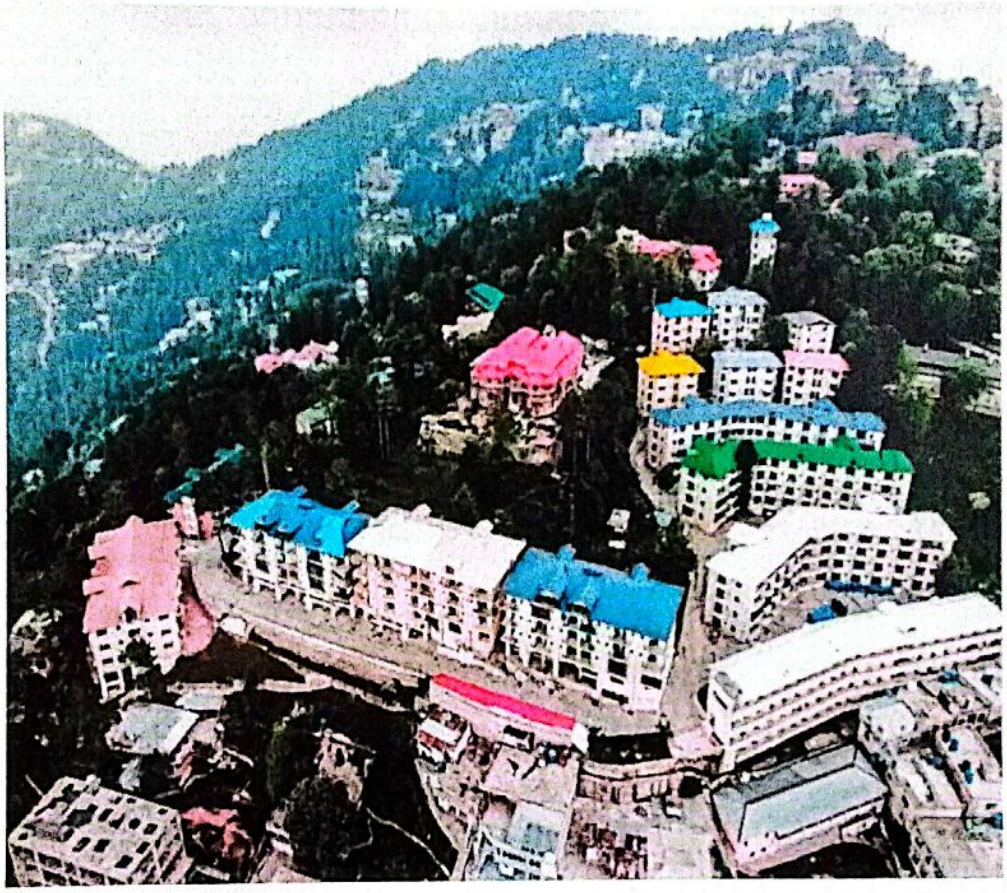
F-215 (EIA)-23

Environmental Impact Assessment Report of the Project "Bhurban Pine Residencia apartments"



Dated: 21TH August 2023

Client: Aviatek Builders & Developers

Consultant: Grow Green Environment Consultancy, 12/73 Vaishno Street, Shamnagar, Chauburji, Lahore

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Executive Summary

This executive summary presents an overview the main findings of the Environmental impact assessment (EIA) report for Bhurban Pine Residencia, Mouza **Mora Aswaal**, Murree apartments G+2 building

Proponent/Chief Executive Details:

Name: Maj. Ret. Azhar Iqbal

Designation: owner.

Head Office: M/S **Aviatek Builders & Developers** establishing **Bhurban Pine Residencia apartments**

Project Site: Moza Mora Aswaal, Bhurban Pine, short of Kashmiri Bazar, Murree.

The proponent is well known developer and builder who is going construct ground plus two apartment building with 78 apartments.

1. **Consultants Description:**

Grow Green Environment Consultancy (GGEC) comprising of professionally competent staff have experience of situational analysis of environmental issues and managing it. They also have a rich experience of preparing and reviewing IEE for housing schemes. Grow Green Environment Consultancy has prepared this Environmental Impact Assessment (EIA).

Mr. Usman ul Haq, Chief Executive, GGEC

Address: 12/73 Vaishno Street, Shamnagar, Chauburji, Lahore,
Cell # 0300-4626266, Whatsapp No.0323-4104253

E-mail: usmanulhaqad@gmail.com

Salient Features of the Project:

2. **Title:** Bhuban Pine Residencia
3. **Location:** **Moza Mora Aswaal, Bhurban Pine, short of Kashmiri Bazar, Murree.**

Description: The project is based on the concept of apartments ground plus 2 (G+2).

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The project site comprises of 10 kanal in the area of Mauza Mora Aswaal Tehsil and district Murree. The project is planned to facilitate the tourists as well as residents which will comprising of residential units of various sizes, apartments and allied infrastructure.

The summary of the area and plats plan is given below:

4. **Cost:** approximately Rs. 400 million
5. **Area:** The project will spread over an area of 10 Kanal.

6. **A Brief Outline of the Proposal;**

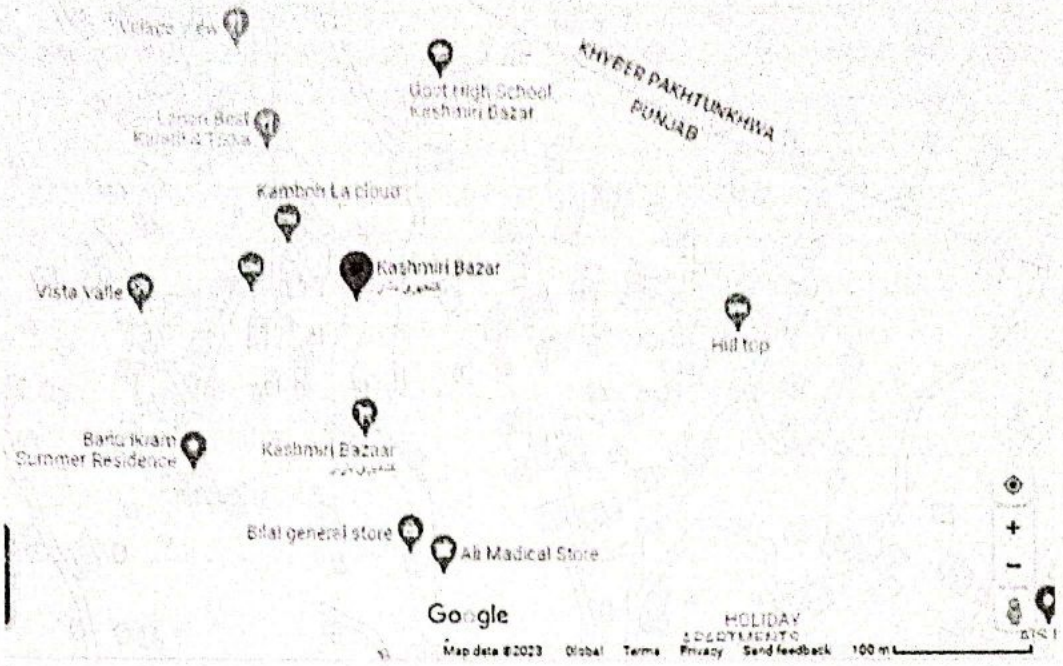
It is project of construction of a ground plus two building namely Bhurban Pine Residencia apartments. The project site comprises of 10 kanal in area of Mauza Mora Aswaal Tehsil Murre and district Rawalpindi. The project is planned to facilitate the tourists as well as residents which will comprising of residential units of various sizes, recreational activities, restaurants with served apartments and allied infrastructure. Total area of the plot is 54524 sq.ft. 50 percent allowed usable area is only 27262 sq. ft. Total allowable covered area of all floors is 109048 sq. ft. total covered area at all levels is 95132 sq. ft. Total number of units will be 78 in two blocks One unit has covered area of 1100 sq. ft.

The project has planned parking capacity of 78 cars as well to facilitate the tourists coming on their own cars. Covered area at level 6550 feet 14399 sq. ft. Building (Block) A has less area and 24 units will be constructed whereas building (Block) B will have 54 units.

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SCHEDULE OF AREAS	
TOTAL PLOT AREA	54524 SFT.
FLOOR	COV. AREA
COVERED AT LEVEL +6550	14,399 SFT.
COVERED AT LEVEL +6560	10,010 SFT.
COVERED AT LEVEL +6570	14,399 SFT.
COVERED AT LEVEL +6580	22,162 SFT.
COVERED AT LEVEL +6590	22,162 SFT.
COVERED AT LEVEL +6600	7,699 SFT.
COVERED AREA OF 1 UNIT	1100 SFT.
TOTAL COVERED AREA	90,831 SFT.
NO. OF UNITS IN BUILDING A	24
NO. OF UNITS IN BUILDING B	54
TOTAL UNITS	78
NO OF CARS	78

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The map and design of the respective site has been finalized while keeping all the environmental factors under consideration.

7. Existing Environmental Conditions;

For the purpose of this report, environmental and social baseline data and conditions at/around the project site has been studied. The data has been gathered from sources of information included consultation with project proponent, private visits, field surveys, desktop studies, existing information sources. Interviews with people near the project area has been conducted to collect their opinion regarding the proposed project and after finding it has been concluded that the project will not have any major adverse impacts on the socio-economic environment of the existing community. Moreover, the project will insert the positive impacts in terms of employment opportunities as it will create jobs during construction and operation and will contribute to the national economy by catering tourist in Murree. This project site does not involve large number of trees. A few trees exist on the site which will not be cut and adjusted on the vacant area

8. Major Impacts and Recommended Mitigation Measures

Keeping in view, all the findings of the baseline study, and through general observation and desktop study, and understanding of the activities and processes involved in the project, environmental impacts have been anticipated. Following

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impact assessment methodology; i.e. defining the criteria for evaluation of the impacts, identification of mitigation measures (all possible options), evaluation of the residual impacts and identification of the monitoring requirements, identification of reversible and non-reversible impacts, adequate and effective mitigation measures have been proposed for all construction and operation related likely environmental impacts of the project. These mitigation measures have been proposed in order of attempts to eliminate or minimize the impact, provide some compensation or rehabilitate the environment by some means.

The criteria of classification of the impacts as being important, middle or weak are according to:

1. Size and geographical extent
2. Duration and Frequency
3. Reversibility
4. Ecological context

Key impacts related to the construction phase include:

1. Construction Noise
2. Solid Waste
3. Soil Contamination
4. Air Pollution
5. Community and Workers' Safety
6. Employment Conflicts

Anticipated impacts associated with the construction phase, however include noise (machine noise and vehicular noise), air emissions from earthwork and construction machinery and vehicles, and soil contamination due to leakage from or accidents of the construction or transportation vehicles or during on-site refueling, solid waste from construction, municipal water uses and safety of the workers and employment conflicts as the major adverse environmental impacts.

Mitigation measures recommended to be incorporated into the project include running the machines and vehicles on good quality (low-sulfur) fuels in good working order ensuring regular maintenance, tuning and servicing, and providing them with emission control devices, such as mufflers and silencers, etc.

