CONSTRUCTION OF MULTI STOREY BUILDING, MOUZA BARAHOTAR, MURREE EXPRESS WAY, DISTRICT MURREE

Project proponent: **Mr. Shafiq Ahmed Abbasi**

Environment **TTI Testing Laboratories, Lahore**

Consultant:

LIST OF ABBREVIATIONS

CO2	Carbon Dioxide
°C	Degree Celsius
dB(A)	Decibel (Unit of Noise)
IEE	Initial Environmental Examination
EMMP	Environmental Mitigation and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EP&CC	Environmental Protection and Climate Change Department
HSE	Health, Safety & Environment
m^3/h	Cubic meter per hour
NOC	No Objection Certificate
Nox	Oxides of Nitrogen
PM	Particulate Matter
PPEs	Personal Protective Equipment
PEPA 1997	Punjab Environmental Protection Act 1997
SOPs	Standard Operating Procedures
Sox	Oxides of Sulfur

EXECUTIVE SUMMARY

The name of project is "Construction of Multi Storey Building, Mouza Barahotar, Murree Express Way, District Murree. The salient features of the project are as under:

Sr. No	Salient Features	
i.	Title of Project	Construction of Multi Storey Building
ii.	Location of Project	Construction of Multi-Storey Building at Khasra 14,15,16,17,21,23, Khewat 159, Khatoni No 218,219) Mouza Barahotar, Murree Expressway, Tehsil Murree, District Murree
iii.	Nature of Project	Multi Storey Building
iv.	Coordinates	Latitude: 31.277251° Longitude: 74.052346°
v.	Name of Project Proponent	Mr. Shafiq Ahmed Abbasi
vi.	Name of Organization/ Environment Consultant	Tti Testing Laboratories, Lahore
vii.	Total area of site/project	7445.89 Sft
viii.	Nature of Area	Rural Area of District Murree
ix.	Quantity of Wastewater	Small quantity of municipal waste water is anticipated.
x.	Quantity of Gaseous Emissions	The Multi-Storey building will generate only sewage/municipal waste water. The Project is not an industrial unit; hence no any kind of gaseous emissions are likely to be

		produced during its operations.
xi.	Environmental Impacts anticipated during Construction Phase of Project	The anticipated impacts during construction phase may include dust, noise, vehicle emissions, workers' safety and employment issues. Chapter 4 of the EIA Report describes all possible environmental impacts and mitigation measures.
xii.	Environmental Impacts anticipated during Operation Phase of the Project	The operations/processes of this project are not likely to generate any kind of gaseous emissions or process wastewater. Hence no any kind of adverse environmental impacts are expected during operational phase of project. The proposed project is not an industrial unit. It is rather a small sized building lodge.
xiii.	Mitigation Measures	The details of mitigation measures required during operational phase of project, have been described in Chapter 4 of EIA Report.
xiv.	Proposed Environmental Monitoring	The plan of Environmental Monitoring has been prepared and made part of EIA Report.

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CHAPTER # 1

INTRODUCTION

Chapter 1: INTRODUCTION

The Project Proponent has planned a project "Construction of Multi Storey Building at Mouza Barahotar, Murree Express Way, District Murree" and this document is the Environmental Impact Assessment Report (EIA) of said Project. The main objective of the study is to keep the project in compliance with prevailing Environmental Laws, Rules, and Regulations. The report indicates potential environmental impacts of the project and suggests mitigation measures to enhance the environmental performance of the proposed project. The report is comprehensive and presents the all-necessary information/data and details of environmental impacts as well as Mitigation Measures of Construction Phase and Operational Phase of aforesaid project.

1.1 Objectives of EIA

The main purpose of this report is to meet legal requirements prescribed in Punjab Environmental Protection Act, 1997. The Section 12 of Punjab Environmental Protection Act, 1997 states as under:

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

The following are the main objectives of EIA Report: -

- **i.** To determine and document the state of the environment of the project area to establish an environment baseline for assessing the suitability of the Project site.
- **ii.** To identify construction and operational activities of project and assess their impacts on the environment
- **iii.** To assist the proponent in planning, designing, and implementing the project in a way that eliminates or minimizes the negative impacts on the biophysical and socio-economic environment and maximizes the benefits for all parties/stakeholders.
- **iv.** To provide an opportunity for the public to understand the project and its impacts on the community and their environment in the context of sustainable development.
- **v.** Eliminate or minimize the negative impacts on the biophysical and socio-economic environment and maximize the benefits to all parties in cost cost-effective manner.

1.2 Brief Introduction to Environment Consultant

The project proponent has hired the services of Environmental Consultant i.e. TTI Testing Laboratories, Lahore. A team consisting of professionals from important disciplines i.e. Environmental Science and Chemistry have worked for the collection of requisite data/information and monitoring of baseline environmental conditions of the project site/area.

The Environment Consultant; Tti Testing Laboratories Lahore consists of well-trained professionals who provide the following services as per legal requirements narrated in Environmental Law, Rules and Regulations:

i. Initial Environmental Examination (IEE)
ii. Environmental Impacts Assessment (EIA)
iii. Socio-Environmental Impacts Assessment (SEIA)
iv. EPA NOC for the Construction Phase of Existing Industrial Units /new industrial units
v. EPA NOC for the construction of new Environmental Units.
vi. EPA NOC for the Operational Phase of Industrial Units
vii. Renewal of EPA NOC after every 3-years

1.3 Contact Details of Focal Person of Environment Consultant

The contact details of Focal Person of Environment Consultant are in the following Table 1.

Table 1.3: Contact Details of Focal Person of Environment Consultant

Name of Environment Consulting Firm	Tti Testing Laboratories Lahore
Name of Focal Person	Rida Rasool Business Development Executive Phone No: 03208484535 Email Address: Environment4@ttilabs.net
Address	Tti Building/ Laboratories 17-D, Quaid-e-Azam Industrial Estate Lahore

1.4 Details of Project Team

The following Team of qualified professionals has conducted environmental assessment and contributed in the preparation of the EIA report.

Table 1.4 Details of Project Team

Sr. No	Name	Qualification	Roles
i.	Mr. Muhammad Tahir	MSc Environmental Sciences MSc Agricultural Engineering	• Team Lead
ii.	Ms. Nisha Lal Din	MS Environmental Sciences	• Data and Documents Collection • Report Writing
iii	Ms. Rida Rasool	BS (Hons) Environmental Sciences	• Data and Documents Collection • Report Writing
iv.	Mr. Muhammad Ahsan	MSc Chemistry	• Environmental Monitoring
v.	Mr. Sibtain Farooq	BS Chemistry	• Environmental Monitoring

1.5 Data Collection

During this phase, all necessary information on the project has been collected and reviewed. A list of potential environmental impacts as well as social issues has been prepared. Relevant data has been collected and compiled, to develop a baseline of the project area's physical, biological, and human environment. Field visits to the site have been also carried out. The secondary resources included the reports of the studies carried out earlier, published books and data, and relevant websites. With the help of these resources, a generic profile of the project area has been developed. During these field visits, information on environmental and social parameters has been collected. The environmental and social hot spots falling at or near the project site have been identified, and most importantly, the project's environmental effects were determined.

1.6 Environmental Impacts of Project

First, the Team has ascertained the potential environmental impacts of the proposed project. Subsequently, the potential environmental impacts have been characterized to determine their significance.

Mitigation measures have been identified to minimize the significant environmental effects. A management framework has also been developed in the form of an EMP for the implementation of the mitigation measures identified during the study.

1.7 Structure of Report

This EIA reviews information on existing environmental attributes of the project Area. All-important ecological features, air quality, noise, water quality, social and economic aspects are included. The report predicts the probable impacts on the environment during Construction and Operational phase of said project. This EIA proposes various environmental management measures. Details of environmental quality, environmental impacts/pollutant generating activities, pollution sources and related aspects have been provided in this report.

The structure of this assessment report is as follows:

i. Introduction
ii. Legislative Framework
iii. Description of the Project
iv. Description of Environment
v. Screening of Potential Environmental Impacts and Mitigation Measures
vi. Stakeholders Consultations
vii. Environmental Mitigation and Monitoring Plan (EMMP)
viii. Conclusion and Recommendations

CHAPTER NO # 2

LEGISLATIVE FRAMEWORK

Chapter 2: LEGISLATIVE FRAMEWORK

Pakistan is a signatory to a number of Multilateral Environmental Agreements and International Treaties. Pakistan has a comprehensive set of environmental legislation covering multiple environmental issues facing Pakistan like pollution of freshwater bodies, gaseous emissions from Industrial Units, degradation of ambient air quality, deforestation, loss of biodiversity, lack of proper waste management, and adverse impacts of climate change. The basic policy and legislative framework along with detailed rules, regulations, and guidelines are in place in Pakistan for enforcement of legislation for the protection of environment and biodiversity.

2.1 Punjab Environmental Protection Act 1997

After the 18th Amendment in the Constitution of Pakistan, the Federal Ministry of Environment has been dissolved and the subject of Environment and Ecology have been devolved to provinces of Pakistan. The province of Punjab has made its own Environment Act titled Punjab Environmental Protection Act, 1997. The Punjab Environmental Protection Act (PEPA), 1997. The Act is a prime legal instrument to deal with all important issues and challenges relating to Environment. A Punjab Environment Protection Act 1997 covers the following important areas/sectors.

