pakistan, rapid urbanization and population growth have placed significant pressure on cities to expand their residential infrastructure and improve living standards. Gujranwala, one of the major industrial and commercial hubs of Punjab, has experienced a steady increase in population and housing demand over the past decade. To cater to this growing need and to promote sustainable urban development, the **Royal Palm City Housing Scheme (Phase-II), Gujranwala** has been proposed as a continuation of the successful Royal Palm City (Phase-I). The project aims to establish a modern, well-planned, and environmentally sustainable residential community that ensures a balanced integration of housing, commerce, recreation, and green spaces.

The Royal Palm City Housing Scheme (Phase-II) is designed to meet the aspirations of middle- and upper-income groups by providing state-of-the-art facilities within a secure and aesthetically appealing environment. The proposed development will consist of residential plots, commercial areas, parks, schools, mosques, healthcare facilities, and community centers, ensuring that residents have access to all essential amenities within the vicinity. The design concept emphasizes sustainable land use, modern architecture, and efficient infrastructure systems, including water supply, sewerage and drainage networks, solid waste management, and internal road connectivity.

Located strategically within Gujranwala's urban expansion zone, the project offers convenient access to the city's main transportation routes and commercial centers, making it an attractive investment and residential destination. The inclusion of green belts, landscaped parks, and recreational areas reflects the proponent's commitment to promoting environmental sustainability and enhancing urban livability. The development also aims to align with Pakistan's broader vision for sustainable housing and urban development, as outlined in national and provincial planning frameworks. It adheres to the environmental safeguards and regulatory requirements prescribed by the Punjab Environmental Protection Agency (EPA) to minimize adverse environmental impacts during both construction and operational phases. Measures for pollution control, soil and water conservation, and energy efficiency have been incorporated into the project planning to ensure environmental compliance and long-term ecological balance.

Moreover, the project is expected to generate numerous socio-economic benefits for the region, including the creation of direct and indirect employment opportunities, stimulation of local business activities, and improvement of civic infrastructure. It will also help decongest existing urban centers by offering a well-planned alternative for residential settlement, thus contributing to the overall development of Gujranwala. In essence, the Royal Palm City Housing Scheme (Phase-II), Gujranwala represents a forward-looking initiative that combines modern urban planning with environmental stewardship. It embodies the vision of sustainable community development by ensuring that economic growth, environmental protection, and social welfare progress hand in hand — making it a model for future housing schemes across Pakistan. The proposed project for the commissioning of its objective and construction requires fulfilling the legal requirements of the Punjab Environmental Protection Act (amended act 2012), Section 12, for which Environmental Impact Assessment (EIA) report should be submitted.

1.1 Purpose of the report

The proposed project involves the establishment of the Royal Palm City Housing Scheme (Phase-II), Gujranwala, as an extension of the existing Royal Palm City development. Based on the Punjab Environmental Protection Act 2012 and the Review of IEE & EIA Regulations, 2022 for filing, reviewing, and approving environmental assessments, this housing scheme falls under **Schedule-II, Category H**, for which an **Environmental Impact Assessment (EIA) report** is required to obtain Environmental Approval. As per the **Punjab Environmental Protection Act (PEPA), Section 12 – Initial Environmental Examination and Environmental Impact Assessment**, “No proponent of a project shall commence construction or operation unless an environmental impact assessment has been filed with the designated Government Agency and approval has been obtained.” In compliance with this legal requirement, this report has been prepared to seek **Environmental Approval (EA)** from the **Environmental Protection Agency, Government of Punjab, Lahore**.

This report provides comprehensive information about the project, covering environmental, social, economic, and technical aspects, to demonstrate that the development will adhere to environmentally sustainable practices during both the construction and operational phases. The assessment aligns with the Punjab Environmental Protection Act, 1997 (amended 2012), the Punjab Environmental Quality Standards (PEQS), and all relevant rules and regulations.

Additionally, the preparation of this EIA report has considered:

- Policy and procedures for filing, reviewing, and approving environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectoral guidelines.

The report highlights various environmental aspects, including social, physical, and biological components, during both the construction and operational phases of the project. It also outlines mitigation measures to minimize any adverse impacts on the surrounding environment. The information provided follows the prescribed format to assist decision-makers at the Environmental Protection Department (EPD), Punjab, in evaluating and granting the required Environmental Approval (EA) for the project.

1.2 Project Need

The Royal Palm City Housing Scheme (Phase-II), Gujranwala, is conceived to meet the increasing demand for organized, secure, and environmentally sustainable residential developments in the city. Gujranwala, being one of the major industrial and commercial hubs of Punjab, has witnessed rapid urbanization and population growth in recent years. This urban expansion has led to significant pressure on existing housing facilities and infrastructure, resulting in overcrowded and unplanned settlements. The proposed project aims to provide a well-planned, modern housing community equipped with essential civic amenities such as water supply, sewerage,

drainage, solid waste management, electricity, healthcare, education, and recreational facilities. By offering a planned urban layout and quality infrastructure, the project will help improve living standards and reduce the burden on the city's existing utilities. Moreover, the project supports the Government of Punjab's vision of promoting sustainable urban development through environmentally responsible planning and efficient land utilization. It will also create direct and indirect employment opportunities during the construction and operational phases, contributing positively to the local economy. The Royal Palm City Housing Scheme will thus serve as a model of sustainable residential development, combining modern infrastructure, environmental conservation, and community well-being to foster balanced socio-economic growth in Gujranwala.

1.3 Objectives of the project

The main objective of the Royal Palm City Housing Scheme (Phase-II), Gujranwala is to establish a modern, efficient, and environmentally sustainable residential community that addresses the growing housing demand in Gujranwala while ensuring socio-economic development and quality urban living. The project is designed to integrate residential, commercial, recreational, and community facilities with sustainable infrastructure and environmental safeguards.

The proposed housing scheme will achieve the following key objectives:

- **Provision of modern residential and commercial facilities:** Develop a variety of residential plots, commercial areas, parks, schools, mosques, and community centers that meet contemporary urban living standards.
- **Environmentally responsible operations:** Adopt proper solid waste management, stormwater drainage, water supply, and energy-efficient systems to minimize environmental impacts.
- **Sustainable infrastructure development:** Establish a reliable electricity supply, water distribution network, and internal road system to ensure long-term operational efficiency.
- **Socio-economic benefits:** Create direct and indirect employment opportunities during both construction and operational phases, stimulate local businesses, and contribute to the overall urban development of Gujranwala.
- **Integration of green and recreational spaces:** Provide landscaped parks, open areas, and recreational facilities to enhance environmental quality, community well-being, and aesthetic appeal.
- **Regulatory compliance:** Ensure adherence to the **Punjab Environmental Protection Act (2012)**, **Punjab Environmental Quality Standards (PEQS)**, and other relevant national and provincial environmental guidelines.