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Water suppression and covered transportation and storage of the construction materials and slow driving on unpaved roads will control dust emission. Regular testing for leakage detection will also be ensured. Solid waste of construction and demolition activities will be used for flooring, while the remaining solid waste will be managed as per TMA practices in the area. For community safety, irrelevant persons will not be allowed inside. Safety of the workers will be ensured by developing SOPs for all jobs, training the workers to follow SOPs, discouraging any careless attitude of workers and providing the workers with, and encouraging them to use PPEs.

Key impacts related to the operation phase include:

1. Compaction of the soil
2. Changing of lose and virgin soil into a multi storey building.
3. The nuisance of noise
4. Pumping of sub soil water.
5. Wastewater generation
6. Solid waste generation
7. Air pollution specifically dust emissions
8. Safety, public health issues
9. Obstructions caused to the public utilities and transportation system

This same characteristic of the proposed project i.e. location, will essentially help the project is controlling its transportation related issues as well. NO public utilities exist in the project area hence, damage to public utilities become less significant. The required water will be supplied from the TMA and additional water bores will be made if required. The water will be also used for domestic sprinkling on the pavements, plantations, lawns and access roads (i.e. kacha roads), if necessary. About 1.25 m^3 waste water will be generated from domestic activities will be collected in treatment system comprising of septic tanks. Plantation at large scale will be done to consume the CO2 generated from movement of cars in the residential area. Safety stairs, evacuation facilities, firefighting arrangements, and emergency preparedness will be taken care of properly. About 250 gm per capita of the municipal solid waste generated will be segregated at source in two color bins. One bin will be used for recyclables, other will be of non–recyclable. The segregated waste which is not recyclable will be dumped at the land fill site of TMA.

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9. Proposed Monitoring

Monitoring at the proposed sites has been conducted for ambient air, Noise level and water and the reports demonstrated that results are within the limits prescribed by PEQs (2016). The values of these parameters are present in baseline study of project. Monitoring of drinking water, waste water and noise levels will be regularly monitored and reported to EPA on bi - annual basis.

10. Environmental Management & Monitoring Plans

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities. These plans have been included in Chapter-6 of the report.

During construction, ambient air quality for dust level in particular, vehicle and equipment exhaust, noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. Monitoring Plan has been included in Chapter-6.

During operation phase, noise level, ambient air quality and exhaust of all the vehicles, needs to solid waste management, community and workers' safety need to be monitored.

11. Conclusion

After assessing the significance of potential impacts, the Grow Green Environment Consultants, have concluded that:

"If the planned project is conducted as proposed and described in this report and the recommendations, mitigation and environmental management measures are implemented, the project activity will not result in any short and long term impact on the local community and environment".

Therefore, the project "**Construction of Bhurban Pine Residencia Apartments** "does not have any major impact of the ecology of the Murree hills and hence, is recommended for Environment Approval and issuance of NOC from the EPA, Punjab.

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List of Acronyms

PEP Act	Pakistan Environment Protection Act 1997 (as regulated and amended).
EA	Environmental Assessment
EIA	Environment Impact Assessment
IEE	Initial Environmental Examination
RDA	Rawalpindi Development Authority
WASA	Water and Sanitation Agency
TMA	Tehsil Municipal Administration
EMP	Environmental Management Plan
ESMP	Environmental and Social Management Plan
IFC	International Finance Corporation
GOP	Government of Pakistan
NEQS	National Environmental Quality Standards
PC	public consultation
PNCS	Pakistan National Conservation Strategy
EPA	Environment Protection Agency
NOC	No Objection Certificate
NPO	No Project Option

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DOE	District Officer Environment
TSS	Total Suspended Solid
EPD	Environment Protection Department
Cfs	Cubic Feet per Second
dB (A)	Desi Bell on A mode of the analyzer
HSE	Health Safety and Environment
PEPA, 1997	Punjab Environment Protection Act, 1997

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CHAPTER-1

INTRODUCTION

1.0 BACKGROUND

Murree, a unique abode with lofty peaks towering above green pine covered slopes, also known as Malika-e-Kohsar, which means "the Queen of Hills", has become one of the prime tourist destinations in Pakistan. Pakistan's most popular hill station Murree is located along Islamabad-Kohala highway N75, some 30 km (19 mile) northeast of Pakistan's capital Islamabad in the Himalayan foothills at 33 54′ 30" north latitude and 73 26 east longitude as they ascend to the northeast towards Kashmir. Murree is one of the most visiting hill station of Pakistan. In recent years Bhurban and New Murree (Patriata), have also developed as a tourist center. The height of new Murree hills is about 2000 -3000 meter. Murree is one of the most visiting hill station of Pakistan.

For those who live downwards to it Murree is like a fantasy city. People from all over the country visit this beautiful hill resort to escape from the sweltering heat. Mountains covered with lush green trees, cold atmosphere, fresh air, beautiful valleys and most importantly clouds on the roads hugging you with full of happiness.

Murree town itself, built by the British colonial government soon after it captured this part of then India in 1850. Until 1876, Murree was the summer headquarters of the Punjab local government; after 1876 the headquarters were moved to Simla. Murree lies between Kashmir Point and Pindi Point. As the names suggest Kashmir point gives a panoramic view of snow laden Himalaya and Pir Panjal ranges in Kashmir while the Pindi point overlooks national capital Islamabad and sister city Rawalpindi. At Pindi Point one can enjoy ride on a Chairlift to three kilometers down to Bansra galli and enjoy a panoramic view of Hazara Mountains as well as Rawalpindi Islamabad. The city of Murree lies in seven-kilometer area between these two points. The most popular area in the hill station is the Mall Road spanning over about two kilometer in beautiful settings.

The Murree Hills are studded with different types of buildings, including many multistoried structures. Industrial buildings include sawmills, small-scale cottage

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operations and medium to large-scale multi-story poultry farms. There are also many shopping areas and a wide range of recreation facilities including golf courses that attract a large number of tourists. The number of houses in the area has increased partly due to the rise in local population and partly due to investments by government and private agencies in developing military colonies, offices, educational institutions, hotels and guest houses, and residential areas.

The number of tourists in the area has expanded quite significantly with the improvement of the roads and transport facilities. Current estimates indicate the presence of about 111,000 tourists in the area during the peak season. This number is expected to grow by 3.2 % per annum. Murree Hills are attracting increasing investment in real estate development activities. Due to the increase of number of tourists during peak season in Murree, has led to the shortage of apartments and guest houses. It has also been declared district **since 14 October 2022** by the provincial government which has increased the demand of apartments and houses for the tourists. All these factors have led to the construction of new commercial center and residential units to accommodate number of visitors in Murree.

Keeping in view the above situation, therefore **Aviatek Builders & Developers** has planned to develop a new project named as **Bhurban Pine Residencia apartments**. The project is planned to facilitate the tourists as well as residents which will comprising of residential units of various sizes, commercial center, apartments and allied infrastructure. Grow Green Consultant has been given the task to conduct environmental impact analysis before the commencement of the project and prepare an EIA in the light of the Guidelines published by the Federal Government in 1997.

1.1 PURPOSE OF THE STUDY

The purpose of this study is to identify the adverse environmental impacts of the project as presently foreseen and propose the applicable mitigation measures to be implemented during construction and operational stages of the project to minimize the negative impacts to fulfil the legal requirement of the project under section 12 PEPA, 2012.

To fulfil the social and legal binding upon **the proponent** for compliance of sectoral guidelines for environmental reports of housing estates and new town development, guidelines for sensitive and critical areas and National Environmental Quality Standards (NEQS) (**Annexure –I**).

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Section 12 of Pakistan Environment Protection Act of 1997 **(Annexure-II)** binds the developer (proponent) to submit an EIA report to a Provincial EPAs and get approval for construction and operation phase of the project in a manner prescribed in IEE/EIA Regulations 2022 and sectoral guidelines for environmental reports of housing estates and new town development.

According to the Punjab IEE/EIA Regulation 2022, construction of housing scheme and tourism development project and environmentally sensitive area project comes under schedule II where EIA is mandatory to be submitted to EPA before the commencement of the project. On the special instruction by DG EPA, Environment Protection Agency declared Kotli Sattian, Kahuta and Murree as environmentally sensitive area vide letter No. 304/56-G/LS/EPA dated 5th November, 2008.Keeping in view the environmental sensitive nature of Murree hills, all developers are required to submit Environmental Impact Assessment instead of IEE and get approval before commencement of construction.

This study identifies what are the officially notified protected areas in Pakistan and in the project area. These may include critical ecosystems including wildlife reserves and forests, archaeological sites, monuments, buildings, antiquities, or cultural heritage sites. The approach detailed in this guideline has been adopted.

To fulfil the legal obligations the project has been analyzed for possible positive and negative, social and environmental impacts and their abatement, for submission to EPA-Punjab, Lahore for issuance of Environmental approval under above said Regulation.

1.2 Justification

The number of tourists in the area has expanded quite significantly with the improvement of the roads and transport facilities. Other contributing factors include restricted international travel that has prompted many to spend vacations within the country, and improved national economy that has given a boost to domestic tourism. Keeping in this scenario proponent has planned to develop **Bhurban Pine Residencia apartments** for tourists.

1.3 Project proponent

The project proponent is M/S **Aviatek Builders & Developers** establishing **Bhurban Pine Residencia apartments** at **Moza Mora Aswaal, Bhurban Pine, short of Kashmiri Bazar, Murree.** The contact address of the proponent is as follows:

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The contact person will be:

Mr. Azhar Iqbal, Aviatek Builders & Developers,

Office No. 3, 1st Floor, Ace uptown tower 1,

E-11/2, Islamabad

1.4 Scoping session

The Punjab IEE/EIA Regulations 2022, Sectoral Guidelines for Housing estates and new town development, Policy and Procedure for filing, review and environmental assessments and guidelines for public consultation were key documents which served basis for scoping of an EIA. The concerned departments were visited and had discussions to chalk out the scope of the report.

District Officer Environment Rawalpindi is the key stake holder who has to make site inspection report which covers the scope of report and details of the site and its suitability. His office was visited. After detailed discussion with stake holders it was decided that format of the EIA given in the "Policy and Procedure for filing, Review and Approval of Environmental Assessments" is the final and report will be prepared on its format mentioned in section 2.3 of above mentioned document.