- **i.** Establishment of the Punjab Environmental Protection Council.
- **ii.** Functions and Powers of the Punjab Environment Protection Council.
- **iii.** Establishment of the Provincial Environmental Protection Agency.
- **iv.** Functions of the Provincial Agency (i.e. EPA Punjab).
- **v.** Powers of the Provincial Agency (EPA Punjab).
- **vi.** Establishment of the Provincial Sustainable Development Fund.
- **vii.** Management of the Provincial Sustainable Development Fund.
- **viii.** Prohibition of certain discharges or emissions.
- **ix.** Initial environmental examination and environmental impact assessment
- **x.** Prohibition of import of hazardous waste.
- **xi.** Handling of hazardous substances.
- **xii.** Regulation of motor vehicles.
- **xiii.** Environmental Protection Order.
- **xiv.** Penalties.
- **xv.** Offences by bodies corporate.
- **xvi.** Offences by Government Agencies, local authorities or local councils.
- **xvii.** Environmental Tribunals.
- **xviii.** Jurisdiction and powers of Environmental Tribunals.
- **xix.** Appeals to the Environmental Tribunal.
- **xx.** Appeals from orders of the Environmental Tribunal.
- **xxi.** Jurisdiction of Environmental Magistrates.
- **xxii.** Appeals from orders of Environmental Magistrates.

Apart from the above mother Act, other legal instruments also exist in the province of Punjab which regulate different environmental issues. The names of those legal instruments are under.

- **i.** Review of IEE/EIA Regulations 2022
- **ii.** Delegation of Powers for Environmental Approvals Rules, 2017

iii. Punjab Clean Air Policy on Controlling Smog 2017
iv. Production and Consumption of Single use Plastic Products Regulations, 2023
v. Punjab Hospital Waste Management Rule, 2014
vi. Punjab Environment Quality Standards (PEQS).

Each Project / Industrial Unit is required to install Waste Water Treatment Plant and Air Pollution Control System to keep the industrial waste water and gaseous emissions with in Panjab Environment Quality Standards (PEQS).

2.2 Punjab Environmental Quality Standards (PEQS)

The Govt. of Punjab has notified Punjab Environmental Quality Standards for different kinds of pollutants, as described in the following Tables: -

Table 2.1 Punjab Environmental Quality Standards for Ambient Air

Sr. No	Pollutant	Time-Weighted Average	Concentration in Ambient Air	Method of Measurement
1.	Sulfur Dioxide (SO2)	Annual Average	80 µg/m3	Ultraviolet Fluorescence Method
		24 hours	120 µg/m3	
2.	Oxides of Nitrogen as (NO)	Annual Average	40 µg/m3	Gas phase chemiluminescence
		24 hours	40 µg/m3	
3.	Oxides of Nitrogen as (NO)	Annual Average	40 µg/m3	Gas phase chemiluminescence
		24 hours	80 µg/m3	
4.	Ozone (o3)	1 hour	130 µg/m3	Non-Dispersive UV Absorption Method
5.	Suspended particulate matter (SPM)	Annual Average	360 µg/m3	High volume sampling (average flow rate not less than 1.1 m3/min)
		24 hours	500 µg/m3	

6.	Respirable Particulate Matter PM10	Annual Average	120 µg/m3	Preferably β-Ray absorption method
		24 hours	150 µg/m3	
7.	Pollutant	Time-weighted Averag e	Concentration in Ambient AIR	Method Of Measurement
		24 hours	35 µg/m3	
		1 hour	15 µg/m3	
8.	Lead (Pb)	Annual Average	1 µg/m3	Ass method after sampling using EPM2000 or equivalent Filter paper
		24 hours	1.5 µg/m3	
9.	Carbon Monoxide (CO)	8 hours	5 µg/m3	Non-Dispersive Infra-Red (NDIR) method
		1 hours	10 µg/m3	

2.2 Punjab Environmental Quality Standards for Drinking Water

Sr. No.	Properties /Parameters	Standard Values	WHO Standards	Remarks
1.	All water intended for drinking (E. Coil or Thermo-tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards.
2.	Treated water entering the distribution system (E. Coil or thermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards.
3.	Treated water in the distribution system (E. Coil or thermo-tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample In the case of large supplies, where sufficient samples are examined, must not be present in 95 % of the sample taken throughout any 12-month period.	Must not be detectable in any 100 ml sample In the case of large supplies, where sufficient samples are examined, must not be present in 95 % o f the s ample taken throughout any 12- month period.	Most Asian countries also follow WHO standards
4.	Color	≤15 TCU	≤15 TCU	
5.	Taste	Non objectionable/ acceptable	Non objectionable/ acceptable	
6.	Odour	Non objectionable/ acceptable	Non objectionable/ acceptable	
7.	Turbidity	<5 NTU	<5 NTU	

8.	Total hardness as CaCO3	< 500 mg/l	_	
9.	TDS	< 1000	< 1000	
10.	Ph	6.5 – 8.5	6.5 – 8.5	
11.	Essential Inorganic	mg/Liter	mg/Liter	
12.	Aluminum (AI) mg/l	≤0.2	0.2	
13.	Antimony (Sb)	≤0.005 (P)	0.02	
14.	Barium (Ba)	0.7	0.7	
15.	Arsenic	≤0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
16.	Boron (B)	0.3	0.3	
17.	Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
18.	Chloride (Cl)	<250	250	
19.	Chromium (Cr)	≤0.05	0.05	
20.	Copper (Cu)	2	2	
21.	Toxic Inorganic	mg/l	mg/l	
22.	Cyanide (CN)	≤0.05	0.07	Standard for Pakistan similar to most Asian developing countries
23.	Fluoride (F)*	≤1.5	1.5	
24.	Lead (Pb)	≤0.05	0.01	Standard for Pakistan similar to most Asian developing countries
25.	Manganese (Mn)	≤0.5	0.5	
26.	Mercury (Hg)	≤0.001	0.001	
27.	Nickel (Ni)	≤0.02	0.02	
28.	Nitrate (NO3)	≤50	50	
29.	Nitrite (NO3)	≤3 (P)	3	

30.	Selenium (Se)	0.01 (P)	0.01	
31.	Residual chlorine	0.2-0.5 at consumer end 0.5-1.5 at source		
32.	Zinc (Zn)	5.0	3	The standard for Pakistan similar to most Asian developing countries
33.	Organic			
34.	Pesticides mg/l			PSQCA No. 4639 – 2004, page No. 4 Table No. 3 Serial No. 20 – 58 may be consulted
35.	Phenolic compound (as Phenols) mg/l			
36.	Poly-nuclear aromatic hydrocarbons (as PAHs) g/l		0.01 (By GC/MS method)	
37.	Alpha Emitters bq/L	0.1	0.1	
38.	Beta emitters	1	1	

*Indicates priority health-related inorganic constituents, which need regular monitoring.

*PSQCA: Pakistan Standards Quality Control Authority.

2.3 Punjab Environmental Quality Standards for Municipal and Liquid Industrial Effluents (mg/l, unless otherwise defined)

Sr. No	Parameters	Into Inland Waters	Into Sewage Treatment
1	Temperature or Temperature Increase	≤3°C	≤3°C
2	pH value (H)	6-9	6-9
3	Biochemical Oxygen Demand (BOD) at 20 °C	80	250
4	Chemical Oxygen Demand (COD)"	150	250
5	Total suspended solids (TSS)	200	400
6	Total dissolved solids (TDS)	3500	3500
7	Grease and Oil	10	10
8	Phenolic compounds (as phenol)	0.1	0.3
9	Chloride (as CI").	1000	1000
10	Cyanide (as CN)	1.0	1.0
11	An-ionic detergents (as MBAs) (2	20	20
12	Sulfate (SO4)	600	1000
13	Fluoride (as F)	10	10
14	Sulfide (S^{-2})	1.0	1.0
15	Ammonia (NH_3)	40	40
16	Pesticides(3)	0.15	0.15
17	Cadmium (Cd)(4)	0.1	0.1
18	Chromium (trivalent and hexavalent)	1.0	1.0
19	Copper (Cu)(4)	1.0	1.0
20	Lead (Pb)(4)	0.5	0.5
21	Mercury (Hg)(4)	0.01	0.01
22	Selenium (Se)(4)	05	0.5

23	Nickel(Ni)[4]	1.0	1.0
24	Silver(Ag)[4]	1.0	1.0
25	Total Toxic metals	2.0	2.0
26	Zinc (Zn)	5.0	5.0
27	Arsenic (As)[4]	1.0	10
28	Barium (Ba)[4]	1.5	15
29	Iron (Fe)	8.0	8.0
30	Manganese (Mn)	1.5	1.5
31	Boron (Ba)[4]	6.0	6.0
32	Chlorine (Cl_2)	1.0	1:0

Explanation:

1. *Assuming minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Provincial Environmental Protection Agency. By 1:50 dilution means, for example that for each one cubic meter of treated effluent, the recipient water body should have 10 cubic meter of water for dilution of this effluent.*
2. *Methylene Blue Active Substances; assuming surfactant as biodegradable.*
3. *Pesticides include herbicides, fungicides and insecticides.*
4. *Subject to total toxic metals, discharge should not exceed level given al S.N. 25.*
5. *Applicable only when and where sewage treatment is operational and BOD5-80 mg/l is achieved by the sewage treatment system.*
6. *The effluent should not result in temperature increase of more than 30°C at the edge of the zone where initial mixing and dilution take place in the receiving body. In case zone is not defined, use 100 meters from the point of discharge.*

Note:

1. *Dilution of liquid effluents to meet to the PEQS limiting value is not permissible through fresh water mixing with the effluent before discharging into the environment*
2. *The concentration of pollutants in water being used will be subtracted from the effluent for calculating the PEQS limits.*

Table 2.4 Punjab Environmental Quality Standards for Industrial Gaseous Emissions (Mg/Nm3)

Sr. No.	Parameter	Source of Emissions	Stander
1	Smoke	Smoke opacity not exceed	40% or 2 Ringelmann Scale or equivalent Smoke number
2	Particulate matter	Boilers and furnaces	
		Oil fired	300
		Coal-fired	500
		Cement Kilns	300
		Grinding, crushing, clinkers coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
3	Hydrogen chloride (HCL)	Any	400
4	Chlorine	Any	150
5	Hydrogen fluoride	Any	150
6	Hydrogen Sulphide	Any	10
7	Sulphur Oxides	Sulfuric acid/Sulfonic acid plants	5000
		Other plants expect power plant operating on oil and coal	1700
8	Carbon Monoxide Parameter	Any Source of Emission	800 Stander
9	Lead (PB)	Any	50
10	Mercury (Hg)	Any	10
11	Cadmium (Cd)	Any	20
12	Arsenic (Ar)	Any	20
131	Copper (Cu)	Any	50
14	Antinomy (Sb)	Any	20
15	Zinc (Zn)	Any	200
16	Oxides of Nitrogen	Nitric acid manufacturing unit	3000
		Other plants expect power operating on oil or coal	
		Gas Fired	400

Table 2.5 Punjab Environmental Quality Standards for Noise

Sr. No	Category of Area Zone	Effective from 1" July, 2010		Effective from I" July, 2013	
		Limits in Db(A) Leq			
		Day Time	Night Time	Day Time	Night Time
1	Residential Area (A)	65	50	55	45
2	Commercial Area (B)	70	60	65	55
3	Industrial Area (C)	80	70	75	6545
4	Silence Zone (D)	55	45	50	

Note:

1. Day time hours; *6:00am to 10:00pm.*

2. Night Time hours; *10:00 pm to 6:00 am.*

3. Silence Zone: *Zones which are declared as such by the competent authority. An area comprising not less than 100 meters around hospital, educational institutions and courts*

4. Mixed categories *of areas may be declared as one of the four above mentioned categories by the competent authority*

dB(A) Leq: *Time weighted average of the level of sound in decibel on scale A which is relatable to human hearing.*

Table 2.6 Punjab Environmental Quality Standards for Industrial Gaseous Emissions (Mg/Nm3)

Sr. No.	Parameter	Source of Emissions	Stander
1	Smoke	Smoke opacity not exceed	40% or 2 Ringelmann Scale or equivalent Smoke number
2	Particulate matter	Boilers and furnaces	
		Oil fired	300
		Coal-fired	500
		Cement Kilns	300
		Grinding, crushing, clinkers coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
3	Hydrogen chloride (HCL)	Any	400
4	Chlorine	Any	150
5	Hydrogen fluoride	Any	150
6	Hydrogen Sulphide	Any	10
7	Sulphur Oxides	Sulfuric acid/Sulfonic acid plants	5000
		Other plants expect power plant operating on oil and coal	1700
8	Carbon Monoxide Parameter	Any Source of Emission	800 Stander
9	Lead (PB)	Any	50
10	Mercury (Hg)	Any	10
11	Cadmium (Cd)	Any	20
12	Arsenic (Ar)	Any	20
13	Copper (Cu)	Any	50
14	Antinomy (Sb)	Any	20
15	Zinc (Zn)	Any	200
16	Oxides of Nitrogen	Nitric acid manufacturing unit	3000

		Other plants expect power operating on oil or coal	
		Gas fired	400

CHAPTER NO # 3

SCREENING AND SCOPING

Chapter 3: SCREENING AND SCOPING

This section of the study focuses on the details of project screening, scoping, and the selection of alternatives.

3.1 Type and Category of Project

According to Section 12 of Punjab Environment Protection Act, 1997, "No proponent of a project shall commence construction or operation unless he has filed with the Provisional Agency an initial environmental examination or where the project is likely to cause an adverse environmental effect, an environmental impact assessment (EIA) and has obtained from the Provisional Agency approval in respect thereof.

The IEE/EIA Regulations 2022, classify the projects under two schedules called Schedule-I and Schedule-Il. The Regulations read that a proponent of a project falling in any category specified in Schedule II shall file an EIA with the Provincial Agency and the provisions of section 12 shall apply to such project. According to the said regulations, the proposed project falls under Schedule

3.2 Scoping

The scoping exercise helps identify key environmental issues that should be highlighted and further investigated in the EIA. Effective scoping is essential in terms of the following: -

i. Defining the spatial and temporal boundaries.
ii. Consulting with stakeholders to identify a full range of concerns.
iii. Focusing on key issues that have been characteristic of the existing environment in the baseline study.
iv. Reviewing the types of alternatives to be considered.
v. Making logical decisions that have been more significant and need to be prioritized in the EIA.

3.3 Objectives of the Project

The objective of the project is to establish a Multi-Storey Building (Montanna Lodges) on Murree Express Way in order to provide an economical residential Facility to the tourists Each year, number of tourists to hilly areas is increasing rapidly and they face problems of accommodation.

This small sized project will contribute in addressing the challenge of accommodation in hilly areas.

3.4 Alternatives

3.4.1 Environmental alternatives

The surrounding environmental conditions are congenial for the project. Both the construction as well as operation phases will not adversely affect the environment. All of the aspects will be kept strictly within the limits defined under Punjab Environmental Quality Standards (PEQS) and the project shall comply with requirements prescribed in Punjab Environmental Protection Act 1997.

3.4.2 3.4.2 Site alternative

The site selected for the project is highly suitable as it is located adjacent to an area. Further, there are a number of Industrial Units in its surroundings while no human settlement exists in the proximity of the project site. Project site has good access of roads for transportation of all kinds of materials of the project. the project proponent has considered other sites in the nearby areas but sites are not feasible as their acquisition as well as existence of villages in their surroundings do not favor those sites.

CHAPTER # 4

PROJECT DESCRIPTION

Chapter 4: PROJECT DESCRIPTION

This section of the study concentrates on details of the project and its salient features, such as location, site layout, objectives, selection of alternatives, and magnitude of the operations.

4.1 Location of the Project

The Project site is located at Khasra 14,15,16,17,21,23, Khewat 159, Khatoni No 218,219) Mouza Barahotar, Murree Expressway, Tehsil Murree, District Murree. A Google map showing the location of the project is attached:

The site is highly suitable for the proposed project. The tourists need convenience in terms of approach roads for Hotels/Lodges.

Table 4.1 Geographical Features of Project Site

SR. NO.	COORDINAL DIRECTIONS/ COMPASS POINTS	EXISTING ARTICLES/ITEMS
2.	North	**Green foothills**
3.	South	**Do**
4.	East	**Murree Express Way**
5.	**West**	**Green foothills**

4.2 Objectives of Project

The objective of the project is Construction of Multi Storey Building (Montanna Lodges), Mouza Barahotar, Murree Express Way, District Murree. The project will provide economical accommodation to the tourists of mountain areas.

4.3 Site Alternatives

The project site is located at Mouza Barahotar, Murree Express Way, District Murree". The site is highly suitable for a Multi-Storey Building (Montanna Lodges), Murree Express Way in order to provide an economical residential Facility to the tourists each year, number of tourists to hilly areas, is increasing rapidly and they face the problems of accommodation. This small sized project will contribute in addressing the challenge of accommodation in hilly areas.

4.4 Road Access

The project site has wonderful road access. The site is located on the Murree Express Way.

4.5 Relocation and Rehabilitation Plans

No any kind of structural settlement exists at the project site to be relocated or dismantled. The land is a vacant plot and hence, no relocation and rehabilitation are required. The Project site is located at the road where traffic is flowing the clock. Further the site is owned by the Project Proponent /Applicant

4.6 Vegetation Features of the Site

Land is clear and no significant plants or vegetation of ecological importance are present at the site. The greenery in the surroundings of project site will serve as a useful buffer zone to lessen the effects of pollution from different sources. So, the project will not cause any harm to vegetation and environment of the area.

4.7 Key Features of Project

Key Features of Project site are as under:

Sr. #	Key Features of Project	
1.	Project Title	Construction of Multi-Storey Building at Khasra 14,15,16,17,21,23, Khewat 159, Khatoni No 218,219) Mouza Barahotar, Murree Expressway, Tehsil Murree, District Murree
2.	Total Area	7445.89 Sft
3.	Cost	**Rs.** 60.00 Million

4.8 Schedule of Implementation

The project construction work will take time period of one year from start to completion.