1.4 Scope of Work

The Royal Palm City Housing Scheme (Phase-II), Gujranwala has been planned to develop a modern, well-organized, and sustainable residential community. The scope of work for the project includes the following key components:

- **Land Development and Plot Layout:** Preparation of the land, leveling, and demarcation of residential and commercial plots, parks, roads, and community facilities in accordance with approved layout plans.
- **Construction of Residential and Commercial Infrastructure:** Development of housing units, commercial areas, community centers, educational and healthcare facilities, mosques, and recreational spaces.
- **Roads and Internal Transportation Network:** Construction of internal roads, footpaths, and access routes to ensure smooth vehicular and pedestrian movement within the housing scheme.
- **Utility Services and Infrastructure:** Provision of electricity, water supply, sewerage, drainage, and solid waste management systems to meet the operational requirements of the residential community.
- **Environmental Management and Sustainability Measures:** Implementation of green belts, landscaped parks, stormwater management, energy- and water-efficient systems, and measures to minimize environmental impacts.
- **Boundary Security and Safety Arrangements:** Construction of perimeter walls, gated entries, and security measures to ensure safety and controlled access throughout the project area.
- **Community Amenities and Recreational Facilities:** Development of parks, playgrounds, open spaces, and other recreational facilities to enhance the quality of life for residents.
- **Monitoring and Maintenance Systems:** Establishment of systems for monitoring utilities, waste management, and environmental compliance to ensure sustainable and efficient operations.

The project layout has been designed based on land suitability, operational efficiency, and environmental safety considerations. The integration of residential, commercial, and community facilities with sustainable infrastructure ensures a well-planned, safe, and environmentally responsible urban living environment in Gujranwala.

1.5 Objectives of the EIA Report

The Environmental Impact Assessment (EIA) Report for the Royal Palm City Housing Scheme (Phase-II), Gujranwala has been prepared to systematically assess potential environmental and social impacts of the project and provide a framework for environmentally sustainable development. The key objectives of this EIA report include:

- **Assessment of Environmental Impacts:** Identify and evaluate potential impacts of the project on physical, biological, and socio-economic components of the environment during both construction and operational phases.
- **Compliance with Legal and Regulatory Requirements:** Ensure adherence to the Punjab Environmental Protection Act (2012) and Punjab Environmental Quality Standards (PEQS), along with other relevant provincial and national environmental regulations.

- **Mitigation Measures:** Recommend measures to minimize, control, or eliminate adverse environmental effects, including proper solid waste management, wastewater treatment, pollution control, and energy and water efficiency in line with PEQS.
- **Sustainable Development Planning:** Integrate environmental, social, and economic considerations into project planning and design to promote long-term sustainability.
- **Decision-Making Support:** Provide comprehensive information to the Environmental Protection Agency (EPA), Punjab, and other relevant authorities to facilitate informed decision-making regarding the project approval.
- **Public and Stakeholder Awareness:** Highlight potential impacts and mitigation measures to ensure transparency, encourage public participation, and address community concerns.
- **Monitoring and Management Framework:** Establish protocols for monitoring environmental performance, ensuring compliance with PEQS and recommended mitigation measures, and maintaining environmental quality throughout the project lifecycle.

By achieving these objectives, the EIA report ensures that the Royal Palm City Housing Scheme (Phase-II) is developed in an environmentally responsible manner, balancing urban growth with ecological protection, community well-being, and compliance with Punjab Environmental Quality Standards (PEQS).

1.6 Project Proponent Details

Name of Proponents: Ahmad Waqas

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Phone: 055-4245000

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1.7 Name of Organization Preparing Report

Organization: Integrated Environment Consultants Lahore.

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Tell Office: +92 42 37897273

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Peshawar Office: Street # 9, Main Canal Road, Abshar Colony Warsak Road Peshawar.

Tell Office: +92 91 5202323: **Web:** www.iec-consultants.com

1.8 Approach and Methodology

The Environmental Impact Assessment (EIA) study for the Royal Palm City Housing Scheme (Phase-II), Gujranwala has been conducted following a systematic, structured, and internationally recognized methodology to assess potential environmental and social impacts and to ensure compliance with relevant regulatory requirements, including the Punjab Environmental Protection Act (2012) and Punjab

Environmental Quality Standards (PEQS). The approach combined desk-based research, field investigations, and stakeholder consultations to comprehensively evaluate the project’s environmental footprint.

The methodology adopted for the EIA included the following key steps:

1. **Review of Legislation and Standards:** A detailed review of applicable environmental laws, regulations, and guidelines at the national and provincial level, including **PEQS**, to identify legal and environmental compliance requirements for the housing scheme.
2. **Data Collection and Analysis:** Collection and analysis of baseline data for the project area through:
 - **Satellite imagery and GIS analysis** to assess land use, site conditions, and surrounding environment.
 - **Official records**, such as District Census Reports (DCR) and government publications, for demographic, socio-economic, and infrastructural data.
 - **Review of relevant literature and comparable EIA reports** from similar housing projects to inform assessment methodologies and mitigation measures.
3. **Field Surveys and Observations:** On-site visits were conducted to identify environmental features, sensitive areas, and potential impacts related to air quality, water resources, soil, biodiversity, and socio-economic aspects.
4. **Stakeholder Consultations:** Engagement with local stakeholders, including community representatives and women, to identify concerns, gather inputs, and incorporate feedback into project planning and environmental management measures.
5. **Impact Identification and Evaluation:** Potential environmental and social impacts were identified, assessed, and categorized based on their significance, duration, and reversibility, to inform mitigation planning.
6. **Preparation of Environmental Management Plan (EMP):** Mitigation measures, monitoring protocols, and institutional responsibilities were integrated into the EMP to ensure compliance with environmental standards and sustainable operation of the housing scheme.

The EIA study was carried out in structured phases as summarized below:

Phase	Activities	Status	Responsibility
Screening and Scoping	Reconnaissance site visits, identification of environmental and social issues, review of safeguard policies, project categorization, and preparation of action plan	Completed	Project Management (PM)
Impact Assessment	Identification and analysis of potential environmental and social impacts through field surveys, stakeholder consultations, and review of project design and alternatives	Completed	Project Management (PM)
Impact	Classification of significant impacts and	Completed	Project

Phase	Activities	Status	Responsibility
Categorization	prescription of mitigation/preventive measures		Management (PM)
EMP Preparation	Development of Environmental Management Plan including stakeholder consultations and integration of mitigation measures	Completed	Project Management (PM)
Final EMP	Compilation of the final version of EMP with monitoring and reporting protocols	Included in EIA report	Project Management (PM)

This methodology ensures a comprehensive, transparent, and participatory assessment, enabling the identification of all potential environmental and social risks and the formulation of appropriate mitigation measures to support the sustainable development of the Royal Palm City Housing Scheme (Phase-II), Gujranwala.

1.9 Impact Assessment and Mitigation Measures

A logical and systematic approach was adopted for impact identification and assessment. The process began during the screening and continued through scoping which identified the key issues and classified them into different categories. Identification of potential environmental and social impacts in terms of their nature, magnitude, extent, location, timing and duration were carried out. The impacts were correlated to the project location, design, construction and operation stages. Based on the impact's prediction methods and because of public/stakeholder consultations, the study team screened out the adverse environmental and social impacts for inclusion in the mitigation measures and EMP. Matrices and overlays were also used for the evaluation of temporal and spatial impacts respectively.

Mitigation measures to minimize, eliminate or compensate the potential environmental impacts have been recommended. The mitigation measures have been recommended on the basis of past experiences, best industry practices, legislative requirements and professional judgement.

1.10 Environmental Management Plan (EMP)

An EMP has been developed for effective implementation of the recommended mitigation measures, and it has included controls to minimize any identified impacts and a program to monitor the effects of mitigation measures and any residual impacts during implementation along with assigning roles and responsibilities of all parties concerned during the project implementation.