1.5 Environmental Assessment Team

Grow Green Environment Consultancy prepared this EIA. A team of experts comprising of experienced Environmental scientists, engineers and Ecologist paid visits to the project site. Discussions were held on project components and detail design parameters. Meetings were also held with Project Manager of Pearl Real Estate Holdings (Pvt) Limited for obtaining the basic information about site and aims and objectives of project. He provided the baseline data and necessary technical, administrative, and environmental information of the project. The following team of Consultants remained engaged for preparation of the Initial Environmental and social Examination Report:

1. Mr. Usman ul Haq, Senior Environmentalist and team leader

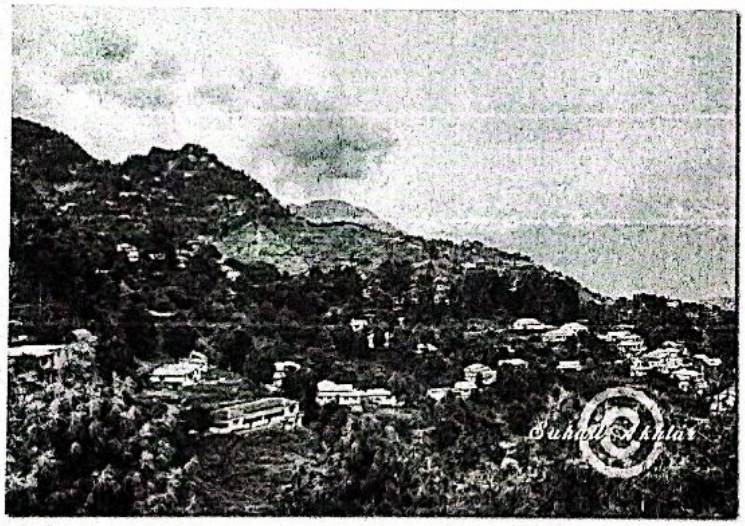
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2. Mr. Ejaz Naqvi, Environmentalist
3. Mr. Shafqat Saeed Farooqi, Environmental and field officer
4. Mr. Salahuddin, Field officer

1.6 NATURE, SIZE AND LOCATION OF THE PROJECT

1.6.1 Location

The proposed project is located at Moza Mora Aswaal, Bhurban Pine, short of Kashmiri Baazar, Murree. The proposed site for project had been already procured. The document of land is attached at **Annexure-III.** The location of the site is given below.



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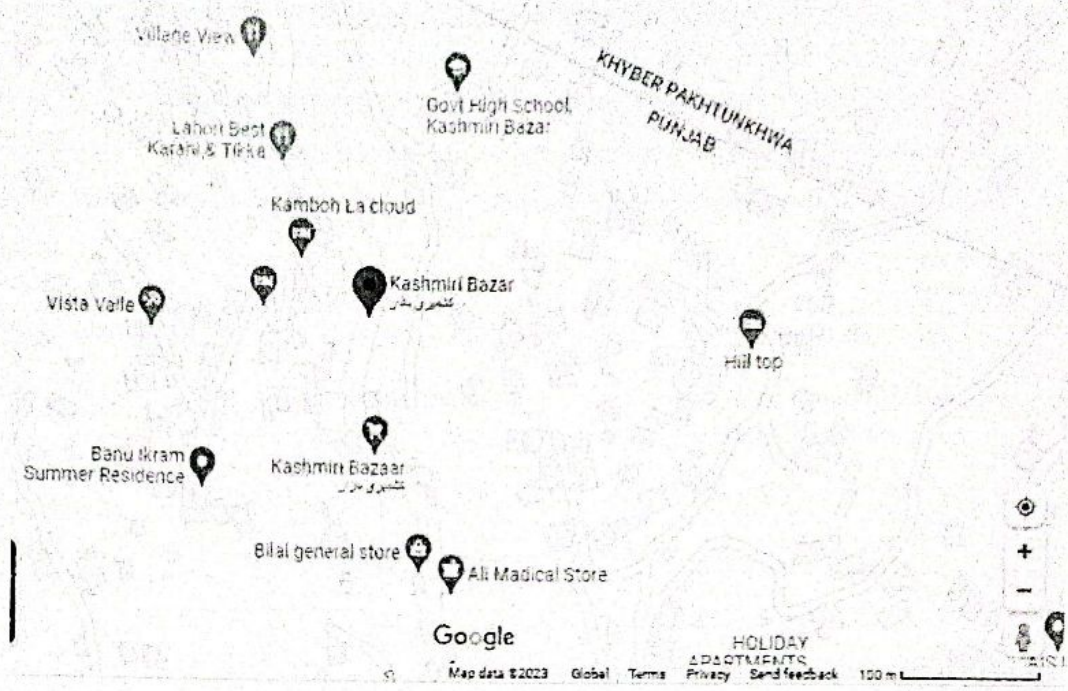
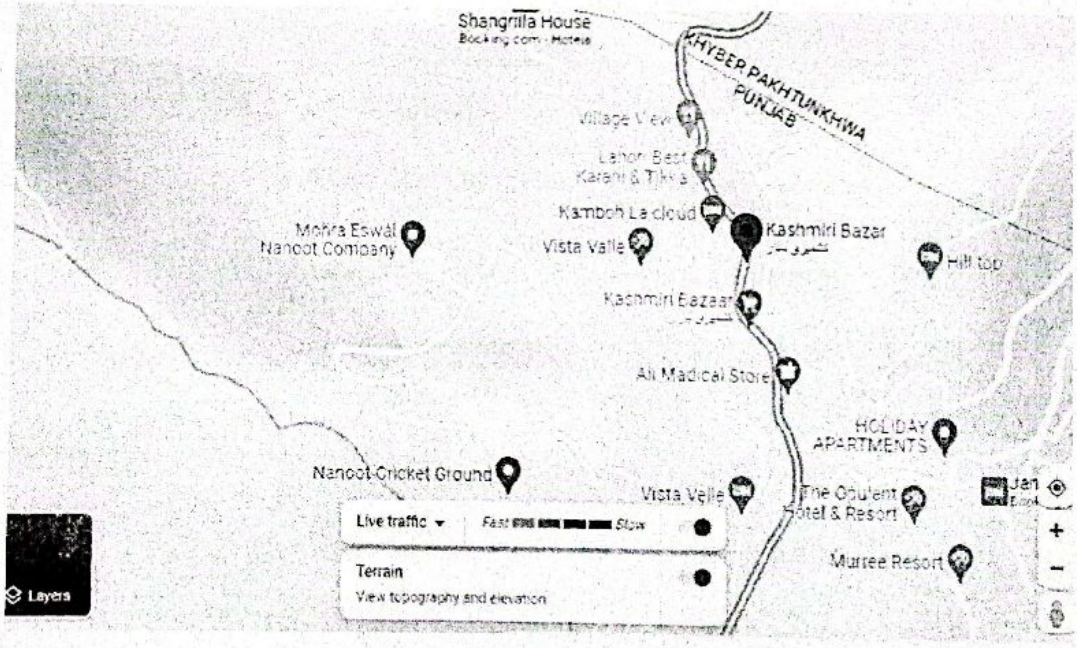


Figure 1.1 Location map of Bhurban Pine Residencia apartments



Design of the plant

1.6.2 Nature and Size

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The project is based on the concept of apartments ground plus 2 (G+2).

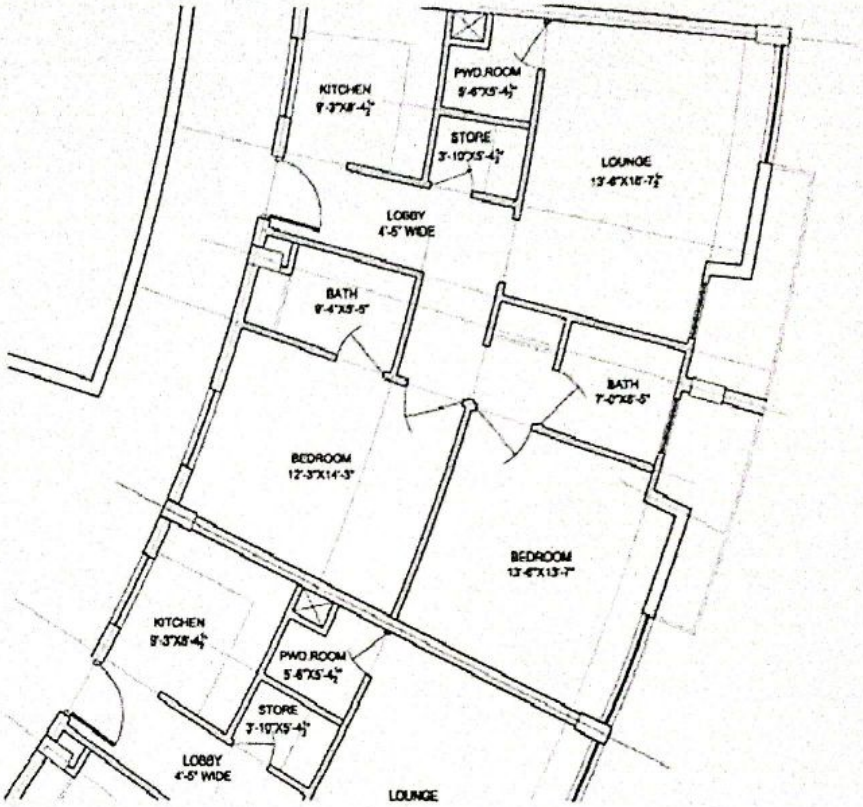
The project site comprises of 10 kanal in the area of Mauza Mora Aswaal, Tehsil and district Murree. The project is planned to facilitate the tourists as well as residents which will comprising of residential units of various sizes, apartments and allied infrastructure.

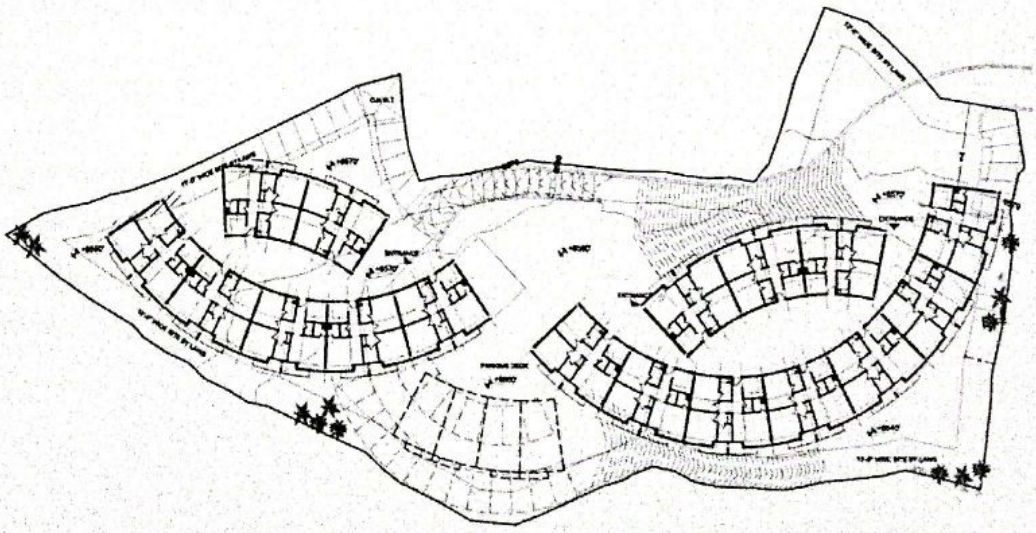
Sr. No	Particular	Description
1	Type of the area	Terrain slope covered with trees and shrubs
2	Project site	Mauza Mora Aswaal
3	Project name	Bhurban Pine Residencia
4	Tehsil	Murree
5	District name	Murree
6	Name of the Province	Punjab
7	Latitude:	33^0,51'39." N
8	Longitude:	73^0,24',59." E
9	Road Accessibility:	Islamabad – Murree Express way
10	Nearest Town:	Murree
12	Total Land for proposed project area	10 kanal
13	Water source	Springs (2)
14	Water Requirement:	Not estimated yet
15	Project completion period	3-4 year
16	Project cost	under estimation