The schedule of Construction is as under in Table 3.3.

Table 4.2 Schedule of Implementation

Sr. No	Activities	First 4 Months	Second 4 Months	Third 4 Months
1.	• Construction of Building/Grey structure			
2.	• Fitting of sanitary accessories. • Completion of electricity work.			
3.	• Finishing work • Wood work • Installation of Furniture & fixture.			

4.9 Manpower

Almost 20 workers will be required during construction phase of the proposed project whereas 15 will be engaged during operational phase of project.

4.10 Solid Waste

There is likelihood of small quantity of solid waste from the operations of the proposed project.

For proper waste management, waste bins will be provided in the building. The waste bins will be collected and waste will be dropped at the site earmarked by Municipal Corporation Murree.

CHAPTER # 5

DESCRIPTION OF ENVIRONMENT

Chapter 5: DESCRIPTION OF ENVIRONMENT

This chapter 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 relevant agencies.

5.1 Data Collection

The primary data was collected by surveying the project area and its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, hydrology, and climatology) was obtained by visiting relevant departments and their official websites. The biological parameters (flora and fauna) were also studied in the project area. The vegetation of the project area was studied by preparing a floristic list based on visual observation. The species were recorded in terms of their historical existence in the project area. Information on wildlife/fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area is based on opportunistic observation, gathering the existing information, and consultation with local experts, community members, government, and Non-Government Organizations (NGOs).

5.2 Physical Environment

The physical environment of Murree is shaped by its location in the northern Punjab region of Pakistan, within the Himalayan foothills. Here's a breakdown of its physical features:

1. **Geographical Features**

Mountainous Terrain: Murree is located in the Galyat range, part of the outermost Himalayas. The area consists of steep slopes, deep valleys, and rugged hills, giving the region a highly varied and dramatic topography.

Elevation: Murree is situated at an altitude of 2,300 meters (7,500 feet) above sea level. This elevation contributes to its cool climate and makes it a popular hill station.

Ridges and Valleys: The region has multiple ridges and valleys, which result in the formation of picturesque viewpoints. Some of the well-known ridges and hilltops include Pindi Point and Patriata (New Murree), both of which offer panoramic views of the surrounding mountains and forests.

Surrounding Ranges: Murree is part of the Galyat Range but lies close to the Pir Panjal Range, and it also shares proximity to other mountain ranges that extend towards the north into Azad Kashmir and Kaghan Valley.

2. **Hydrology (Water Bodies)**

- **Rivers and Streams:** The main river system around Murree includes the Kohala River, which originates from the nearby Neelum Valley in Azad Kashmir and eventually flows into the Jhelum River. There are also various smaller streams and tributaries feeding into the valley and surrounding areas.
- **Waterfalls and Springs:** Murree has numerous small springs and waterfalls, which add to its natural beauty. The Kashmir Point and Chakkar Gali areas, for example, have freshwater springs that contribute to the local water table and provide drinking water.
- **Lakes:** While Murree doesn't have large lakes, its proximity to areas like Rawal Lake (located near Islamabad) offers scenic spots for tourists. Rawal Lake is a man-made reservoir that serves as a water supply for the twin cities of Islamabad and Rawalpindi.

3. **Soil and Vegetation**

- **Soil Types:** The soils in Murree are predominantly loamy and sandy at lower elevations, with the upper parts of the hills featuring shallow, rocky soils due to the steep slopes. The fertility of the soil supports the growth of diverse vegetation.
- **Forests and Vegetation Types:**

  - Murree is covered in a variety of forest ecosystems. The lower slopes are covered by pine forests, particularly Chir Pine and Blue Pine. The upper hills are often dominated by cedar, oak, and deodar trees.
  - The region also has rich undergrowth consisting of shrubs, wildflowers, and grasses, particularly in the spring and summer months.

4. **Natural Disasters**

- **Landslides:** Due to its hilly and unstable terrain, Murree is prone to landslides, especially during heavy rainfall or snowmelt in the winter and monsoon seasons. This can sometimes disrupt transportation and cause damage to properties.
- **Flooding:** The numerous streams and rivers can cause flooding during intense monsoon rains, affecting the settlements in low-lying areas or near riverbanks.

5. **Climate and Weather Conditions**

- **Seasonal Variation:**

- **Summer:** During the summer months (April to September), temperatures in Murree are cool, with daytime highs ranging from 15°C to 25°C (59°F to 77°F), making it a popular escape from the sweltering heat of the plains. Nights tend to be cooler, and there's often a pleasant breeze.
- **Winter:** Winters (December to February) bring cold temperatures, often dropping below freezing point. The snowfall is common during these months, especially in January and February. Snow can accumulate up to several feet on the ground, turning the region into a winter wonderland, which is one of the main attractions for tourists.
- **Monsoon:** Murree experiences moderate rainfall during the monsoon season (June to September), which further enhances the region's lush greenery. The annual rainfall can range between 1,200 mm to 1,800 mm.

6. Rainfall

- Murree experiences substantial annual precipitation, ranging from 1,600 to 1,900 mm, making it one of the wettest hill stations in Pakistan. The monsoon season, especially during July and August, brings the heaviest rainfall, often exceeding 300 mm per month. In addition to rain, significant snowfall during the winter months mainly in January and February adds to the overall moisture, supporting lush greenery and a cool, temperate climate throughout the year.

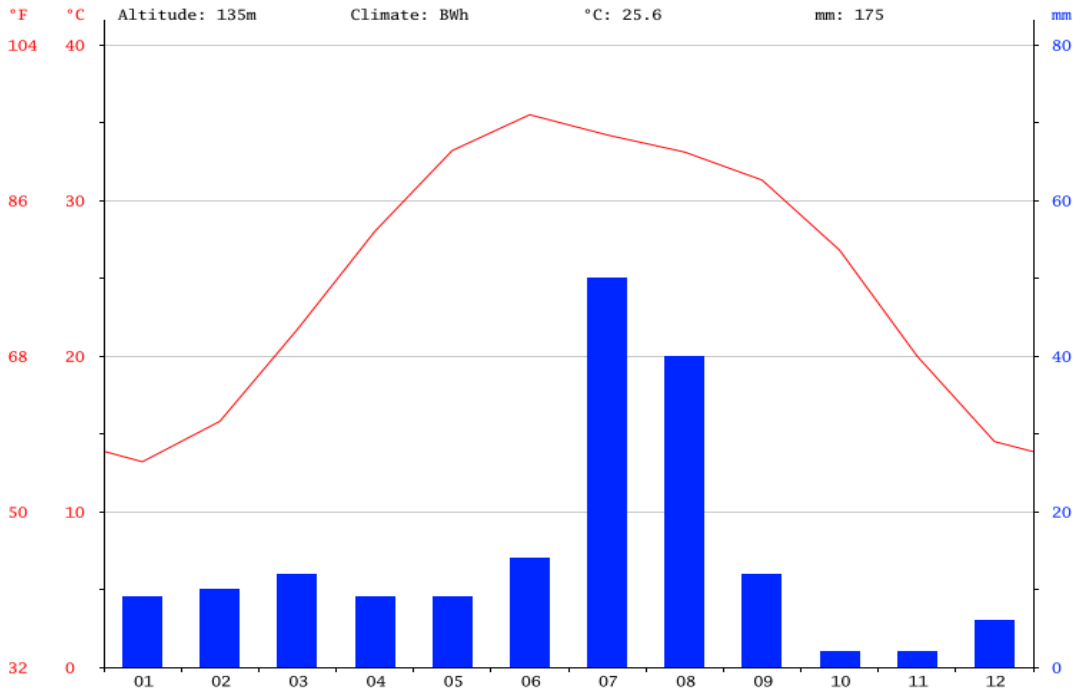

*Fig: **Rainfall Pattern in District Murree***

5.3 Ecological Environment

District Murree has a rich and diverse ecological environment due to its hilly terrain, cool climate, and abundant rainfall. The area is part of the western Himalayan foothills, covered with dense forests of pine, deodar, and oak trees. These forests provide natural habitat to various wildlife species including leopards, monkeys, foxes, and a wide range of birds. The region also supports diverse plant species, many of which are native and medicinal in nature. The clean air, natural springs, and undisturbed mountainous ecosystem make Murree an ecologically significant and sensitive zone.

Species of Flora and Fauna

1. **Flora:**

Fig: Pic of Flora existing in District Murree

Fig: Pic of Flora existing in District Murree

Fig: Pic of Flora existing in District Murree

Fig: Pic of Flora existing in District Murree

2. **Fauna:**

- **Fauna:** Murree is home to diverse wildlife that thrives in its forested and hilly environment. Some of the key species include:
- **Mammals:** Leopard (Panthera pardus) inhabits nearby Galyat region. Rhesus Monkey (Macaque), Wild Boar (Sus scrofa), Foxes, and the Murree vole (a rodent endemic to the area). Barking deer, jackal, small mongoose, flying squirrels, common leopard seasonal migrations, wild boar, red fox, yellow-throated marten, masked palm and Asian palm civets, Kashmir flying squirrel, eurasian otter — many recorded in

Murree Hill or Ayubia areas.