1.11 Environmental Monitoring Plan

An Environmental monitoring plan has been developed for assessment of the effective implementation of the recommended Environmental monitoring plan and to assess the efficiency of the Environmental monitoring plan during the project implementation. The purpose of Environmental monitoring plan is to ensure that the project follows environmental regulations and that any adverse effects on the environment are mitigated and monitored throughout the project's lifecycle.

1.12 Team Prepared and Reviewed the EIA

The EIA team comprised of the members as provided in Table 1-1 below.

Table 1-1: List of EIA Team Members

Name	Qualification	Status in Project
Mr. Ahtasham Raza	M.Phil. (Env. Sciences) GC University, Lahore	Project In-charge
Mr. Adnan Sharif	M.Phil. (Env. Sciences) University of Lahore.	Team Leader
Mr. Mehmood Amjad	BS (Hons) Environmental Sciences NFC.IET. Multan	Monitoring In-charge
Maham Sarfraz	PhD (Env. Sciences) GC University, Lahore	Environmentalist
Nimra Shehzadi	M.Phil. (Env. Sciences) GC University, Lahore	Environmentalist

Royal Palm City Housing Scheme (Phase-II)
Environmental Impact Assessment (EIA)

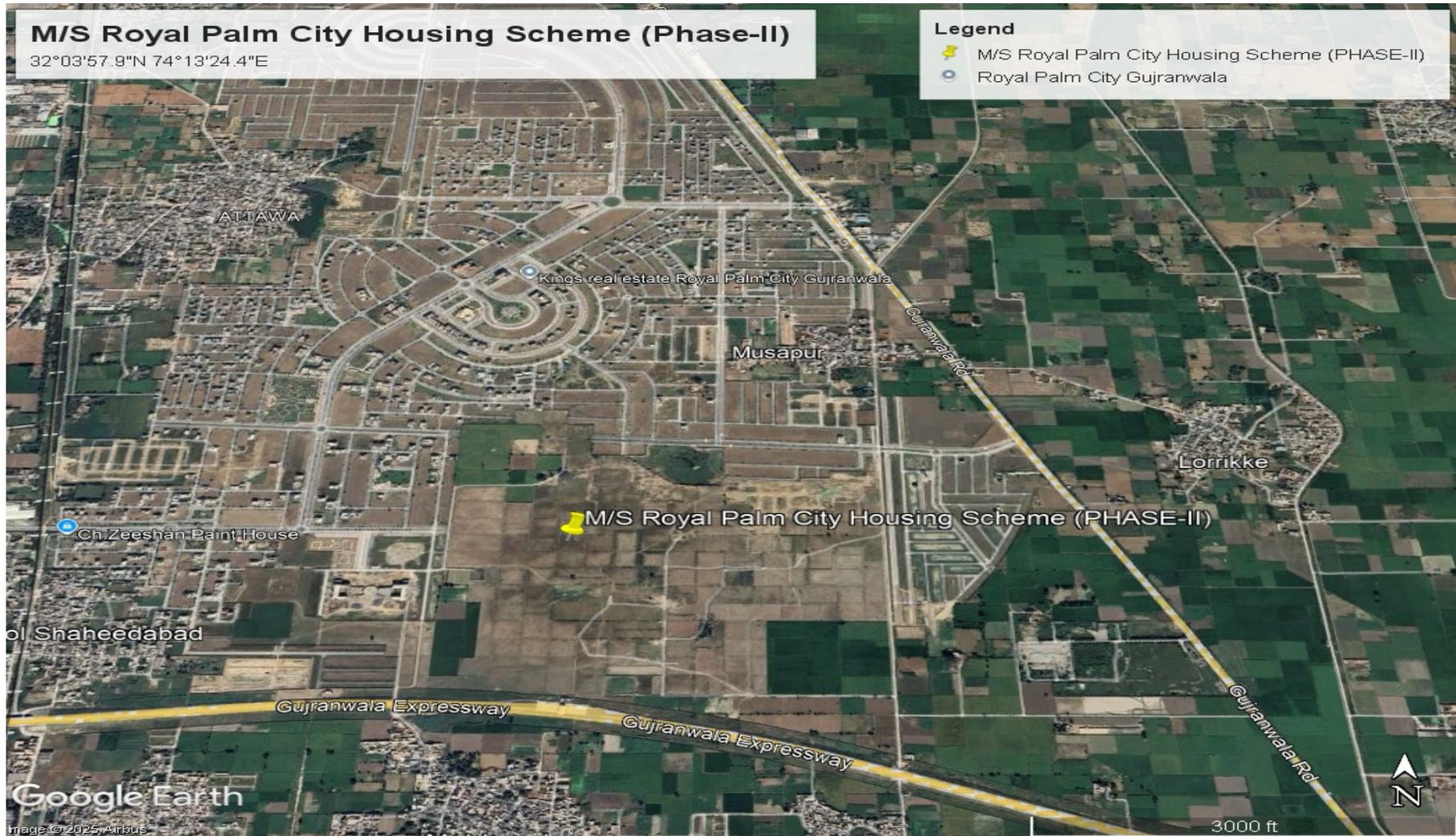


Figure 1-1: Figure: Location of the Proposed Project

2 SCREENING OF THE PROJECT

In accordance with the Pakistan Environmental Protection Agency Review of Environmental Impact Assessment (EIA) Regulations, 2022, the project for construction of M/S Royal Palm City Housing Scheme (Phase-II) falls in Schedule-II, Category H. for which Environmental Impact Assessment (EIA) report is required for Environmental Approval.

The relevant clause under **Category H: Urban Development and Tourism** is as follows:

Category H – Urban Development and Tourism Projects	
1.	Housing Schemes more than 300 Kanals
2.	Large-scale tourism development projects
3.	Hospitals having more than 50 beds
4.	Hotels with more than 100 rooms
5.	Industrial estates (including export processing zones)

Given the scale and nature of the Royal Palm City Housing Scheme (Phase-II), the project has the potential to cause significant environmental impacts during both the construction and operational phases, including land use changes, soil erosion, solid waste generation, air and noise pollution, and increased pressure on local infrastructure and resources. Therefore, preparation of a comprehensive Environmental Impact Assessment (EIA) report is mandatory. The EIA study ensures that environmental considerations are fully integrated into project planning and decision-making. It also facilitates public participation, allowing the concerns and views of affected communities and stakeholders to be considered. The EIA process further aids in identifying potential risks, developing mitigation measures, and formulating an Environmental Management Plan (EMP) to minimize adverse impacts and enhance environmental sustainability.

3 SCOPING OF THE PROJECT

The scoping process identifies the key environmental and social issues that require detailed assessment for the proposed project. It establishes the spatial and temporal boundaries, highlights significant environmental aspects, and defines the scope of investigations necessary to evaluate potential impacts associated with the development of the housing scheme.

3.1 Spatial and Temporal Boundaries of Environmental Assessment

Considering spatial and temporal boundaries is essential to ensure a comprehensive environmental assessment of the project. Spatial boundaries define the geographic extent of potential impacts, including the project area and its surrounding environment, while temporal boundaries encompass both the short-term (construction phase) and long-term (operational phase) impacts. The proposed project, Royal Palm City Housing Scheme (Phase-II), is located adjacent to Phase-I at Mouza Musa Pur, Thatha Panjhata, Mehlowala, Main GT Road, Tehsil Saddar, District Gujranwala. The assessment considers the project's influence on local ecosystems, nearby communities, infrastructure, and natural resources over its entire life cycle, ensuring that all potential environmental and social impacts are thoroughly evaluated and appropriately mitigated.