The layout of the plant is given below-

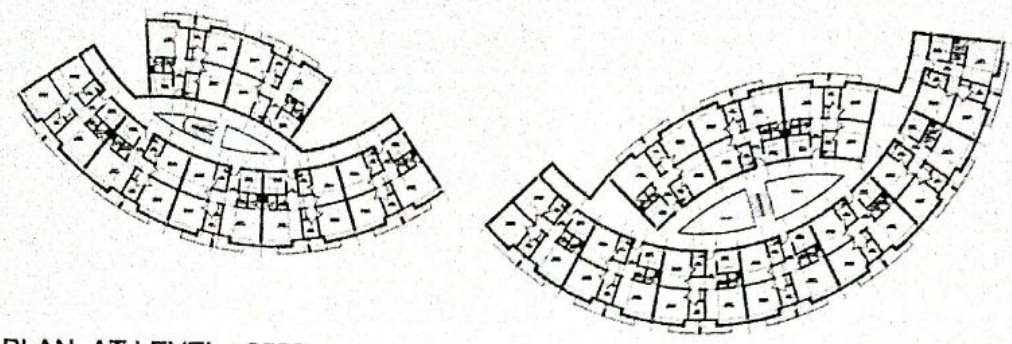
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Figure 1.2 Layout of proposed project

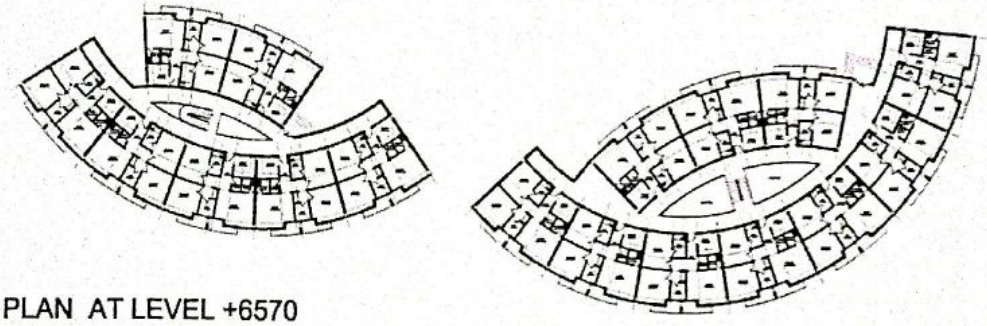




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PLAN AT LEVEL +6580



PLAN AT LEVEL +6570

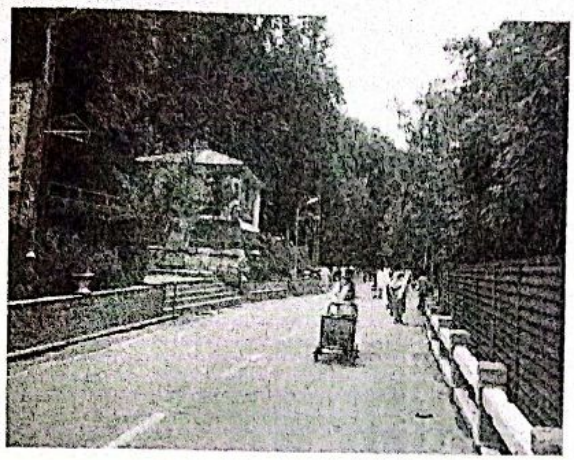
1.7 CAPITAL COST ESTIMATES

The capital cost is being estimated Which will include civil cost, mechanical, electrical, fabrication and erection cost.

1.8 STUDY AREA

For an environmental assessment Study, a clear delineation of the Study Area is important within which the impacts must be considered. In the light of this, impacts on the existing environment have been considered in a geographical area (Study Area) of the proposed Project.

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The irregular settlement is in forms of village is the nearest village Mauza Mora Aswaal, Bhurban, Kashmiri Bazar near the project site. 60 percent population of these villages depends upon pet animals and timber while 40 percent depend upon the labor, service and business related to the surrounding tourist point. Abbasi is the significant community in the project area

The Ambient air monitoring at site shows the clear ambient air quality. The data of Meteorology Department, Government of Pakistan was also consulted for

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meteorological parameters. Based on above parameters, and keeping in view the size of the project and its limited implications on the surroundings.

1.9 STRUCTURE OF THE REPORT

The EIA report is structured in the light of guidelines for Review and filling of EIA and sectoral guidelines for housing estates and new town development issued by the government of Pakistan. It includes non-technical or executive summary and followed by eight (6) chapters with Chapter-1 provides introduction of the proposed project, Chapter 2 provides the country's environmental policy, legal and administrative framework applicable to the proposed project together with the guidelines, Chapter 3 presents the description of the project including components, design parameters, detail of infrastructure facilities etc, Chapter 4 describes in detail the existing environmental baseline conditions of the Study Area considering the physical, ecological and social domains of environment, Chapter 5, Public consultation and information disclosure, Chapter 6 depicts Anticipated Environmental and social impacts and mitigation measures.

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CHAPTER - 2

ENVIRONMENTAL LEGISLATIVE REQUIREMENTS AND FRAMEWORK

2.1 GENERAL

This Chapter deals with the relevant policy, legal and administrative frameworks instituted by the Government of Pakistan and Punjab for the protection of environment. All the relevant provisions of these policy and legal frameworks have been duly considered in this EIA study. In addition to this, the roles and responsibilities of the Proponent and other key players such as EPA Punjab, Rawalpindi Development authority, TMA Murree, WASA Rawalpindi and Forest department have also been discussed in this section. The legal set of documents which will be applicable to this project is also discussed in this chapter.

2.2 POLICY FRAMEWORK

The Ministry of Environment was responsible authority for policy making on environmental protection in Pakistan. With the 18th amendment, all the powers of environmental legislation have been entrusted to provincial governments. Presently EPD Punjab is the legislator department in the present scenario in province of Punjab who has provincial Environment Protection Council and amended Act namely Environment Protection Act 1997 (amended 2012).

2.2.1 National Environment Policy, 2005

The National Environmental Policy (2005) provides an overarching framework for addressing the environmental issues (particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification etc.) confronting Pakistan. It recognizes the goals and objectives of the Pakistan National Conservation Strategy (PNCS), 1992, National Environmental Action Plans, and other existing environment related national policies, strategies, and action plans. It also provides broad guidelines to the federal government, provincial governments, federally administered territories and local governments to address their environmental concerns and to ensure effective management of their environmental resources.

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2.3 LEGAL FRAMEWORK

The Government of Pakistan (GOP) has promulgated laws/acts, regulations and standards for the protection, conservation, rehabilitation and improvement of the environment. In addition to this, they have also developed environmental assessment procedures governing urban development and tourism projects. The same rules and regulations of federal government notified under PEPA 1997 have been adopted by the Punjab government for the purpose of environmental conservation in the province Following are the glimpse of these laws and procedures relevant to the proposed Project.

2.3.1 Pakistan Environmental Protection Act 1997 amended 2012

The Act was enacted on December 06, 1997 by repealing the Pakistan Environmental Protection Ordinance 1983. It provides the framework for implementation of the PNCS, 1992 establishment of provincial sustainable development funds, protection and conservation of species, conservation of renewable resources, and establishment of Environmental Tribunals, appointment of Environmental Magistrates, Initial Environmental Examination (IEE), and Environmental Impact Assessment (EIA) regulations. After implementation of 18th amendment province of Punjab has amended this Act with minor additions and has been adopted as provincial environmental protection act 1997 (amended 2012).

Section 11 of the Act ibid binds the proponents to emit the effluents and emissions from their premises within the prescribed limits as notified in NEQS in 2000 and 2010. Section 12 of the Act stresses the need to carry out EIA/IEE study prior to construction or operation of a project. A committee under the chairman ship of Director General EPA reviews the report and gives its decision for approval or otherwise of any project. Environmental approval is issued for construction phase. After completion of the project construction approval for operational phase is also required to be obtained. After implementation of the 18th amendment government of Punjab, EPD adopted the federal act as such which is now called Pakistan Environment Protection Act, 1997 amended in 2012. All the rules and regulation made here under have been adopted by EPD.

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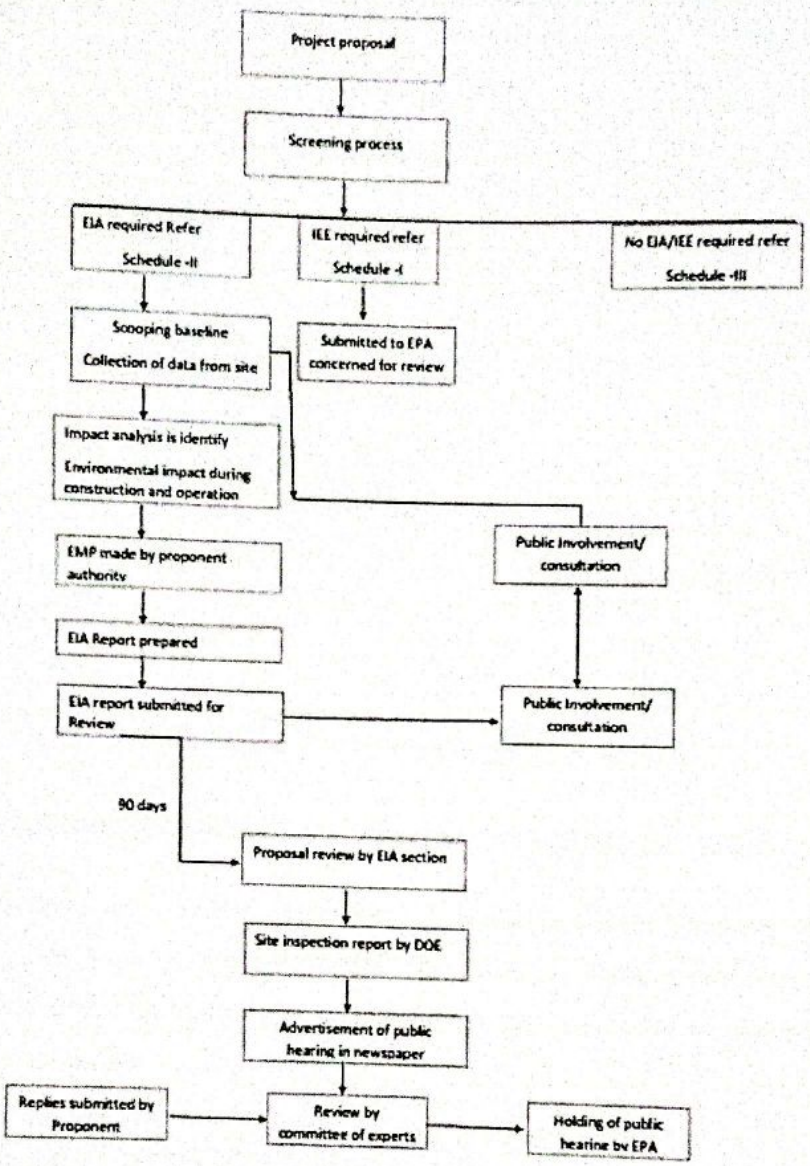
2.3.2 Punjab Environmental Protection Agency (Review of IEE/EIA) Regulations, 2023

These regulations provide criteria for projects requiring IEE and EIA. The projects have been divided into two schedules according to the scoping of project. The project Pearl Resorts and country club lies in schedule I of section I of housing schemes which require IEE however this project area lies in an environmentally sensitive area .On the special instruction by DG EPA, Environment Protection Agency declared Kotli Sattian, Kahuta and Murree as environmentally sensitive area vid their letter No. 304/56-G/LS/EPA dated 5th November, 2008.Keeping in view the environmental sensitive nature of Murree hills, all developers are required to submit Environmental Impact Assessment instead of IEE and get approval before commencement of construction. They also briefly describe the procedure for preparation and review of environmental reports in the department. **(Annex- IV IEE/EIA Regulation 2022)**

Director General EPA Punjab using his powers bestowed him by the Act has appointed Director (ML&I) EPA Punjab as convener of the EIA review committee who will prepare the recommendations for the Director General for his consideration under IEE/EIA regulations 2000.The government has also notified sectoral committee of experts for different sectors which assist the Director General by folding regular meetings and giving their views/comments on the IEE/EIA reports submitted by Proponents.