- **Birds:** From Murree Biodiversity Park (2011 census):
- Slaty-headed Parakeet
- Plum-headed Parakeet
- Scaly-bellied Woodpecker
- Brown-fronted Woodpecker
- Northern Crag Martin, Barn Swallow, Yellow Wagtail, Grey Wagtail, White-cheeked Bulbul, Red-vented Bulbul, Black Bulbul, White-capped Redstart, Grey Bushchat, Blue Whistling Thrush, Black-throated Thrush, Little Forktail, Verditer Flycatcher, Laughing Thrush, Asian Paradise Flycatcher, Black-throated Tit, Great Tit, Common Rosefinch, Black Drongo, Yellow-billed Magpie, House Crow, Jungle Crow, Common Myna, House Sparrow, Rock Bunting.

Fig: Pic of Fauna existing in District Murree

Fig: Pic of Fauna existing in District Murree

Fig: Pic of Fauna existing in District Murree

Fig: Pic of Horse Riding in District Murree

5.4 Socio-Economic Resources

District Murree, being a renowned hill station and tourist destination, has a socio-economic structure largely centered around tourism, services, and small-scale trade. A significant portion of the population is employed in hotels, restaurants, transport services, and handicraft shops, which cater to the influx of visitors year-round. Agriculture and livestock farming also support local livelihoods in rural areas, with crops like maize and vegetables grown on terraced fields.

The district has a moderate literacy rate, with access to educational institutions, basic health units, and road infrastructure, especially in urbanized areas. Murree's economy benefits from both seasonal tourism and remittances from residents working in other cities or abroad. The local communities maintain strong cultural traditions and social cohesion, often rooted in close family and tribal ties.

5.5 Nearby Residential Areas

District Murree is surrounded by several residential towns and villages that contribute to its social and economic landscape. Some of the notable nearby residential areas include:

- **Bhurban** – A well-known tourist spot and residential area with luxury resorts and scenic views.
- **Patriata (New Murree)** – A developed locality famous for its chairlift and dense forests.
- **Ghora Gali** – A historic residential area with schools, markets, and rest houses.
- **Rawat** – A small town with a mix of traditional homes and modern infrastructure.
- **Darya Gali, Aliot, and Phagwari** – Villages that form part of the rural settlements of Murree, offering a glimpse into local life and culture.

5.6 Occupations

The primary occupations in District Murree are closely linked to its tourism-driven economy. A large portion of the population is engaged in hospitality and tourism services, including work in hotels, restaurants, guest houses, transport services, and tourist shops. In rural areas, people are involved in agriculture, livestock rearing, and small-scale farming, growing crops like maize and vegetables. Government jobs, particularly in education, health, and local administration, also provide employment. Additionally, many residents work in construction, retail trade, and handicrafts, while some earn livelihoods through remittances from family members working in other cities or abroad.

5.7 Literacy Rate

As of the 2023 census (reported in fiscal year 2024–25), Murree District boasts a literacy rate of approximately 86.0%, making it one of the most literate districts in Punjab. Within the district, Kotli Sattian Tehsil records a literacy rate of 88.2%, while Murree Tehsil stands at 84.8%. Male literacy reaches around 92.1%, whereas female literacy is approximately 79.5%, indicating a gender gap that remains notable but narrower than the national average.

5.8 Industries

District Murree does not have large-scale industrial development due to its hilly terrain, ecological sensitivity, and focus on tourism. However, several small-scale and cottage industries contribute to the local economy. These include:

- **Handicrafts and Souvenirs**: Production of woodwork, hand-knitted woolen items, shawls, traditional clothing, and decorative items for tourists.
- **Food Processing**: Small units involved in making local snacks, bakery items, fruit preserves, and herbal products.
- **Construction and Carpentry**: Local workshops produce wooden furniture, doors, and traditional architectural items.
- **Hospitality and Tourism Services**: Though not traditional industries, hotels, resorts, restaurants, and travel services form the backbone of Murree's economic structure.
- **Herbal and Medicinal Plant Collection**: Some locals are engaged in the collection and small-scale trade of **medicinal herbs and forest products** from the surrounding hills.

5.9 Educational Facilities

Noteworthy Educational Institutions in Murree are as under:

1. **Lawrence College Ghora Gali**

Founded in 1860, this historic boys' boarding school follows a British-style public school model. Located about 4 km from Murree, it sits at an altitude of ~1950 m, on a sprawling 150-acre campus filled with scenic beauty and architectural charm. Known for its high academic standards and rich extracurricular offerings.

2. **Convent of Jesus and Mary (CJM), Murree**

A girls' private boarding and day school established in 1876 by Claudine Thévenet.Offers primary to secondary education and has a legacy of notable alumnae including Benazir Bhutto.

3. **Presentation Convent High School, Murree**

Founded in 1917 by Presentation Sisters; run by the Catholic Board of Education. Recognized as a historical building under Punjab's preservation ordinance.

4. **Cadet College Murree**

A military-style residential institution established post-independence (2002). Focused on leadership, discipline, and preparation for military or professional careers.

5. **PAF College Lower Topa**

A prestigious Pakistan Air Force boarding school founded in 1952, serving as a feeder for future PAF officers. Located in Lower Topa, near Patriata, equipped with labs, hostels, and complete educational amenities.

6. **Military College Murree**

Established in 2008, this is one of only three military feeder colleges to the Pakistan Military Academy. Educates cadets from grades 8–12 with a strong emphasis on physical training, academics, and leadership.

7. **Kohsar University Murree**

This is Murree's first public university, established by the Government of Punjab via the 2020 Act. Spanning multiple campuses around Murree—including at Jhika Gali and Kashmir Point—the university offers diverse undergraduate & postgraduate programs (e.g. Botany, Sociology, Computer Science, Tourism & Hospitality).

5.10 Health Facilities

Key Health Facilities in Murree District are as under:

1. Tehsil Headquarters (THQ) Hospital, Murree

- **Overview:** As the primary public sector hospital in Murree, it's centrally located on Cart Road and caters to both local residents and tourists.
- **Services Offered:** Emergency department operational 24/7, general OPD (medicine, surgery, pediatrics), maternal and child care (antenatal, labor rooms), basic diagnostics (X-ray, ultrasound), pharmacy, and minor surgical procedures.
- **Recent Developments:** A dialysis unit became available in mid-2023, and the hospital now supports a broader scope of surgical procedures, with enhanced diagnostic and staffing provisions during high-traffic tourist seasons.

2. Syed Muhammad Hussain Government TB Sanatorium (Samli TB Hospital)

- **Current Status:** A key facility addressing tuberculosis in the region.
- **Upgrades in Progress:** In April 2024, the Punjab Chief Minister directed the integration of various health

- **services, including:** Fully operationalizing the mother & Child block, establishing general wards, cardiac, oncology, medicine, surgery, urology, orthopedics, eye, and ENT departments, Creation of a helipad and airstrip to enhance emergency patient transfers.
- **Cardiology Expansion:** By mid-2025, the development of modern cardiac services—including a catheterization lab—was underway, in coordination with the Rawalpindi Institute of Cardiology.

3. Field Hospitals & Mobile Clinics

- **Mobile Healthcare Delivery:** To extend healthcare access across Murree and surrounding areas, especially in remote zones, the Punjab government has been deploying field hospitals and clinic-on-wheels setups.

4. Basic Health Units (BHUs) & Rural Health Centre (RHC)

- **BHUs:** There are 14 BHUs across Murree's union councils. While they offer ambulatory and some gynecological services, many suffer from uneven staffing and lack 24-hour doctor availability.
- **RHC Phagwara:** Serving over 8,000 people, this center is plagued with staff shortages (e.g., lab technicians, sweepers), faulty X-ray equipment, and lacking essential hygiene and maintenance.

5. Combined Military Hospital (CMH), Murree

- **Facility Type:** A Class-C military-run hospital, part of the Pakistan Army Medical Corps network.
- **Role:** Primarily serves military personnel and their families, but may offer emergency and referral services to civilians when necessary.

6. Family Health & Welfare Services

- **According to Punjab's Population Welfare Department, Murree hosts:** A Family Health Clinic at the THQ Hospital, A Family Health Mobile Unit, and Several Family Welfare Centers in Murree, Ghora Gali, Phaphreel, Gulehra Gali, Phagwara, Manga, and a CMH facility—catering to population outreach and maternal-child health needs.

5.11 Major Parks and Environmental Facilities in Murree

There are Following worth mentioning Major Parks and Environmental Facilities in Murree

1. **New Sozo Adventure Park**

   A jungle-themed amusement park located in Lower Topa (approx. 12 km from Murree), offering a wide array of rides such as water slides, swings, jumping castles, ziplines, and more. Ideal for families and thrill-seekers alike.

2. **PIA Park Murree**

   Located on Club Road, Bagh Shaheedan in Murree Cantt, this well-maintained public park features walking trails, children's playgrounds, picnic zones, beautiful seating areas, and charming artificial animal sculptures. No entrance fee—widely appreciated for its serene and accessible environment.

3. **Murree Wildlife Park (Bansra Gali)**

   A small zoo nestled along Ghora Gali Road, home to animals such as tigers, bears, deer, and various birds. Also features a play area for children—great for a family outing focused on wildlife viewing.