3.2 Important Issues and Concerns Raised During Consultation

The EIA for the proposed project incorporated a two-stage consultation process, primarily focused on one-on-one meetings. In the initial stage, the consultation was specifically directed towards engaging local government authorities, affected individuals, nearby residents, and local communities surrounding the Royal Palm Housing Scheme Project. The primary goal of this stage was the evaluation of both the short-term and long-term impacts that might result from the new housing development proposed for the project. The intent was to gather insights and perspectives from key stakeholders in the immediate vicinity to better understand potential environmental, social, and economic implications of the project. During these consultations, key concerns raised by stakeholders included issues related to land use change, increased traffic flow, drainage and wastewater management, loss of vegetation, and dust emissions during construction. Social concerns included population influx, pressure on local infrastructure and utilities, and the need for proper waste management systems and community facilities.

The second stage of consultations, as indicated, will be conducted through a more extensive process of public participation if deemed necessary. This broader involvement will allow for a wider outreach to the public, enabling a more comprehensive engagement to gather additional feedback, concerns, and insights from a larger cross-section of the community. This will ensure a more inclusive approach, providing an opportunity for a wider range of stakeholders to contribute their perspectives, concerns, and suggestions, which can be valuable in shaping and refining the EIA for the proposed project.

3.3 Significant Impacts and Factors to be Determined

The determination of significant impacts for the Royal Palm Housing Scheme requires careful consideration of environmental, social, and economic factors to

ensure sustainable development and regulatory compliance. Environmental concerns include the conversion of land, which can lead to vegetation loss, habitat disturbance, and reduced biodiversity. Water resource management is critical, as increased demand and improper drainage systems could strain supplies and contaminate nearby water bodies. Construction activities may generate dust and vehicular emissions, impacting air quality, while soil erosion and degradation can result from excavation and land leveling. Solid and liquid waste generated during construction and later occupancy must be managed effectively to prevent environmental contamination.

Social impacts involve potential disturbance to existing nearby communities or disruption to local livelihoods. Increased population density can place pressure on infrastructure and public services, including roads, electricity, schools, and healthcare facilities. Development near cultural or historical areas may require preservation measures. Health and safety risks include noise, dust, and vibrations during construction, along with occupational hazards for workers. Poor sanitation or stagnant water can lead to health issues for residents.

3.4 Development of an Environmental Management Plan

The EMP in an EIA is crucial as it outlines strategies to mitigate environmental impacts, ensures regulatory compliance, guides project operations, promotes sustainability, reduces risks, assures stakeholders, and allows for ongoing improvement and adaptation to address environmental concerns throughout the project's life cycle.

These key parts of EMP include a clear description of the project, an outline of potential environmental impacts and risks, specific mitigation measures tailored to address these impacts, a comprehensive monitoring and reporting system to track environmental indicators, protocols for emergency response and contingency planning, details on stakeholder engagement and communication strategies, and a framework for ongoing review and updates to ensure the plan's adaptability and effectiveness over the course of the project. Together, these components form a comprehensive EMP designed to guide environmental practices, minimize adverse impacts, and maintain compliance with regulations and best practices in environmental management.

4 ALTERNATIVES CONSIDERED, AND REASONS FOR THEIR REJECTION

The alternatives for the proposed project and their relative potential impacts on the environment were considered to evaluate the best project option. The following alternatives were considered for the project.

4.1 Project Alternatives

- No project option
- Site Alternative
- Design Alternative

4.2 No Project Option

4.2.1 Strengths and Opportunities

If the extension of the housing scheme is not undertaken, significant strengths and opportunities can be identified. The funds, efforts, and resources allocated for the project can be redirected to other priority initiatives of the proponent. The existing land will remain untouched, preventing any displacement of local communities or disruption to their livelihoods. Additionally, the inconvenience caused by construction activities, such as noise, dust, and traffic, will be avoided. Recurring maintenance and operational costs associated with the extended housing scheme will be saved. The current environmental conditions, including physical, biological, and social aspects, will remain unaffected, preserving local ecosystems and community dynamics. Moreover, those currently benefiting from the surroundings such as nearby residents or businesses, will continue to enjoy their existing environment without any changes or disturbances.

Conclusion

The “No project option” reveals that the absence of project impacts economic development in the area. Therefore, this option is not recommended.

4.3 Location Alternatives

4.3.1 Construction on Proponent’s Land

The proponent’s land has been carefully chosen due to its proximity to existing infrastructure and logistical convenience. The site has already undergone through assessments, and it is deemed suitable in terms of safety, environmental impact, and compliance with regulations. The proponent’s land is already owned, eliminating the need for additional land acquisition and streamlining the construction process. This option provides more control and flexibility to the proponent over the project’s development and operation. Additionally, it aligns with the proponent’s strategic goals and minimizes potential delays associated with the utilizing government land, making it the preferred choice for the project.

Conclusion

The construction on proponent’s land was preferred because it provides more control and flexibility to the proponent over the project’s development and operation.

4.4 Design Alternatives

Design alternatives for the proposed housing scheme extension focus on evaluating various layout and infrastructure options to achieve sustainable and efficient development. These include adopting eco-friendly designs with adequate green spaces, optimizing land use through the selection of low-density or high-density housing models, and integrating smart infrastructure systems that promote energy efficiency, water conservation, and effective waste management. In terms of wastewater management, the establishment of a Wastewater Treatment Plant (WWTP) presents significant advantages over traditional septic tank systems. A WWTP ensures higher treatment efficiency and enables the reuse of treated water for landscaping and other non-potable purposes, making it particularly suitable for large-scale, high-density housing projects. In contrast, septic tanks are based on passive treatment methods, have limited capacity, require frequent maintenance, and are generally inadequate for managing substantial wastewater volumes or meeting the Punjab Environmental Quality Standards (PEQS).

Although Packaged type effluent treatment plant are less costly to install, their long-term sustainability and environmental performance are limited. Conversely, WWTPs offer scalability, automation, and advanced treatment technologies that ensure regulatory compliance, operational reliability, and reduced environmental impact. Therefore, the adoption of a WWTP is recommended as a more sustainable and environmentally responsible solution for the proposed housing scheme.

5 DESCRIPTION OF THE PROJECT

5.1 General

This section deals with project components, which are the part of the utility and its related activities. It also describes the category of the project, availability of construction materials, construction time and cost of the project, construction and operational equipment etc. The information presented in this section is based on project site survey, preliminary design report, and other related details provided by the provided by the client.

5.2 Type and Category of the Project

The project is commercial in nature. In accordance with the Environmental Protection Agency, Government of the Punjab, Lahore, "List of Projects Requiring an EIA", the project under consideration falls into the Schedule II Category H, that is the category of the projects requiring Environmental Impact Assessment (EIA). Therefore, to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act (amended 2012), the client is required to submit the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore to obtain the required Environmental Approval (EA).

5.3 Objectives of Project

The main objective of the *Royal Palm City Housing Scheme (Phase-II), Gujranwala* is to establish a **modern, efficient, and environmentally sustainable residential community** that addresses the growing housing demand in Gujranwala while ensuring socio-economic development and quality urban living. The project is designed to integrate residential, commercial, recreational, and community facilities with sustainable infrastructure and environmental safeguards.