The EIA/IEE process followed in Environment Protection Agency Punjab is provided in figure 2.1

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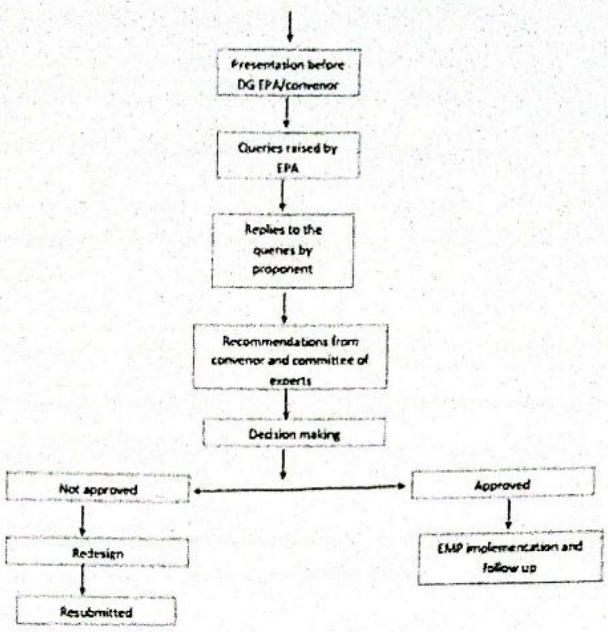


Figure 2.1 IEE/EIA Process in Punjab

2.3.3 Punjab Municipal Solid Waste Management Guidelines, 2007

Punjab Municipal Solid Waste Management Guidelines, 2007 provide the general guidance to the provincial Government departments, local governments, private operators and other agencies that initiate to operate any solid waste management activity in urban areas.

The present set of guidelines is aimed to cover only the municipal solid wastes. Therefore, hazardous wastes do not come under the preview of these guidelines. Various components of solid waste management such as waste generation and collection, waste transfer, recovery of useful components, waste incineration, composting, bio-gas generation and land filling are covered in these guidelines giving a technical guidance to do these operations with minimal impacts to the environment. For the disposal of waste by land filling, it provides the general, design and operational guidelines. Apart from that, these guidelines also explain the pollution control system for the landfill site with design details. As far as environmental monitoring is concerned, these guidelines also prescribed the National Environmental Quality standards for Municipal and liquid Industrial effluent and ground Water Quality Monitoring Standards.

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2.3.4 Pakistan Environmental Assessment Procedures, 1997

Pakistan Environmental Assessment Procedures (1997) is, in fact, a package, which contains the following, sets of information relevant to the proposed Project:

a) Policy and Procedures for Filing, Review and Approval of Environmental Assessment Reports

It describes environmental policy and administrative procedures to be followed for filing of environmental examination/assessment reports by the proponents and their review and approval by the concerned environmental protection agencies.

2.3.5 Sectoral Guidelines for Preparation and Review of Environmental Reports of Housing Estates and New Town Development

Housing is a fundamental requirement of all human beings and it is a basic objective of any society to attempt to satisfy this need. This guideline will assist proponents to identify the key environmental issues that need to be assessed in development of housing project as well as mitigation measures and alternative should be considered. The guidelines also present a set of notifications that pertain to the protected areas, game reserves, national parks and environmental sensitive areas. This project lies within the administrative boundaries of Tehsil Murree, which is controlled by the bylaws of Rawalpindi Development Authority and Master Plan of Murree. The project site is located outside the declared forest area and is the property of private people who have willingly sold the land with mutually agreed terms and conditions. The copies of the sale deal of this project site have been placed at annexure IV. These guidelines have been fully followed for preparation of this EIA study.

2.3.6 The New Murree Development Authority Act 2004

According to subject to the provisions of this Act and any rules framed there under, the Authority may exercise such powers and take such measures as may be necessary for the planning, development and management of the area.

- The Authority may prepare and approve a master plan and a phased master programme for the development of the area.

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- Establish, maintain and periodically revise as necessary, planning, controls and building regulations for the area.
- No planning or development scheme shall be prepared by any person or by agency in the area except with the concurrence of the Authority.
- Any scheme prepared under this Act may at any time be amended or modified by the Authority.
- No person shall, without the prior written consent of the Authority, allocate, exploit or in any manner utilize any natural resources used as construction material in the area.

2.3.7 Punjab Wildlife (protection, preservation, conservation and management Act 1974

This Act provides the protection, preservation, conservation and management of wildlife in the Province of the Punjab.

- **Wildlife Sanctuary**

The wildlife sanctuary shall be set aside as undisturbed breeding ground for the protection of wildlife and access thereto for public shall, except in accordance with the rules, be prohibited and no exploitation of forest therein shall be allowed except for reducing fire hazards, epidemic or insect attacks or other natural calamities.

No person shall–

(i) Enter or reside,
(ii) Cultivate any land,
(iii) Damage or destroy any vegetation,
(IV) Hunt, kill or capture any wild animal or fire any gun or other firearm within one mile of the boundaries,
(v) Introduce any exotic species of animal or plant,
(vi) Introduce any domestic animal or allow it to stray,
(vii) Cause any fire, or
(viii) Pollute water in wild life sanctuary

- **Game Reserve**

No hunting and shooting of a wild animal shall be allowed in the game reserve, except under a special permit, which may specify the maximum number of game animal that may be killed or captured, the area and duration for which such permit shall be valid.

The number of occasions on which hunting and shooting may be allowed shall not exceed two in a year.

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- **National park**

A national park shall be accessible to public for recreation, education and research subject to such restrictions as Government may impose.

Provision for access roads to and construction of rest houses, hostels and other buildings in the national park along with amenities for public may be so made and the forest therein shall be so managed and forest produce so obtained as not to impair the object of the establishment of the national park.

The following acts shall be prohibited in a national park

(i) Hunting, shooting, trapping, killing or capturing of any wild animal in a national park or within one and a half mile radius of its boundary;

(ii) Firing any firearm or doing any other act which may disturb any animal or bird or doing any act which interferes with the breeding places;

(iii) felling, tapping, burning or in any way damaging or destroying, taking, collecting or removing any plant or tree therefrom;

(iv) Clearing or breaking up any land for cultivation, mining or for any other purpose

(v) Polluting water flowing in and through the national park.

The project area is excluded from national park, game reserve and wildlife Sanctuary.

2.3.8 Building and Zoning Regulation by Rawalpindi Development Authority 2007

Rawalpindi development authority prepared building and zoning regulations for the construction of new housing scheme or any development activity. These are as follows

- The total number of storeys permissible in an apartment building allowed on residential plots in approved schemes excluding basements, shall not be more than four, each storey having a minimum building height of 9-ft 6-inches (2.9m) other than the basement.

- No building other than Apartment Building shall contain more than three storeys and the minimum height of each storey shall not be less than 9-ft 6-inches (2.9 m).

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- All buildings shall have one multipurpose (A, B, C) dry chemical powder 6 Kg fire extinguisher for each 2000 sq. ft. of floor area. At least two fire extinguishers of 6 Kg each shall be placed on each floor (if floor size is less than 2000 sq. ft.).
- The maximum travel distance to a fire extinguisher shall not exceed 75 ft. but for kitchen areas this distance is 30 ft.
- Septic Tanks shall be provided in all the residential and commercial buildings.
- All buildings other than houses shall provide adequate storage space for storing of solid waste equal to at least 24 hours generation

2.3.9 Land Use Rule by Lahore Development Authority 2009

These rules may be cited as the Lahore Development Authority Land Use (Classification, Reclassification and Redevelopment) Rules, 2009 prepared by Housing, Urban development and Public health Engineering Department. Rawalpindi development Authority adopted the same Act as notified No. SO (H-II) 5-2/81

The Authority shall ensure that the following land use provisions under permitted, permissible and prohibited uses are strictly followed as per master plan, peri-urban structure plan or approved scheme in a notified area:

2.3.9.1 Environmentally Sensitive Area

(a) Permitted Use:

The Authority shall ensure that permitted land use in an environmentally sensitive area is in accordance with special or general law and any special conditions applicable in the environmentally sensitive area.

(b) Permissible Use:

The Authority shall ensure that no person is allowed to use a property in an environmentally sensitive area for a purpose which is neither permitted nor permissible.

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(c) **Prohibited Use:**

The Authority shall ensure that no person is allowed to use a property in an environmentally sensitive area for a purpose which is neither permitted nor permissible.2

2.3.10 Punjab Private Housing Scheme and Land sub–Division Rules 2010

These are the relevant rules for developer of new housing schemes notified by Local Government and Community Development Department NO SOR (LG) 38-2/2004-P.

In this case Rawalpindi Development Authority is the administration department for the approval of housing scheme or any development activity. According to this act Proponent is bound to submit an application for preliminary planning permission for a scheme before initiating any planning or development activity. Project concept of the design has been submitted to the Rawalpindi Development Authority for the approval later on detailed housing plan and engineering design will be submitted for approval.

2.3.11 Building code of Pakistan Seismic Provisions 1986 (Amended 2007)

The devastating earthquake of October 08, 2005 made it abundantly clear that earthquake provisions of the Pakistan Building Code 1986 need to be comprehensively bolstered so that public health and safety for all communities are ensured. This has been encapsulated in these "Seismic Provisions". The thrust of these provisions is to establish minimum regulations for earthquake considerations in building systems.

These Seismic Provisions in the Pakistan Building Code are founded on broad-based principles that make possible the use of new materials and new construction systems

The Seismic Provisions are compatible with the Uniform Building Code 1997 (of USA), the American Concrete Institute ACI 318–05, American Institute of Steel Construction ANSI/AISC 341–05, American Society of Civil Engineers SEI/ASCE 7–05 and ANSI/ASCE 7–93. The project area lies in seismic zone III .The detail of seismic zones of Punjab is discussed in chapter 4 description of environment.

2.4 Other Relevant Laws

2.4.1 Punjab Local Government Act, 2013

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Punjab Local Government Act was prepared by Local Government and Community Development Department published by Punjab Gazette in Aug 2013.

This Act promote good governance, effective delivery of services and transparent decision making through institutionalized participation of the people at local level; and, to deal with ancillary matters.