4. **Bagh Shaheedan**

   A scenic park near Club Road, offering natural landscapes of pine forests and trails that are excellent for leisurely walks and picnicking.

5. **Sangrela Park / Natural Water Park**

   Set beside a flowing stream and surrounded by pine forest, Sangrela offers a natural water-themed experience. Visitors can enjoy picnics, playgrounds, and minimal entry charges. Ideal for families seeking a tranquil, nature-immersed outing.

6. **Pindi Point**

   A scenic viewpoint just a 15-minute walk from Mall Road, known for panoramic hills views and a chairlift ride to Bansara Gali (1.5 km). Includes cafes and children's play areas.

7. **Kashmir Point**

   One of the highest viewpoints (around 7,500 ft), accessible via Mall Road. Offers sweeping views of Kashmir mountains and features the Murree Safari Train, a 20-minute tourist train ride passing GPO area, adding a nostalgic charm.

8. **Patriata (New Murree)**

   About 15 km from Murree, this hill station offers a gondola cable car and chairlift system that delivers stunning treetop views. The highest area of Murree, it's great for panoramic sightseeing and nature immersion.

9. **Bhurban**

   Situated approximately 11 km from Murree, Bhurban features luxurious resorts (like PC Bhurban), beautiful golf courses, and tranquil green landscapes. A favorite among honeymooners and those seeking high-end comfort in nature.

10. **Ayubia National Park & Lalazar Safari Park**

    A lush forest reserve with biodiversity, hiking trails, and wildlife viewing opportunities. Lalazar Safari Park, located within the park at around 9,000 ft in Nathiagali, houses rare species such as snow leopards and various birds, serving as both a wildlife sanctuary and a summer resort.

11. **Nathiagali & Dunga Gali Pine Line Track**

    Nearby hill stations offering serene hiking trails. The Pine Line Track is approximately 4 km of peaceful walking bordered by dense pine forests and beautiful landscapes—perfect for nature lovers and light adventurers.

12. **Historic & Cultural Spots**

    Mall Road: The vibrant center of Murree, full of shops, eateries, and local handicraft vendors—great for

casual walks and immersive shopping.

Murree Museum & Art Galleries: Located near Mall Road, they provide cultural and historical insight through colonial-era exhibits and local artistry.

CHAPER # 6

POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Chapter 6: POTENTIAL ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Assessment of impacts depends on the nature and magnitude of the project/ activity being undertaken, as well as the type of environmental control measures that are envisaged as part of the project proposal. The potential impacts of the project have been identified and assessed based on the type and scale of the various activities associated with this project. This section discusses the project's potential environmental impacts on the area's geomorphology, soil, water resources, air, biological resources, and socioeconomic conditions and, where applicable, identifies mitigation measures that will reduce, the adverse impacts.

6.1 Identification of Potential Environmental Impacts

In the first step, potential environmental impacts of the project are identified by desktop work using checklists, professional judgment, published literature on environmental impacts of similar projects, and standard environmental guidelines. Potential impacts are also identified through discussion with project proponent, and consultation with stakeholders and community to identify their concerns. The main aspects associated with potential environmental impacts are as follows: -

i. Ambient Air Quality
ii. Waste water and Solid waste
iii. Noise pollution
iv. Ecology of the area, including flora and fauna
v. Soil Contamination and Erosion
vi. Air Emissions (Dust and Particulate Matter)
vii. Solid Waste Generation and disposal

6.2 Environmental Impacts Assessment Criteria

The potential impacts of the Project are evaluated based on the following criteria:

The current baseline conditions and the anticipated changes in environmental parameters are likely to be affected by Project. Whether any impact will violate applicable Punjab Environmental Quality Standards (PEQS).

6.3 Methodology for Impact Assessment

The impact assessment methodology defines three levels of consequences (or severity) and likelihood (chance of occurrence) i.e. Low, Moderate/Medium, or High.

The significance of an impact is determined based on the level of consequence and likelihood of the impacts.

Table 6.1 Methodology for Impacts Assessment

Sr. No	Level	Severity of Impact (Results)	Likelihood
1.	High	• Significant or catastrophic harm to the local and regional environment. • A serious threat to the company's reputation, profitability, and overall ability to operate.	• Measurable harm to the environment. • Potential impact on reputation and costs. • Decreased operational efficiency
2.	Moderate	• Measurable damage to the environment Potential to affect reputation/cost Reduced efficiency	• Moderate likelihood of occurrence throughout the operational lifetime. Periodic or occasional aspects of the • operations.
3.	Low	• Negligible damage to the environment No risk to business	• Unlikely to occur during lifetime of operation.

The impacts are classified based on their spatial distribution, i.e. local when impacting an area of approximately 1 km radius from the project area, moderate spread, when impacting an area of 1 to 2 km radius, and regional beyond 2 km.

The impacts are classified as short-term, moderate-term, and long-term in terms of their existence on a temporal scale. Impacts with less than 1 year of existence as short-term term, while those with 1 to 3 years as moderate term and more than 3 years as long term.

The negative impacts are termed as adverse impacts while positive impacts as beneficial. The significance of the environmental impacts of various involved activities has been evaluated based on the following criteria

Table 6.2: Impacts Significance

Sr. No	Impacts Significance	Criteria
1.	Long Term	When the impact is of high intensity with high spread and high duration.
2.	Moderate Term	When the impact is of moderate intensity with high moderate spread and high-moderate duration.
3.	Short Term	When the impact is of low intensity but with moderate spread and moderate duration.
4.	Insignificant	When the impact is of low intensity, low spread, and low duration.
5.	Beneficial	When the Impacts are Positive.

6.4 Environmental Mitigation Measures

6.4.1 Change in Project Site

The said project has been planned in vacant area and no population is present on and near the project site. Hence, there is no need to change the site of the project. Further, the project proponent has planned his project in the vacant area of low fertile land to save the expensive and precious land of district Murree.

6.5 Improved Management and Monitoring Practices

Improved management practices will be done to keep the project's surrounding environment within safe limits in terms of air and water quality. Environmental monitoring will be conducted as per requirements of environmental laws and Regulations.

6.6 Compensation in Money Terms

There is no damage to flora, fauna, or any other resource, hence compensation in money terms is not needed.

6.7 Replacement/ Relocation/ Rehabilitation

The said project is small sized and it is planned at a vacant area and there is no population, or natural resource. So, replacement, relocation, and rehabilitation are not required.

6.8 Potential Environmental Impacts associated with Project Location

i. The proponent has selected a site for his project which is vacant area.
ii. There is no community or human settlement on the project site.
iii. There is no flora & fauna (particularly belonging to an endangered species) at the project site.
iv. There is a good road network in the area of project.
v. There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, or any structure of socio-cultural significance (historical or archaeological site or religious structures.

It can be safely concluded that the selected site is best suited for the project, and will not pose any adverse environmental impacts.

6.9 Potential Impacts associated with Construction Phase of project and Mitigation Measures

Potential Environmental and Socio-Economic Impacts associated with the construction phase of project, are following:

i. Air Pollution (Dust and Particulate Matter)
ii. Waste water
iii. Noise pollution
iv. Ecology of the area, including flora and fauna
v. Soil Contamination and Erosion
vi. Solid Waste Generation and disposal

Impacts of Air Pollution

Dust emissions from land clearing, construction activities, and movement of machinery and vehicles may affect local air quality.

Mitigation Measures:

- Water sprinkling on active construction sites.
- Covering of construction material during transport and storage.
- Regular maintenance of vehicles and machinery to minimize exhaust emissions.

6.10 Impacts of Noise Pollution

Increased noise levels from construction machinery and equipment may disturb nearby residents and workers.

Mitigation Measures:

- Use of noise-suppressing equipment and proper mufflers.
- Limiting construction activities to daytime hours.
- Provision of personal protective equipment (PPE) like earplugs to workers.

6.11 Impacts of Solid Waste Generation

The project is not likely to generate any kind of solid waste. The raw material of Construction Phase like cement sand, aggregate and steel are all expensive items. There is no likelihood of their wastage.

The potential environmental impacts of the project and respective mitigation measures are summarized as under.

6.3 Environmental Impacts & Mitigation Measures

Potential Impacts	Mitigation Measures
Construction Phase	
Solid Waste	
• Solid waste shall be generated in the form of excavation waste, broken bricks, waste concrete material, steel trimmings, etc.	• All types of waste shall be kept segregated. The waste shall be managed regularly. • The construction waste shall be disposed of through construction waste contractors. The recyclable part of the waste shall be sold to the recyclers.
Air Pollution	
• Particulate matter may arise due to excavation and movement of off- road and on-road vehicles during transport of construction materials such as sand, aggregate, etc. • Cutting, grinding and welding may cause noise pollution. • Off-road or on-road vehicles may also cause exhaust pollution.	• Construction contractor shall be directed to ensure using well-conditioned and well-tuned vehicles and equipment. • Contractor will ensure Sprinkling of water on the exposed surfaces. • Contractor will Cover all trucks loaded with sand and other such lose construction materials. • Regular sweeping of roads and parking areas shall be ensured to avoid deposition of dirt /dust. • Contractor will ensure use of appropriate masks by workers to prevent entry of dust in their breathing system.
Noise Pollution	

• Operation of construction machinery and equipment may be a source of noise pollution. • Cutter's grinders and welding activities may also cause noise. • Movement of off-road or on-road vehicles may generate noise	• The Project proponent and contractor will ensure that all vehicles are well maintained. • Contractor will ensure use of ear plugs by workers to prevent entry of noise in their ears.
Occupational Health & Safety	
• Cutting, grinding, welding operations may operate metal dust	Contractor will ensure use of personal protective equipment by respective workers.
Socioeconomic Impacts	
• Disturbance to local population • Jobs for locals	• The construction labor shall be advised to respect the local culture and moral values. • Locals shall be preferred for job as far as possible according to their competence/ education/ skills.