The proposed housing scheme will achieve the following key objectives:

- **Provision of modern residential and commercial facilities:** Develop a variety of residential plots, commercial areas, parks, schools, mosques, and community centers that meet contemporary urban living standards.
- **Environmentally responsible operations:** Adopt proper solid waste management, stormwater drainage, water supply, and energy-efficient systems to minimize environmental impacts.
- **Sustainable infrastructure development:** Establish a reliable electricity supply, water distribution network, and internal road system to ensure long-term operational efficiency.
- **Socio-economic benefits:** Create direct and indirect employment opportunities during both construction and operational phases, stimulate local businesses, and contribute to the overall urban development of Gujranwala.
- **Integration of green and recreational spaces:** Provide landscaped parks, open areas, and recreational facilities to enhance environmental quality, community well-being, and aesthetic appeal.

- **Regulatory compliance:** Ensure adherence to the **Punjab Environmental Protection Act (2012)**, **Punjab Environmental Quality Standards (PEQS)**, and other relevant national and provincial environmental guidelines.

5.4 Cost and Magnitude of Operation

The total estimated cost of the Royal Palm City Housing Scheme (Phase-II) project is PKR 4,767,000,000. The proposed development covers a total area of 1,588 Kanals and 11 Marlas. All project quantities and cost estimates have been derived from the approved design drawings and project feasibility study.

5.5 Location of the Project

The Royal Palm City Housing Scheme (Phase-II) is located at Mouza Musa Pur, Thatha Panjhata, Mehlowala, Main G.T. Road, Tehsil Saddar, District Gujranwala. The site is well-connected through an established network of roads, transport, electricity, and communication facilities, making it an ideal location for the development of a modern housing scheme. The total area of the project is 1,588 Kanals and 11 Marlas, offering suitable land and environmental conditions for sustainable urban development.

Royal Palm City Housing Scheme (Phase-II)
Environmental Impact Assessment (EIA)



Figure 5-1: Location of Proposed Project

5.6 Land Use

The proposed Royal Palm City Housing Scheme (Phase-II) will be developed on land designated primarily for residential and commercial purposes. The layout plan includes a balanced mix of residential plots, commercial areas, public buildings, parks, green belts, educational and healthcare facilities, roads, and utility infrastructure. The land is currently a mix of agricultural and open area, which will be transformed into a planned urban settlement to accommodate the growing housing demand in Gujranwala. The project aims to promote sustainable land use practices by integrating green spaces and environmentally friendly infrastructure.

Table 5-1: Land Use Distribution

SR.NO	LAND USE	% AGE	AREA IN KANALS
1.	Residential	49.92	792.97
2.	Roads/Parking	35.57	565.01
3.	Commercial	2.03	32.30
4.	Public Buildings for Sponsor	1.50	23.85
5.	Public Buildings for GDA	1.50	23.85
6.	Parks/ Open Spaces	7.02	111.56
7.	Graveyard	2.00	31.84
8.	Others Masajid/ Prayer Area (Plot # P-04) Solid Waste Management Area OHR & Filtration Society Office	0.46	7.36
Total		100.00	1588.74

5.7 Vegetation Features of Project

The proposed Royal Palm City Housing Scheme (Phase-II) site currently does not support any specific vegetation or notable plant species and consists mainly of barren land with scattered soil patches. No natural trees, shrubs, or herbaceous vegetation are present, and the site provides minimal habitat for wildlife. The project includes a landscaping and greening plan to introduce vegetation, improve aesthetics, and enhance environmental quality. About 7.02 percent of the total area (111.56 kanals) is reserved for parks, open spaces, and community green areas, while roads, public buildings, and utility facilities will feature tree lines, hedges, and ornamental plants. The planned vegetation will provide environmental benefits such

as air quality improvement, microclimate regulation, biodiversity support, and soil stabilization, transforming the barren site into a sustainable and green urban environment.

5.8 Road Access

The proposed **Royal Palm City Housing Scheme (Phase-II)** is strategically located with excellent connectivity to the major road network of Gujranwala, providing convenient access for residents, visitors, and service providers. The project site lies adjacent to the **Gujranwala Expressway**, approximately **1–2 km** from the **Gujranwala Road and Eminabad Road**, ensuring smooth linkage to the city center, nearby commercial zones, and surrounding neighbourhoods. This connectivity enhances mobility and promotes integration with existing and planned urban infrastructure. Within the housing scheme, internal circulation will be supported by a well-planned network of main avenues, secondary roads, and internal streets, ensuring smooth traffic flow and safe pedestrian movement. Roads are designed with appropriate width, turning radii, and intersections to handle projected traffic volumes efficiently. Adequate parking spaces are incorporated to minimize congestion in residential and commercial areas. The overall road layout has been integrated with the master land use plan, ensuring easy accessibility to residential plots, commercial areas, parks, public facilities, and utility services. The well-connected design not only facilitates efficient transportation and emergency access but also enhances urban aesthetics, safety, and long-term sustainability of the housing development.

Royal Palm City Housing Scheme (Phase-II)
Environmental Impact Assessment (EIA)