- Municipal services" include intra-city network of water supply, sanitation, conservancy, removal and disposal of silage, refuse, garbage, sewer municipal services" include intra-city network of water supply, sanitation, conservancy, removal and disposal of sullage, refuse, garbage, sewer or storm water, solid or liquid waste, drainage, public toilets, express ways bridges, flyovers, public roads, streets, foot paths, traffic signals, pavements and lighting thereof, public parks, gardens, graveyards, arboriculture, landscaping, billboards, hoardings, firefighting, land use control, zoning, master planning, classification declassification or reclassification of commercial or residential areas, markets, housing, urban or rural infrastructure, environment and construction, maintenance or development of these services and enforcement of any law relating to municipal services.

- Nuisance includes any act, omission, place or thing which causes or is likely to cause injury, danger, annoyance or offence to the sense of sight, smell or hearing or which is or may be dangerous to life or injurious to health or property.

2.4.2 Labor Laws

Construction and operational activities during the course of construction could affect the occupational health of the workers. Quantitative national standards for occupational health are yet to be developed in Pakistan and employers are required to abide by the labor laws in respect of their own employees and also ensure that contractors to follow the relevant labor laws and rules relating to safety of workers. The proponents will ensure that the labor force engaged is not exposed to any danger by monitoring the contractors' work frequently. Labor Department Government of Punjab is the relevant department who cares for the implementation of labor laws.

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2.5 PUBLIC PARTICIPATION & CONSULTATION

Public consultation and participation are mandatory for IEE/EIA procedure. Sectoral guide lines issued by Pakistan environmental agency are required to be consultant during the process of public consultation. EIA/IEE regulations 2000 also give guide line for public participation of schedule II projects. An advertisement is published in to leading newspaper for comments of the public on proposed project. Duration of thirty days is fixed for public comments. Finally, a public hearing is conducted on any public place where each stakeholder is heard by the representative of Director General of EPA Punjab. Proper remedial measure/action is taken by EIA section on the reservation of stakeholders.

2.6 ENVIRONMENTAL QUALITY STANDARDS

2.6.1 National Environmental Quality Standards (NEQS), 2000

Compliance of NEQS is the requirement of approval of IEE/EIA. Ministry of Environment notified these standards in 1993. They were revised in 2000. They furnish information on the permissible limits for discharges of municipal and industrial effluent parameters and industrial gaseous emissions in order to control environmental pollution. A copy of these standards is attached as **(Annexure-I NEQS All).**

Table- 2.1 National Environmental Quality Standards for Municipal and Liquid Industrial Effluents (mg/l, Unless Otherwise Defined)

Sr. No.	Parameters	Revised Standards Into Inland Waters	Into Sewage Treatment[5]
1	Temperature or Temperature Increase	<3°C	<3°C
2	pH value (H^+).	6-9	6-9
3	Biochemical Oxygen Demand $(BOD)_5$ at 20°C[1]	80	250
4	Chemical Oxygen Demand (COD)[1]..	150	400
5	Total Suspended Solids (TSS)	200	400
6	Total Dissolved Solids(TDS)	3500	3500
7	Oil and Grease	10	10

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Sr. No.	Parameters	Revised Standards Into Inland Waters	Into Sewage Treatment[5]
8	Phenolic compounds (as phenol)	0.1	0.3
9	Chloride (as Cl^-)	1000	1000
10	Fluoride (as F^-)	10	10
11	Cyanide (as CN^-) total...	1.0	1.0
12	An-ionic detergents (as MBAS)[2]	20	20
13	Sulphate (SO_4^{2-})	600	1000
14	Ammonia (NH_3)	40	40
15	Pesticides	0.15	0.15
16	Cadmium [4]	0.1	0.1
17	Chromium (trivalent and hexavalent [4]...	1.0	1.0
18	Cooper [4].....	1.0	1.0
19	Lead [4].....	0.5	0.5
20	Mercury [4].....	0.01	0.01
21	Selenium [4]	0.5	0.5
22	Nickel [4]....	1.0	1.0
23	Silver [4]	1.0	1.0
24	Total toxic metals....	2.0	2.0
25	Zinc....	5.0	5.0
26	Arsenic [4]...	1.0	1.0
27	Barium [4].....	1.5	1.5
28	Iron....	8.0	8.0
29	Manganese.....	1.5	1.5
30	Boron [4].....	6.0	6.0
31	Chlorine....	1.0	1.0

2.6.2 DRINKING WATER QUALITY STANDARDS

In pursuance of the statutory requirement under clause (e) of sub-section (1) of section (6) of the PEPA, 1997 the Pakistan Environmental Protection Agency, Ministry of Environment has notified drinking water quality standards. WHO drinking water quality guidelines have been used for bench marking purpose in the drinking water quality standards that are notified and given in **Table 2.2.**

Table- 2.2 National Standards Drinking Water Quality

Sr. No.	Parameters	Standard values for Pakistan (mg/l)	WHO (mg/l)
1	Aluminum (Al)	≤ 0.2	0.2
2	Ammonium (NH3)	-	1.5
3	Antimony (Sb)	≤ 0.005	0.02
4	Arsenic (As)	≤ 0.05	0.01

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Sr. No.	Parameters	Standard values for Pakistan (mg/l)	WHO (mg/l)
5	Barium (Ba)	0.7	0.7
6	Boron (B)	0.3	0.3
7	Cadmium (Cd)	0.01	0.003
8	Chloride (Cl)	< 250	250
9	Chromium (Cr)	≤ 0.05	0.05
10	Copper (Cu)	2	2
11	Cyanide (CN)	≤ 0.05	0.07
12	Fluoride (F)	≤ 1.5	1.5
13	Iron (Fe)	-	0.3
14	Lead (Pb)	≤ 0.05	0.01
15	Manganese (Mn)	≤ 0.5	0.5
16	Mercury (Hg)	≤ 0.001	0.001
17	Molybdenum (Mo)	-	0.07
18	Nickel (Ni)	≤ 0.02	0.02
19	Nitrate (NO_3)	≤ 50	50
20	Nitrite (NO_2)	≤ 3	3
21	Selenium (Se)	0.01	0.01
22	Silver (Ag)	-	NS
23	Sodium (Na)	-	200
24	Sulphate (SO_3)	-	250
25	Residual Chlorine	0.2-0.5	-
26	Zinc (Zn)	5.0	3.0
27	Color	≤ 15 TCU	≤ 15 TCU
28	Taste	Non-Objectionable/ Acceptable	Non-Objectionable/ Acceptable
29	Odor	Non-Objectionable/ Acceptable	Non-Objectionable/ Acceptable
30	Turbidity	< 5 NTU	5 NTU
31	Total hardness	< 500 mg/l	-
32	TDS	< 1000	<1000
33	pH	6.5-8.5	6.5-8.5

2.7 OCCUPATIONAL HEALTH

Construction and operational activities could affect the occupational health of the workers. Quantitative national standards with respect to the above aspect are yet to be developed in Pakistan. However, guidance in qualitative terms can be obtained from the Pakistan Factories Rules, 1962 (based on the Factories Act, 1934) and the Labor Laws (Amended) Ordinance, 1972.

2.8 TOXIC AND HAZARDOUS WASTE

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Section 14 of the PEPA Act, 1997 prohibits the handling trade collection and storage of hazardous substances. Hazardous substances rules have been formulated in this regard but they are still on the status of draft and available on the website of EPD and Pak EPA. Protection of the environment with regards to toxic and hazardous waste is also covered by the Pakistan Penal Code (PPC), 1860. Environment Protection Department (EPD), Punjab, is mandated to monitor the transportation of hazardous materials within the provincial limits.

2.9 PRESERVATION OF CULTURAL HERITAGE

The Antiquities Act, 1975, administered by the Provincial Government, is aimed at safeguarding the preservation of cultural heritage, destruction, damage or defacement of antiquities is an offence under the Act.

2.10 ADMINISTRATIVE FRAMEWORK

1. Pearl Real Estate Holdings (Pvt) Limited

The implementing agency of the proposed Project is Pearl Real Estate Holdings (Pvt) Limited who will execute the proposed project at Muaza Phaphril Tehsil Murree, District Rawalpindi. The management of Pearl Resorts and Country club will ensure that all the proposed measures are effectively implemented at the design, construction and operational stages.

2. Environmental Protection Agency, Punjab

Pakistan Environmental Protection Council is the apex inter-ministerial and multi-stakeholders decision-making body, which is headed by Prime Minister. While Pakistan Environmental Protection Agency is meant for the enforcement of environmental laws in Pakistan, they have delegated powers to provincial environmental protection agencies for review, approval and monitoring of environmental examination/ assessment projects. After 18th Amendment EPD has all powers to enforcement of PEPA 1997 amended 2012. As regards the proposed Project, EPA Punjab will be responsible for reviewing the report, issuing No Objection Certificate (NOC) and overall/broad based monitoring of the proposed Project activities.

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2. Hospital Waste Management Rule, 2014

According to this rule all hospitals, clinics, laboratories, dispensaries, pharmacies, nursing homes, blood banks, autopsy centers, mortuaries, medical research institutes, and veterinary institutions are to strictly follow hospital waste management rules of 2014 for the environmentally-safe disposal of infectious and hazardous waste. Pakistan Environmental Protection Act, 1997 and Hospital Waste Management Rules, 2014, strictly prohibit unsafe disposal of all types of hospital/hazardous waste including hospital waste.

3. Punjab Environmental Protection (Motor Vehicles) Rules 2014

According to this rule a person shall not operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the Environmental quality standards or where applicable the standards established under clause (g) of subsection (1) of section 6 of the Act.

The authorized officer shall verify the compliance of the directions. The authorized officer may impound, with the help of local Police, the motor vehicle which is being operated in contravention of these rules after the days mentioned on the direction slip or even after the imposition of administrative penalty.

2. Punjab Smog Rules, 2023

3. Punjab Clean Air Policy, 2023

4. Single use Plastic strategy

2.11 ENVIRONMENTAL GUIDELINES

Three sets of guidelines, the Pak-EPA's Environmental Guidelines, the World Bank Environmental Guidelines, and ADB Environmental Guidelines are reviewed here.

1. Environmental Protection Agency's Environmental Guidelines

The Federal EPA has prepared a set of guidelines for conducting environmental assessments. The guidelines derive from much of the existing work done by international donor agencies and NGOs. The package of regulations, of which the

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guidelines form a part, includes the PEPA 1997 and the NEQS. The guidelines themselves are listed below.

1. Guidelines for the Preparation and Review of Environmental Reports,
2. Guidelines for Public Consultation,
3. Guidelines for Sensitive and Critical Areas,
4. Sectoral Guidelines for Environmental reports –Housing Estates and New Town Development

It is stated in the Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, 2000 that the EIA or IEE must be prepared to the extent practicable, in accordance with the Pakistan Environmental Protection Agency Environmental Guidelines.

2.12 World Bank Environmental Guidelines

The principal World Bank publications that contain environmental guidelines are listed below.

5. Pollution Prevention and Abatement Handbook 1998: Towards Cleaner Production, (WB/UNIDO/UNEP, 1999)

6. Environmental Assessment Sourcebook, Volume I: Policies, Procedures, and Cross-Sectoral Issues, (WB, 1991-a).

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CHAPTER-3

PROJECT DESCRIPTION

3.1 Project Concept

The project is based on the concept of facilitating the tourists which come in Murree for entertainment with their families. The concept is to give them a clean and acceptable environment in the apartments.