Operational Phase	
Solid Waste	
• Improper disposal of solid waste may create adverse Environmental Impacts.	• Since the project is a small sized Multi-Storey building to be used for accommodation of Tourists, hence there is no likelihood of generation of any toxic solid waste. • Insignificant quantity of municipal solid waste generated during operational phase of project will be handed over to Municipal Corporation for its safe disposal.
Air Pollution	
• The project may generate smoke if generators are used for meeting power requirements.	• There is no any such operation/Activity during operational phase of project which may generate air pollution. • The project proponent has planned to meet power requirements of the project (Multi-Storey Building) from National Grid/WAPDA line only.

CHAPTER # 7

STAKEHOLDERS CONSULTATION

CHAPTER NO 7: STAKEHOLDERS CONSULTATION

Stakeholders' consultation refers to the process by which the concerns of relevant persons/ departments who have a plausible stake in the environmental impacts of the project or activity are ascertained to consider all the material concerns in the project or activity design as appropriate.

Impact assessment surveys and stakeholders' consultation sessions were held with different stakeholder's groups to take their comments/views proposals. The objectives of this process were to:

- **i.** Share information with Stakeholders on said project installation and operation
- **ii.** Share the impacts on the physical, biological, and socioeconomic environment
- **iii.** Understand stakeholders concerns regarding various aspects of the project
- **iv.** Collect valuable suggestions from the stakeholders to improve the said project design
- **v.** Understand the perceptions, assess social impacts, and concern of the people/communities of the project area
- **vi.** Raise the awareness level and identify any issues for the implementation of the said project
- **vii.** Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- **viii.** Disclose information of contact offices/officers for any complaints/queries

7.1 Objectives of Consultation

Stakeholders' consultation plays a vital role in ascertaining the impacts of the said project on stakeholders in the successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. The involvement of stakeholders is essential, as it leads to better and more acceptable decision-making. The overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those that are not known or are specific to the project. Discourse from many who have thoroughly observed the site conditions in the pre-development phase goes a long way in updating knowledge and understanding.

7.2 Identification of Stakeholders

All the people who are directly or indirectly affected or concerned with the project are the stakeholders. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted. They are the key players including; shops, public and government offices, schools, hospitals, hotels, and

NGOs. Not only published material and other literature was obtained but also the views and concerns of stakeholders were noted.

7.2.1 Environmental Impact on Direct Stakeholders

No disturbance in the local community is being foreseen due to the Construction of the said project as the project is located in open land area. No property loss is being envisaged due to the construction of said project.

7.2.2Environmental Impact on Indirect Stakeholders

The indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the said project, the residents around the project area will get an opportunity to be employed. So, in the early development stages and during the operational phase, people of surrounding communities will be benefited. Indirect respondents include;

i. Government agencies responsible for dealing with the project-related activities.
ii. Government Agencies involved in the execution and monitoring of the said project.
iii. Government departments such as TMA and the Planning & Development Department, working on other development activities are considered indirect stakeholders.

7.3 Consultation Process

Information disclosure, public consultation, and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies. Surveys are carried out to investigate physical, biological, and socioeconomic resources falling within the immediate AOI of the project.

7.4 Objectives of Meetings with the Stakeholders

i. Share information with stakeholders on the said project and expected impacts on the community in the vicinity of the project.
ii. Understand stakeholders' concerns regarding various aspects of the project, including existing conditions, and the likely impacts of construction and operation activities.
iii. Provide an opportunity to the public to influence the project design positively.
iv. Obtain local and traditional knowledge, before decision making.
v. Increase public confidence in the proponent, reviewers, and decision-makers.
vi. Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions.
vii. Dissemination of information through discussions, education, and liaison with stakeholders.

viii. Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders.

ix. Incorporation of public concerns and their solutions in the EIA; and eliciting their comments and feedback.

x. Create a sense of ownership of the project proposal in the minds of the stakeholders.

7.5 Consultation with Local Community

The response of various stakeholders in the population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to the creation of possible impacts, adverse impacts, and beneficial impacts, including; employment opportunities, income generation activities, change in living standards, and provision of the amenity. The various rounds of public meetings and consultations were arranged in the project and study area.

7.6 Summary of Views, Concerns, and Suggestions

The summary of socioeconomic concerns and problems highlighted by different persons have been mentioned here:

i. Removal of shrubs and trees should be avoided to the extent possible.

ii. The project will become a source of income for some locals to earn their livelihood easily and honorably.

iii. Employment opportunities should be provided to the locals.

iv. Water sprinkling should be done regularly during the construction phase of project avoid dust emissions.

v. Good relations with the local communities should be promoted by encouraging the Contractor to provide opportunities to the locals against skilled and unskilled positions.

vi. The contractor should prefer hiring local labor from adjacent nearby villages.

vii. Indigenous trees around the facility should be planted to control air pollution and improve the aesthetic conditions of the area.

7.7 Pics of the Project Site

Pics of the Project Site

CHAPTER # 8

ENVIRONMENT MANAGEMENT & MONITORING PLAN

CHAPTER 8: ENVIRONMENT MANAGEMENT & MONITORING PLAN

This chapter provides Environmental Management and Monitoring Plan (EMMP) of the project for its construction and operation phases to keep its environment benign and to ensure compliance of Punjab Environmental Quality Standard (PEQS). This section underlines the monitoring framework for both construction and operational phases to check compliance of Monitoring Plan and to take timely actions for correction.

Components of Environmental Management and Monitoring Plan

The EMMP consists of the following:

i. Environmental Management Plan
ii. Environmental Monitoring Plan

8.1 Environmental Management Plan

This Environmental Management Plan (EMP) has been prepared specifically for the construction phase of a medium-sized Multi-Storey building. This plan addresses environmental impacts, mitigation measures, and monitoring strategies typically associated with Multi-Storey building construction activities.

1. Objectives of the EMMP

- Prevent environmental degradation during construction phase.
- Ensure compliance with environmental regulations and permits.
- Protect community health and safety.
- Reduce waste, emissions, and disturbances.

Table 8.1: Different activities of Project & Potential Environmental Impacts (Construction Phase)

Sr. No	Activity	Potential Environmental Impacts
i.	Site clearing / excavation	Dust, noise, erosion, habitat loss
ii.	Material storage	Soil/water contamination, visual blight

iii.	Construction waste generation	Land pollution
iv.	Concrete mixing	Water pollution, dust
v.	Equipment operation	Air/noise pollution, fuel spills
vi.	Worker camps	Sanitation issues, solid waste
vii.	Transportation	Traffic congestion, dust emissions

2. Mitigation Measures

Environmental Issue and Mitigation Action

i. Air Pollution (Dust, Emissions):

- Regular water sprinkling on dusty areas
- Cover trucks carrying sand/soil
- Maintain construction machinery to reduce emissions

ii. Noise Pollution:

- Operate machinery only during designated hours
- Use silencers and barriers
- Provide PPE to workers

iii. Water Pollution:

- No discharge of wastewater into open drains
- Treat concrete slurry before disposal
- Temporary drains for storm-water

iv. Soil Contamination:

- Use impervious sheets under fuel and chemical storage
- Avoid leakage/spills of cement or diesel

v. **Waste Management:**

- Segregate solid waste (construction debris, packaging, scrap metal).
- Reuse and recycle solid waste where possible.
- Dispose of non-recyclables through licensed contractors.

vi. **Vegetation Clearance**:

- Avoid unnecessary tree removal
- Replant trees after construction work

vii. **Traffic & Community Disturbance:**

- Use designated entry/exit routes.
- Place warning signs and employ flagmen.
- Schedule material deliveries during off-peak hours.

Table 8.2: Monitoring Plan (Construction Phase)

Sr. No	Parameter and Method	Frequency	Responsible Person
i.	Dust levels	Visual observation / dust meters (Monthly)	Site Supervisor
ii.	Noise levels with Noise meter (dB)	Monthly or during complaints	do
iii.	Waste disposal records	Logbook / Receipts (Monthly)	do
iv.	Water use / discharge	Metering / visual inspection (Monthly)	do
v.	Fuel/chemical storage	Leak checks / visual inspection (Monthly)	do
vi.	Tree cutting / afforestation	Record keeping and site checks	do

Table 8.3: Different activities & Potential Environmental Impacts

Sr. No	Activity	Potential Impact	Significance
i.	Energy use (AC, lighting)	GHG emissions	Low (Project is small sized)
ii.	Water use (showers, laundry)	Depletion of freshwater	do
iii.	Wastewater discharge	Water pollution	do
iv.	Solid waste (kitchen, rooms)	Land pollution, odor	do
v.	Chemical use (cleaning)	Toxic exposure	do
vi.	Construction/renovation	Dust, noise,	Temporary

Table 8.4: Mitigation Measures

Aspect	Mitigation Measure
Energy	Use LED lighting, solar panels, energy-efficient appliances, and motion sensors. Train staff on energy-saving practices
Water	Install low-flow fixtures, water reuse systems for gardening, guest awareness campaigns on water conservation.
Wastewater	Install septic tank or small-scale STP (Sewage Treatment Plant). Regular maintenance and proper sludge disposal.
Solid Waste	Segregate waste (organic, plastic, glass, hazardous). Compost organic waste; partner with recycling vendors.
Chemicals	Use eco-friendly cleaning products. Train staff in safe use and storage. Maintain proper labeling.