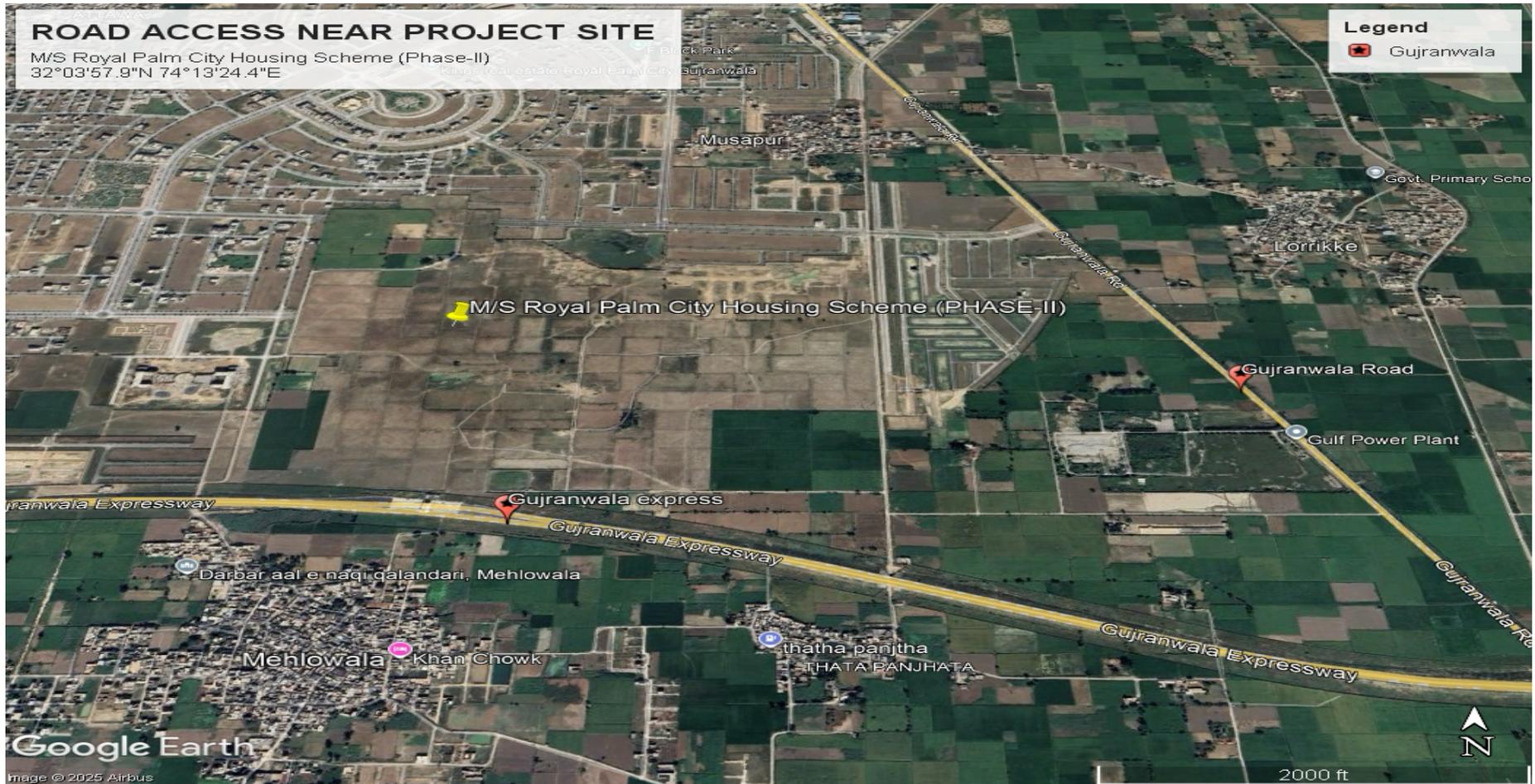


Figure 5-2: Road Access of Proposed Project

5.9 Construction Period and Cost

The project cost estimate has been prepared. The quantities have been worked out from the design drawings. The rates for cost estimates are based on construction work, contractor cost, cost of land, and cost of the raw materials. The Project cost as initially estimated will be Rs. PKR 4,767,000,000.

It is planned that the following schedule of project implementation will be adhered to. This is subject to the conditions that everything goes according to planning and no serious bottlenecks are encountered. The implementation stages of the project activity include:

1st Stage

The stage –1 comprises the onsite contouring studies and soil investigations and the finalization of the project designs.

2nd Stage

The stage –2 comprises the following task:

- 1) Laying of foundations excavation and commencement of erection work.
- 2) Shoring and piling
- 3) Start of civil, electrical and mechanical work.
- 4) Development of basic infrastructure.
- 5) Fitting of instrumentation.

3rd Stage

The stage –3 comprises the following task:

- 1) Commercial building civil structure erection completion.
- 2) Completion of the basic infrastructures water supply system, electricity supply etc.

4th Stage

The last stage will be the commencement of regular use.

5.10 Energy Use

The energy requirements of the Royal Palm City Housing Scheme (Phase-II) will be fulfilled through an electricity supply connection from WAPDA. During the construction phase, a 400 KVA temporary connection will be utilized to meet the energy demand for construction machinery, equipment, site lighting, and related works. For the operational phase, the housing scheme will require a larger and permanent power supply to support residential, commercial, and community facilities, including street lighting, pumping stations, and the wastewater treatment plant (WWTP). The permanent electricity demand will be met through multiple high-capacity transformers and feeders, as per WAPDA's design and approval, ensuring a reliable and uninterrupted power supply. To promote sustainability, the project also aims to integrate energy-efficient technologies such as solar-powered

streetlights, LED lighting, and energy-efficient appliances. The incorporation of renewable energy options will help reduce dependence on conventional sources, minimize greenhouse gas emissions, and ensure long-term energy sustainability for the housing scheme.

5.11 Water Use

The water requirements of the facility will be fulfilled by the underground water source for all the construction and operational activities.

5.12 Operational Arrangements

At operation stage, the project proponent will be involved in operation and maintenance of the proposed facility.

5.13 General Description of Project

The **Royal Palm City Housing Scheme (Phase-II)** is located at Mouza Musa Pur, Thatha Panjhata, and Mehlowala, along the Main GT Road, Tehsil Saddar, District Gujranwala. The project site is ideally located with well-developed infrastructure in its surroundings, including access to major roads, transportation facilities, electricity, telephone, and water supply networks. The area provides favorable environmental and physical conditions for the development of a modern housing scheme. The total land area of the project site is 1588 Kanal and 11 Marla. The housing scheme is designed to include residential plots, commercial areas, parks, educational institutions, healthcare facilities, and other essential community amenities. The layout plan follows modern urban planning standards with a focus on sustainable development, efficient land utilization, and the creation of a comfortable, eco-friendly living environment for future residents.

5.14 Restoration and Rehabilitation Plan

To ensure environmental sustainability and site recovery after project completion, a comprehensive restoration and rehabilitation plan has been proposed for the Royal Palm City Housing Scheme (Phase-II). The primary focus of this plan is on tree plantation and landscaping to restore the natural environment and maintain ecological balance within the project area. The proposed tree plantation program will involve planting native and ornamental tree species along roadsides, parks, and open spaces to enhance greenery and aesthetic appeal. This initiative will help stabilize soil, improve air quality, promote biodiversity, and offset carbon emissions resulting from construction activities. In addition to tree plantation, proper landscaping, green buffer zones, and the restoration of disturbed areas will be carried out to ensure long-term ecological stability. The plan aligns with the project's commitment to environmental stewardship and sustainable development, ensuring that the housing scheme contributes positively to the natural environment and community well-being.

6 DESCRIPTIONS OF ENVIRONMNET

6.1 Introduction

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Study 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 namely Irrigation Department, Meteorological Department, Forest offices and prevailing environmental laws and environmental quality standards etc.

6.2 Desk Studies

Project design data was collected from proponents. This data included the available documents, drawings, reports, etc related to the proposed project. The experts conducted a detailed desk study of the above available data before the field visit. Salient features of the Project were thoroughly reviewed to assess their environmental implications. The documents which were consulted and departments visited are Project Head Office, Project Site, Irrigation Department, Meteorological Department, Forest offices and other related officials.

6.3 Site Visits

A team of experts visited the proposed site to collect baseline environmental data for ambient air, noise levels, drinking water and waste water sampling, public consultation, baseline ecological environment data etc. After the survey of the project area the environmental data regarding physical, ecological and socioeconomic aspects were collected for carrying out environmental assessment. Secondary data were also collected from various sources mainly studies carried out by project proponents and reports of other line Departments. A social survey of the proposed area was carried in which people living around the proposed unit site were interviewed to ascertain their views about the project commissioning and operational activities to perceive the impacts on the natural and socioeconomic environment around the proposed project site. This included information on land, surface water, groundwater, air, vegetation, animals and human.

6.4 History of Gujranwala

Gujranwala, located in the northeast of Punjab, Pakistan, is one of the province's major industrial and historical cities. Its origins date back several centuries, with early settlements believed to have emerged during the Mughal period. The city gained prominence in the 18th century and is traditionally associated with Gujjar tribes who established the foundations of the settlement. During the Sikh era, Gujranwala rose to political significance as the birthplace of Maharaja Ranjit Singh, founder of the Sikh Empire, making it an important administrative and military center. Under British colonial rule, Gujranwala continued to develop as a major urban and commercial hub due to its strategic location along the Grand Trunk (GT) Road and railway connections linking it with Lahore, Sialkot, and Rawalpindi. The city became known for its thriving trade, metal works, ceramics, and agricultural markets, which supported the surrounding fertile plains of central Punjab. Today, Gujranwala stands as one of Pakistan's leading industrial cities, renowned for its production of ceramics, sanitary fittings, electric fans, and agricultural machinery. Its dynamic industrial

sector, supported by a skilled workforce and strong transport infrastructure, contributes significantly to the national economy.

Geographically, Gujranwala District covers an area of about 3,622 km² and consists of six tehsils: Gujranwala City, Kamoke, Nowshera Virkan, Wazirabad, Aroop, and Tatlay Aali. The land is mostly flat and fertile, irrigated by the Upper Chenab Canal and its distributaries. The average elevation is around 226 meters above sea level. The district's population exceeds five million, with a majority living in urban centers. Punjabi is the dominant language, while Urdu and English are also widely understood. Gujranwala's blend of industrial activity, agricultural strength, and historical legacy continues to define its importance in Punjab's socio-economic landscape.

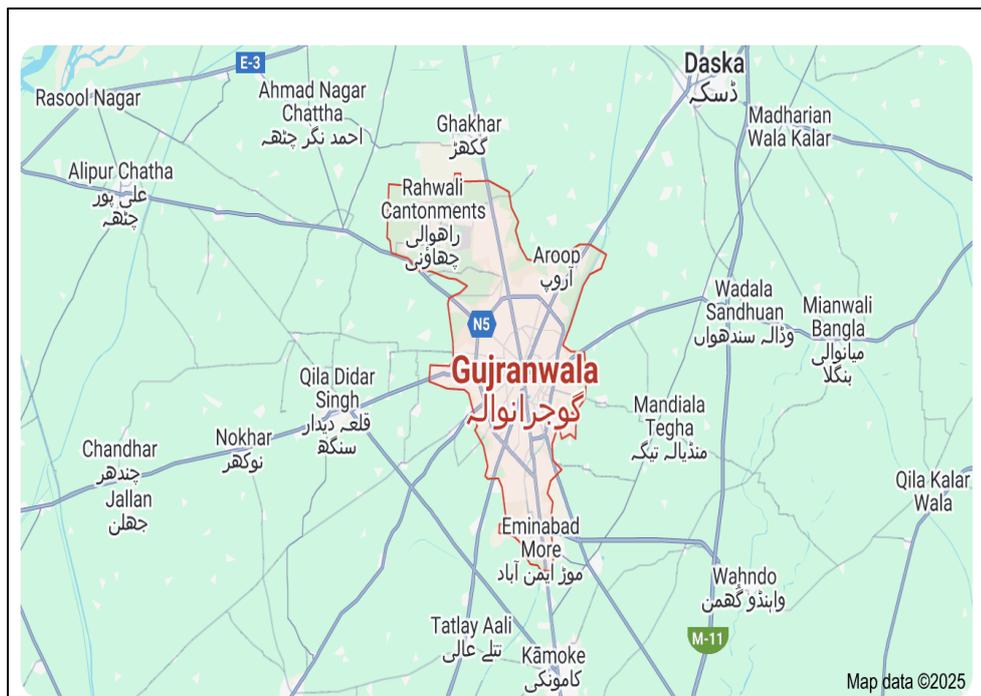


Figure 6-1: Location Map of District Gujranwala

6.5 Physical Environment

6.5.1 Topography

The topography of district Gujranwala is generally flat and forms part of the fertile alluvial plains of central Punjab, located within the Rachna Doab, the area between the Chenab and Ravi River systems. The landscape is characterized by its level surface and highly productive soil, making it one of the most agriculturally prosperous regions of the province. The Chenab River flows along the northwestern boundary of the district, forming a riverine belt with rich alluvial deposits ideal for cultivation.

Moving away from the river, the land gently rises into upland plains known as the Bangar areas, which are well-drained and suitable for agriculture and settlements. The average elevation of the district is about 226 meters above sea level, with minimal variation throughout. Gujranwala is served by an extensive canal irrigation system, mainly fed by the Upper Chenab Canal and its distributaries, which provide a reliable water supply for both agriculture and domestic use. Overall, the flat and fertile

topography of Gujranwala supports intensive agriculture, industrial development, and dense settlements, with no significant hills or steep gradients, making it one of Punjab's key economic and agricultural centers.

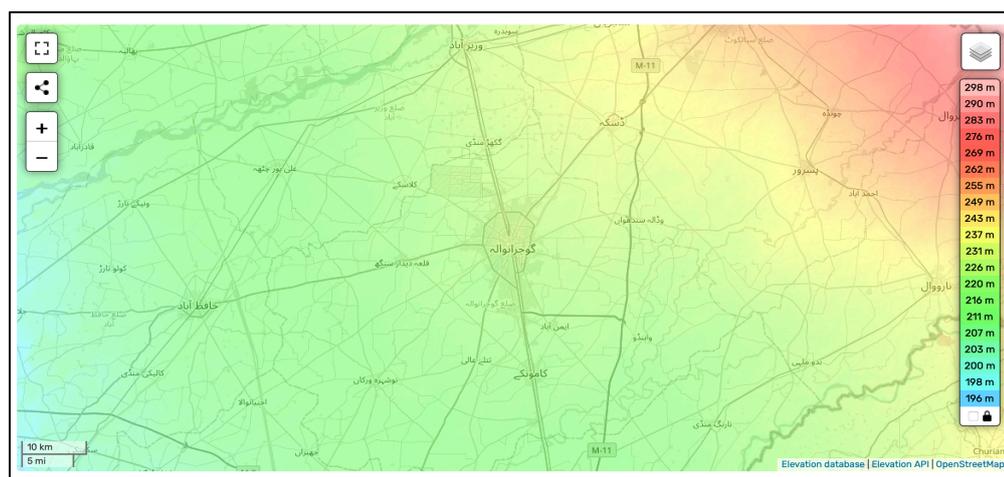


Figure 6-2: Topography of Gujranwala

6.5.2 Geology and Soil

The geology of district Gujranwala represents the characteristic features of the alluvial plains of Punjab, shaped over thousands of years by the depositional processes of the Chenab and Ravi River systems. The subsurface strata primarily consist of unconsolidated alluvial materials such as sand, silt, and clay, with occasional layers of gravel. These sediments are of Quaternary age and have been transported from the Himalayan foothills by river action. Hard rock formations are absent at shallow depths, and the thick alluvial deposits make the area highly suitable for groundwater extraction through both shallow and deep tube wells. The soils of Gujranwala district are mainly alluvial and among the most fertile in Punjab. In the low-lying areas near the Chenab River, the soils are generally loamy to sandy-loam in texture, well-drained, and ideal for the cultivation of crops such as wheat, rice, sugarcane, and vegetables. In the slightly elevated Bangar areas, the soils are heavier—typically silty-clay loam—with good moisture-holding capacity but requiring regular irrigation for optimal productivity. The combination of fertile soils and an efficient canal irrigation network, mainly fed by the Upper Chenab Canal, supports intensive and diversified agricultural practices throughout the district.

6.5.3 Climate and Meteorology

- Summer (April to July): The hot season lasts for 2.7 months, from April 27 to July 18, with an average daily high temperature above 96°F. The hottest month of the year in Gujranwala is June, with an average high of 102°F and low of 79°F.
- Winter (December to February): The cool season lasts for 2.6 months, from December 5 to February 23, with an average daily high temperature below 72°F. The coldest month of the year in Gujranwala is January, with an average low of 43°F and high of 65°F.