Air Quality	Regular HVAC maintenance. No burning of waste. Landscape to improve air quality.

Table 8.5: Environmental Monitoring Plan

Sr. No	Parameter	Method	Frequency	Responsible
i.	Wastewater quality	Lab testing (BOD, COD, TSS)	Quarterly	Facility Manager
ii.	Indoor air quality	CO_2 sensors / visual checks	do	do
iii.	Noise levels	dB meter	do	do
iv.	Waste segregation	Visual inspection, records	do	do
v.	Water consumption	Water meter	do	do
vi.	Energy consumption	Meter reading	do	do

Table 8.6: Annual Environmental Budget

Sr. No	Components	Estimated Cost
1	Environmental Monitoring	Rs. 3,00,000/-
2	Training of staff for better Environmental Management	Rs. 200,000/-
3	Land preparation and Tree Plantation	Rs. 200,000/-
4	Watering and maintenance of trees/landscape	Rs. 3,00,000/-
	Total	**Rs.10,00,000/- Rs.1.00 Million**

CHAPTER # 9

CONCLUSION AND RECOMMENDATIONS

Chapter 9: CONCLUSION & RECOMMENDATIONS

9.1 Conclusion

The EIA findings showed that the project design highly suitable and it is based on the current best practices and the available technology. The project is feasible and desirable from the perspective of environmental and social-economic evaluation undertaken in this study. The overall benefits of the proposed development are higher than the potential cost of the marginal negative environmental changes which are likely to occur. The proposed project is desirable because it will contribute in the socio-economic status of the people in the area. It will create employment and deliver other socioeconomic benefits.

The baseline environmental assessment of the proposed project site indicates that the site selected for the project does not contain any endangered species of flora. The EIA establishes that the proposed project design is far more suitable than the **No Project Option.**

The project Design shall ensure environmental protection and safety of workers. It will also fulfill the requirements of Regulatory Authority i.e. EPA Punjab.

Based on an overall assessment of the environmental impacts of the project, it is concluded that the project is not likely to cause any significant adverse impacts on the social, physical, and biological environment of the area.

9.2 Recommendations

Following are recommendations to make this project more Environmentally Friendly.

i. Implementation of EMP must be given priority.
ii. Proper PPEs including gloves should be provided to workers during Construction phase of project.
iii. Workers must be directed to follow SOPs.
iv. No compromise on public health and the environment should be allowed during Construction and Operational phase of project.
v. Proper tree plantation should be done to support the environment and air quality of the area.
vi. Waste storage bins should be installed at different points for proper waste collection and disposal.
vii. The Security Guards shall be trained to provide necessary support in case of any emergency situations.
viii. The fire alarms should be installed to signal the evacuation in case of any emergency.
ix. Proper, communication systems in an effective manner shall be made with hospitals, emergency services, and police for urgent support.

In view of the findings of the EIA, the proposed project is considered an environmentally safe project.

It is recommended that Environmental Approval may be issued by the Punjab Environmental Protection Agency, in favor of this Project.

GLOSSARY

i. **Biodiversity:** The variety of all life forms on earth – different plants, animals, microorganisms, their genes, and the ecosystems they form.

ii. **Carbon Footprint:** The total amount of greenhouse gases emitted directly or indirectly by human activities, usually measured in carbon dioxide equivalents (CO_2e).

iii. **Climate Change:** A long-term change in the average weather patterns of the Earth, primarily caused by increased levels of greenhouse gases.

iv. **Conservation:** The sustainable use and management of natural resources to prevent exploitation, degradation, and destruction.

v. **Deforestation:** The clearing or thinning of forests by humans, often for agriculture, logging, or development.

vi. **Ecosystem:** A community of living organisms interacting with their physical environment (e.g., forest, desert, coral reef).

vii. **Emissions:** Substances released into the air, especially harmful gases such as CO_2, methane, and nitrogen oxides from industrial and vehicular sources.

viii. **Endangered Species:** Species that are at risk of extinction due to loss of habitat, environmental changes, or human activities.

ix. **Environmental Impact Assessment (EIA):** A process to evaluate the environmental effects of a proposed project or development.

x. **Fossil Fuels:** Natural resources like coal, oil, and natural gas formed from ancient organic matter, which release greenhouse gases when burned.

xi. **Global Warming:** An increase in Earth's average surface temperature due to the buildup of greenhouse gases in the atmosphere.

xii. **Green Energy / Renewable Energy:** Energy sources that are naturally replenished, like solar, wind, hydro, and geothermal power.

xiii. **Greenhouse Gases (GHGs):** Gases that trap heat in the atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases.

xiv. **Habitat Loss:** Destruction or alteration of the natural environment where wildlife lives, often due to human activity.

xv. **Pollution:** Contamination of air, water, or soil by harmful substances or waste.

xvi. Recycling: The process of converting waste materials into new products to reduce resource consumption and pollution.

xvii. **Renewable Resources:** Resources that can be replenished naturally over time, such as sunlight, wind, and biomass.

xviii. **Sustainability:** Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

xix. **Urbanization:** The process of increasing population in cities and towns, often leading to environmental stress and loss of natural spaces.

xx. **Zero Waste:** A philosophy that encourages the redesign of resource life cycles so that all products are reused, and no trash is sent to landfills or incinerators.

xxi. Environmental Protection & Industrial Pollution Control

xxii. **Afforestation / Reforestation:** Planting trees to create forests (afforestation) or restore degraded forest lands (reforestation), used as a pollution mitigation measure and carbon sink.

xxiii. **Air Pollution Control Devices:** Equipment used to reduce or remove pollutants from industrial exhaust gases. Examples include electrostatic precipitators, baghouse filters, and scrubbers.

xxiv. **Ambient Air Quality Standards (AAQS):** Limits set for the concentration of pollutants in outdoor air to protect human health and the environment. Enforced by national or regional regulatory bodies.

xxv. **Best Available Techniques (BAT):** The most effective and advanced stage in industrial technology and methods used to limit emissions and impacts on the environment.

xxvi. **Bio-remediation:** The use of microorganisms or plants to detoxify and restore polluted industrial sites (soil and water).

xxvii. **Continuous Emission Monitoring System (CEMS):** An automated system that provides real-time data on the pollutants released from an industrial source, helping ensure regulatory compliance.

xxviii. **Effluent:** Liquid waste or sewage discharged from an industrial facility into the environment, often treated before disposal.

xxix. **Effluent Treatment Plant (ETP):** A facility to treat industrial wastewater and remove harmful contaminants before it's discharged into water bodies or reused.

xxx. Environmental Compliance: The act of adhering to environmental laws, regulations, standards, and permits applicable to an industrial operation.

xxxi. **Environmental Management System (EMS):** A framework that helps an organization achieve its environmental goals through consistent control of its operations, often ISO 14001 certified.

xxxii. Hazardous Waste: Waste materials from industrial processes that are dangerous to health or the environment and require special handling and disposal.

xxxiii. **Noise Pollution:** Unwanted or harmful industrial sound that disrupts the surrounding environment or human well-being, controlled through barriers, enclosures, or silencers.

xxxiv. **Particulate Matter (PM):** Fine dust or tiny particles released from industries that can cause respiratory and cardiovascular problems; controlled using filters and scrubbers.

xxxv. **Pollution Control Board (PCB):** Statutory authorities (like State Pollution Control Boards or CPCB in India) responsible for monitoring and enforcing environmental regulations in industries.

xxxvi. **Resource Recovery:** The process of reclaiming usable substances or energy from industrial waste streams, such as waste-to-energy or metal recovery from slag.

xxxvii. **Scrubber:** A device used in industries to remove particulates and/or gases (e.g., SO_2) from industrial exhaust using water or chemical solutions.

xxxviii. **Solid Waste Management:** Systematic control of the collection, treatment, and disposal of industrial solid waste, including recycling and landfilling.

xxxix. **Stack Emissions:** Pollutants released into the atmosphere through chimneys or stacks of industrial plants; subject to regular monitoring and standards.

xl. **Sustainable Industrial Practices:** Approaches that reduce environmental impact by using energy-efficient processes, clean technology, waste reduction, and closed-loop systems.

xli. **Water Pollution Control:** Measures taken to prevent or reduce contamination of water bodies from industrial discharges, including effluent treatment and zero liquid discharge (ZLD) systems.

xlii. **Zero Liquid Discharge (ZLD):** A wastewater treatment approach in which all industrial wastewater is purified and reused, eliminating any discharge into the

xliii. Environment