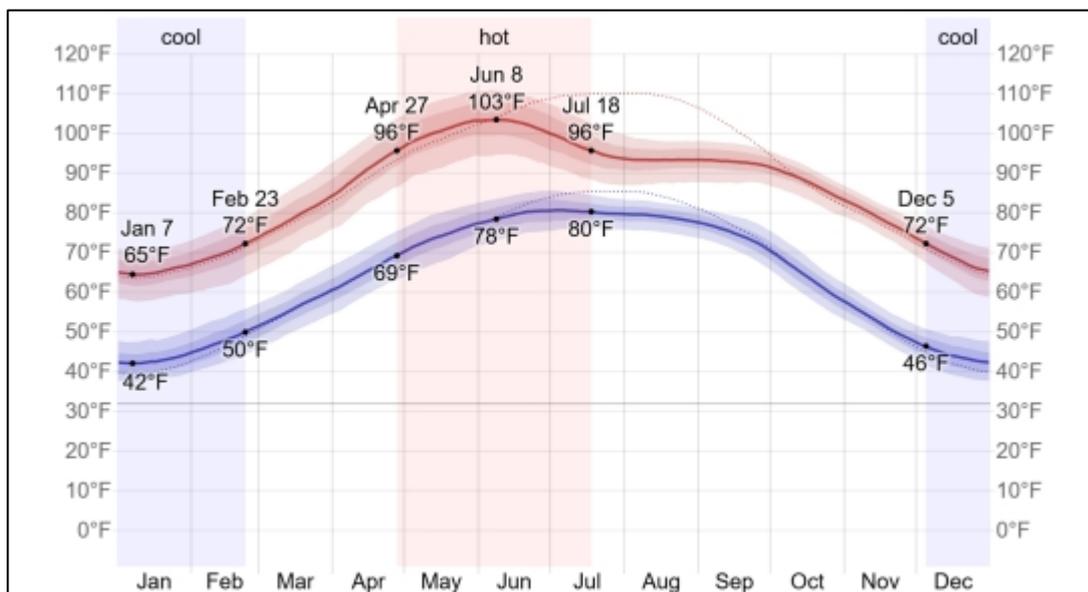


Figure 6-3: Average High and Low Temperature of Gujranwala

6.5.3.1 Rainfall

To show variation within the months and not just the monthly totals, we show the rainfall accumulated over a sliding 31-day period centered around each day of the year. Gujranwala experiences extreme seasonal variation in monthly rainfall.

- The rainy period of the year lasts for 10 months, from December 11 to October 22, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Gujranwala is July, with an average rainfall of 6.8 inches.
- The rainless period of the year lasts for 1.7 months, from October 22 to December 11. The month with the least rain in Gujranwala is November, with an average rainfall of 0.3 inches.

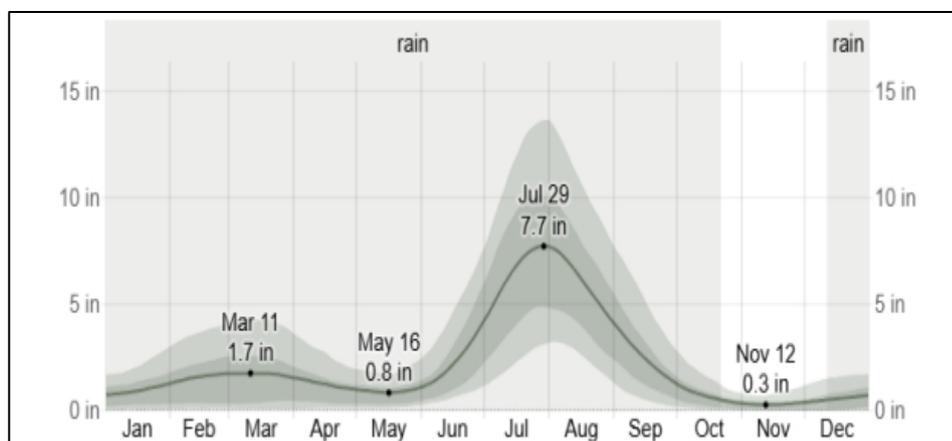


Figure 6-4: Average Monthly Rainfall in Gujranwala

6.5.3.2 Humidity

Gujranwala experiences extreme seasonal variation in the perceived humidity.

- The muggier period of the year lasts for 4.2 months, from June 6 to October 13, during which time the comfort level is muggy, oppressive, or miserable at least 25% of the time. The month with the most muggy days in Gujranwala is August, with 30.5 days that are muggy or worse.
- The month with the fewest muggy days in Gujranwala is January, with 0.0 days that are muggy or worse.

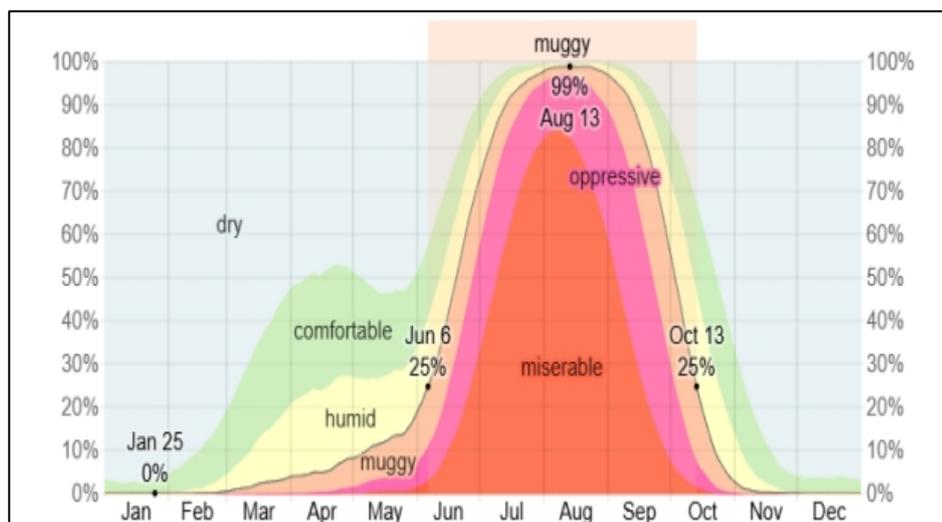


Figure 6-5: Humidity Comfort level in Gujranwala

6.6 Surface Water Resources

Gujranwala primary surface water resource is the Chenab River, which flows through the area. Additionally, the Upper Chenab Canal system provides irrigation water, and there are also some smaller canals and drains.

1. Chenab River:

The Chenab River is a major river in the Punjab province and forms a significant surface water source for Gujranwala.

2. Upper Chenab Canal:

This canal system, part of the larger Indus Basin Irrigation System, distributes water from the Chenab River for agricultural use in the region.

3. Other canals and drains:

Besides the main river and canal system, there are smaller canals and drains that contribute to the surface water availability in the area, though they may also be used for drainage purposes.

6.7 Ground Water Resources

Gujranwala relies heavily on groundwater for various uses, including agriculture, drinking water, and industrial activities. The tehsil has a mix of surface water resources (like the Chenab River) and groundwater resources, with groundwater playing a significant role in supplementing surface water.