3.2 Project Description

It is project of construction of a ground plus two building namely Bhurban Pine Residencia apartments. The project site comprises of 10 kanal in area of Mauza Mora Aswaal Tehsil Murre and district Rawalpindi. The project is planned to facilitate the tourists as well as residents which will comprising of residential units of various sizes, recreational activities, restaurants with served apartments and allied infrastructure. Total area of the plot is 54524 sq.ft. 50 percent allowed usable area is only 27262 sq. ft. Total allowable covered area of all floors is 109048 sq. ft. total covered area at all levels is 95132 sq. ft. Total number of units will be 78 in two blocks One unit has covered area of 1100 sq. ft.

The project has planned parking capacity of 78 cars as well to facilitate the tourists coming on their own cars. Covered area at level 6550 feet 14399 sq. ft. Building (Block) A has less area and 24 units will be constructed whereas building (Block) B will have 54 units.

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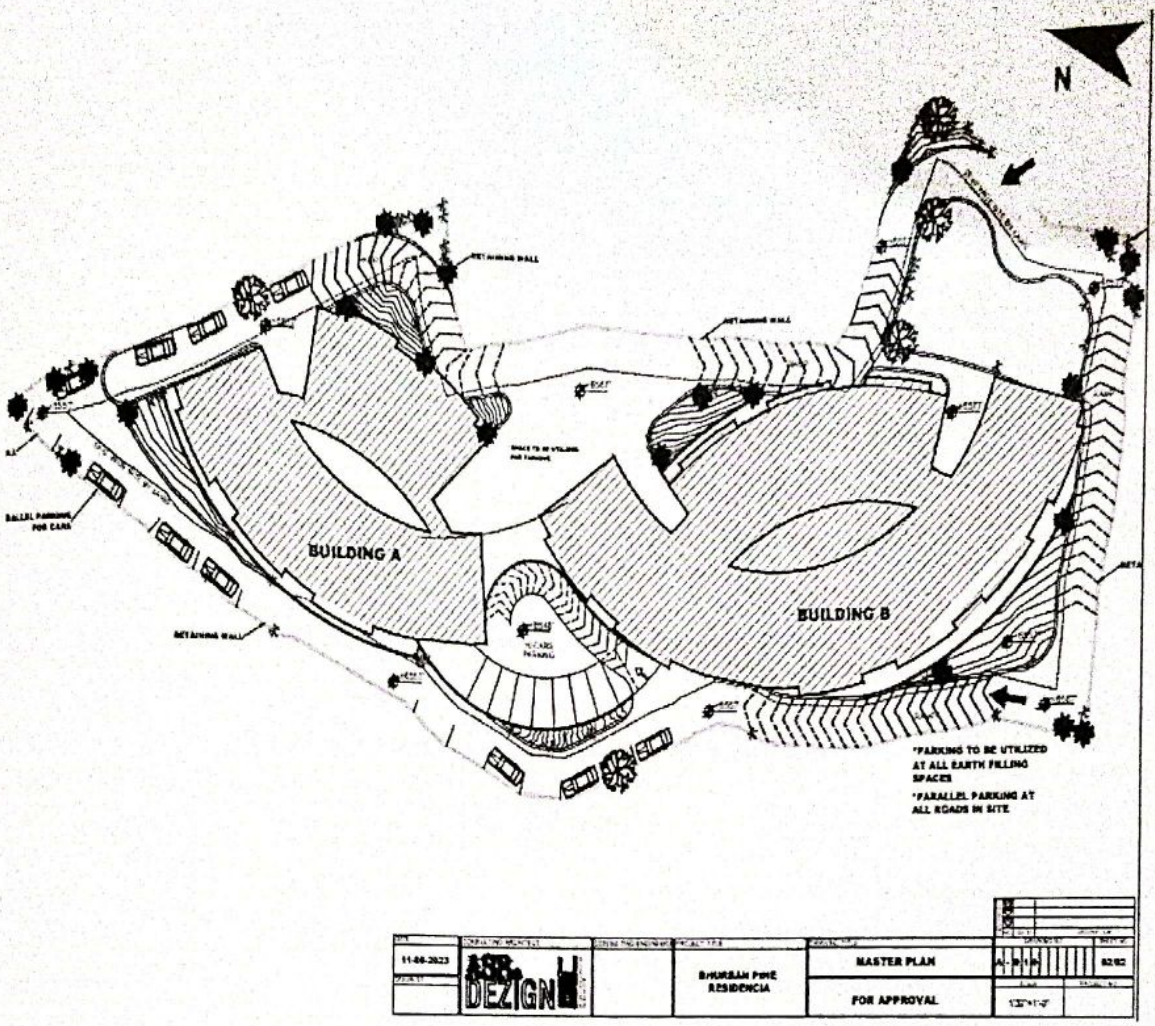
SCHEDULE OF AREAS	
TOTAL PLOT AREA	54524 SFT.
FLOOR	COV. AREA
COVERED AT LEVEL +6550	14,399 SFT.
COVERED AT LEVEL +6560	10,010 SFT.
COVERED AT LEVEL +6570	14,399 SFT.
COVERED AT LEVEL +6580	22,162 SFT.
COVERED AT LEVEL +6590	22,162 SFT.
COVERED AT LEVEL +6600	7,699 SFT.
COVERED AREA OF 1 UNIT	1100 SFT.
TOTAL COVERED AREA	90,831 SFT.
NO. OF UNITS IN BUILDING A	24
NO. OF UNITS IN BUILDING B	54
TOTAL UNITS	78
NO OF CARS	78

3.2 Salient features of the Project.

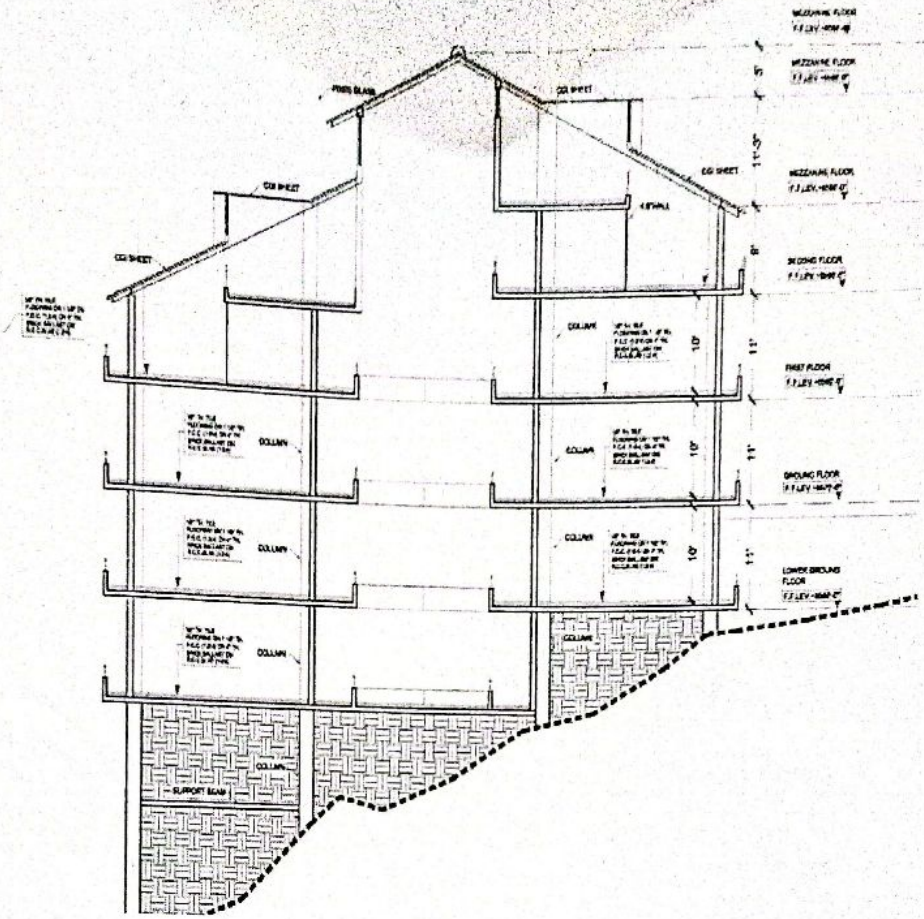
The Bhurban Pine Residencia apartments comprised of two buildings namely A and B due to topography of the land. It will have residential apartments plus restaurant and parking area plus 50 % open area.

The detailed building plan is reproduced below:

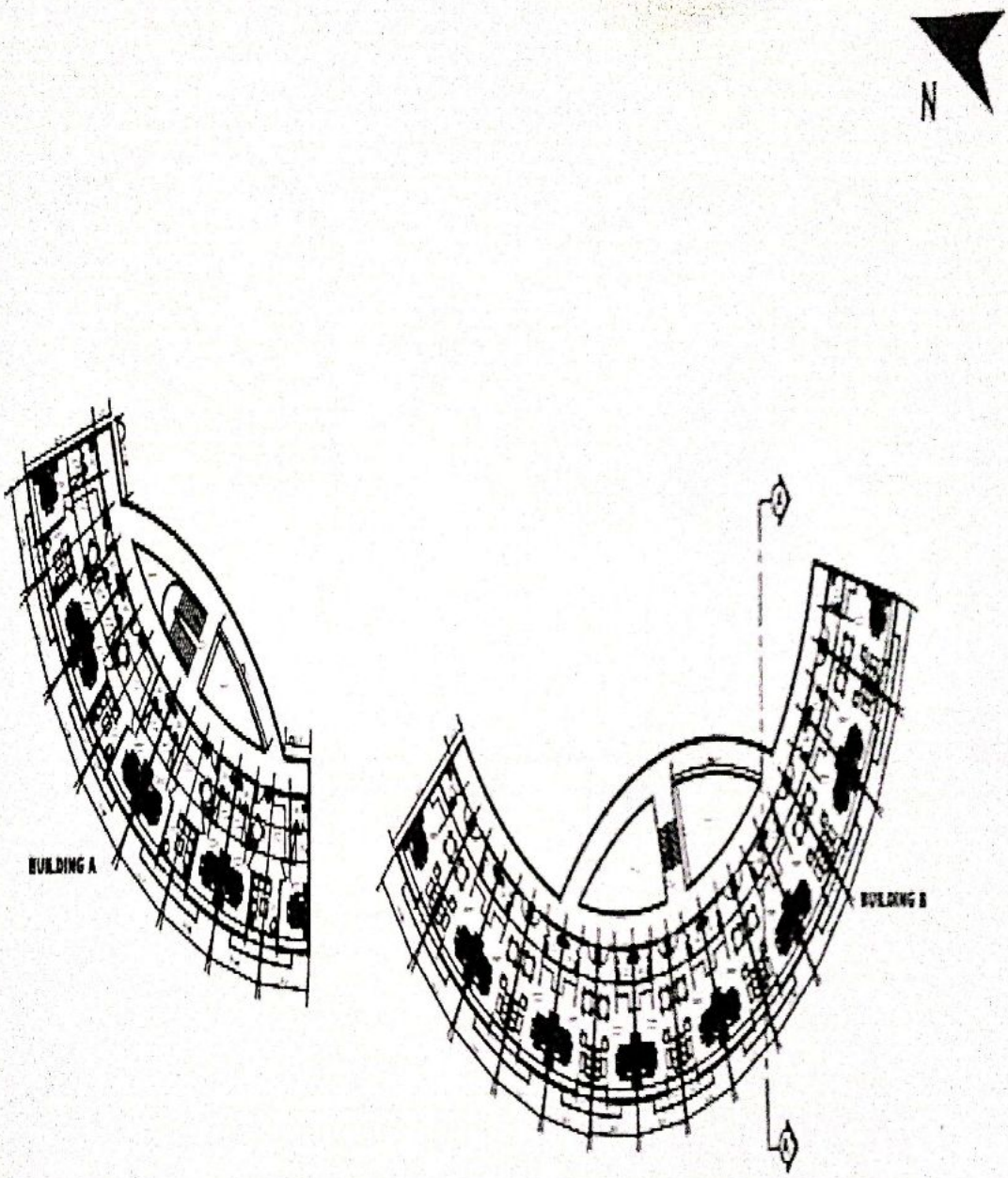
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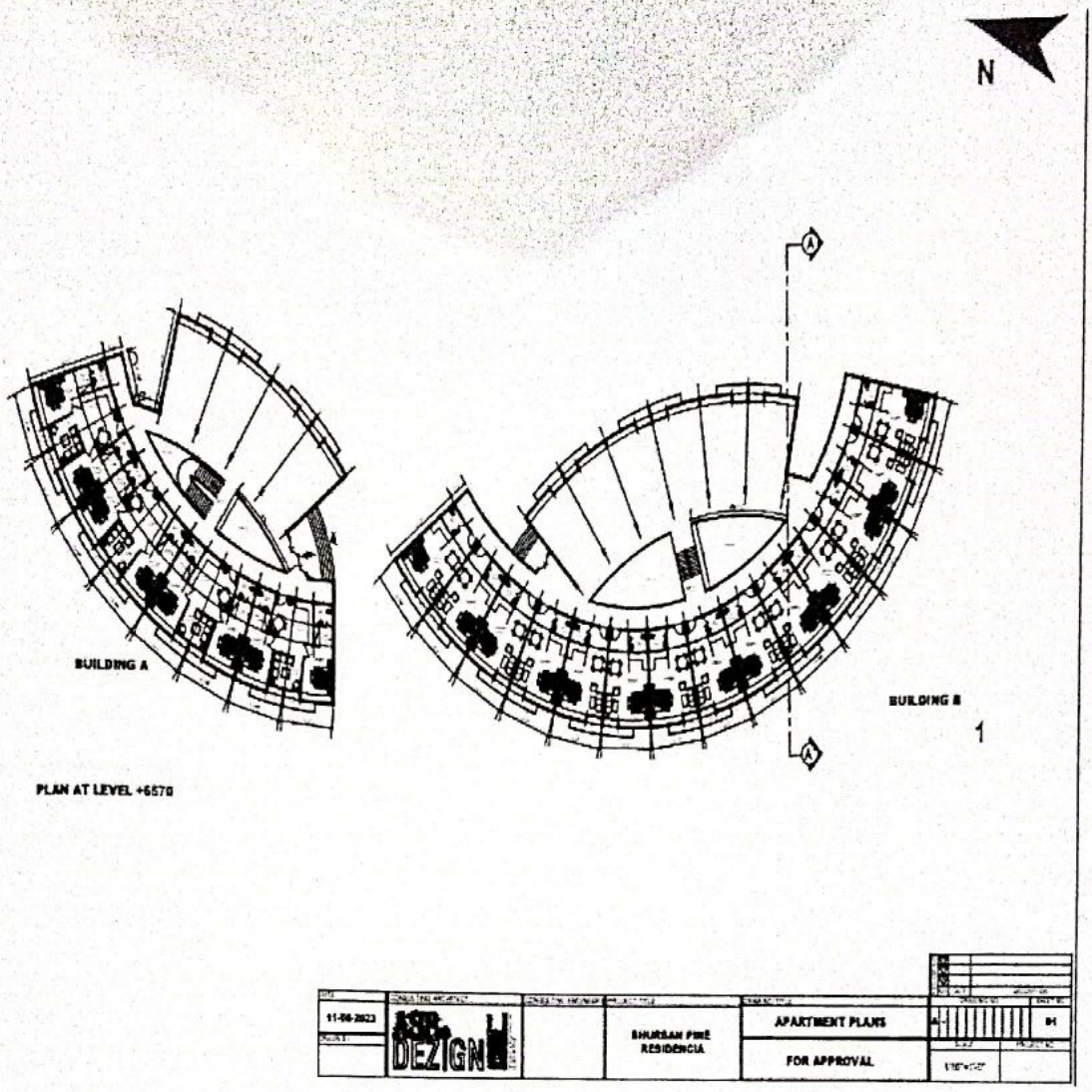


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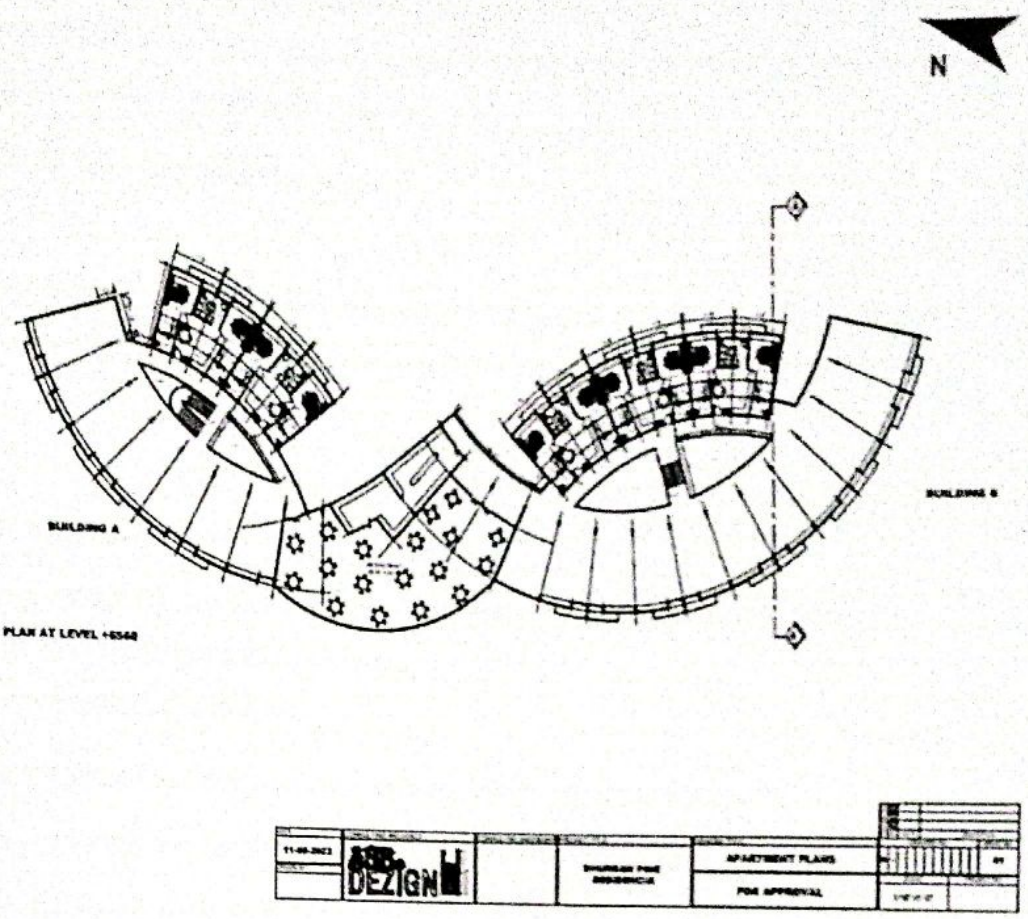


PLAN AT LEVEL +6550

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3.3 Type and category of the project

The project is construction of a residential building which consists of two building A and B it is project of commercial building and lies in Schedule I of EIA/ IEE Regulations 2023 but due to the special/sensitive nature of Murree area, declared by the Director General EPA, 2008, the project requires EIA to be filed for environmental approval.

3.4 Objectives of the Project

The objective of the project is building a residential building consisting of 78 apartments to cater the increasing needs of the tourists in Murree. Murree is the nearest hill station which attracts the tourists during the holidays. Rawalpindi and Islamabad are the nearest urban cities which enjoy the Murree beautiful weather and

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scenic beauty. The citizens across the Pakistan as well as the foreigners visit **the queen of the hills.** With the increase of the population and increased circulation of wealth amongst the Pakistanis tourists are increasing every year. There is a dire need for the standardized residential apartments for the tourists. The project aims to cater the growing demand of residences in Murree.

3.6 Cost and Magnitude of the project

The cost of the project is 500 million rupees with 78 apartments comprising of ground plus 2 levels. It also includes the below road levels mezzanine floor. The area is 10 kanal.

3.7 Site Alternatives

The selection of the site was very important for this project. The salient features for such project in the Murree are as follows:

- Easy access to the visitors
- Availability of the infrastructure like road, electricity, gas, water etc.
- Away from the central part of Murree to breathe in fresh air
- Scenic beauty of the area.
- Acceptable cost of the land.
- Suitability of the land for construction w.r.t geo-physical features
- Enough space for parking

All these facilities are available at this site; hence it was selected for the **Bhurban Pine Residencia apartments**. One plot near Gharial Camp was considered as alternate which costs much higher than this site. Moreover, it was on the busy road which is seldom liked by the tourists.

Keeping in view the above said reasons this site was finalized.

3.8 The status of the proposal in the project cycle

(Pre-feasibility, feasibility or detailed design)

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Pre-feasibility has been completed, the building plan has been completed and submitted in the TMA office for approval. It will be started as soon as environmental approval has been granted.

3.9 Description of the planning, design and implementation stages

3.9.1 Planning

The project planning has been completed.

3.9.2 Design

The building plan has been finalized while civil work designing has been done. The material estimates are being made.

3.9.3 Implementation schedule:

Implementation Stages

Phase I:

Planning stage 3 months has been completed

Phase II:

Designing stage 3 months has been completed.

Phase III:

Construction of 78 apartment units by the proponent

Construction, Erection & completion (36 Months). Yet to be started.

3.10 The requirements for raw materials, water, and energy.

The raw material is gravel, sand, cement and steel bars which will be bought from the market.

3.10.1 Water Supply

The water for the construction of the building will be taken from the market and subsoil water whereas the water during operation phase of the project will be used from the fountain and that of cantonment Board. Study conducted by Zeeshan Tahir Virk and et al in 2019 shows that consumption and water sufficiency ratio (WSR) show (1.92) that available groundwater is sufficient to meet the requirements for consumption in Murree available water is sufficient.

Taking into account the national standards of water consumption (***150 liters per capita per day***) about 35100 liter or 35 m3 per day water will be required during operation phase but in this case it will be maximum estimated water consumption in peak tourism days. Here the people stay for one or two nights hence 50 percent of

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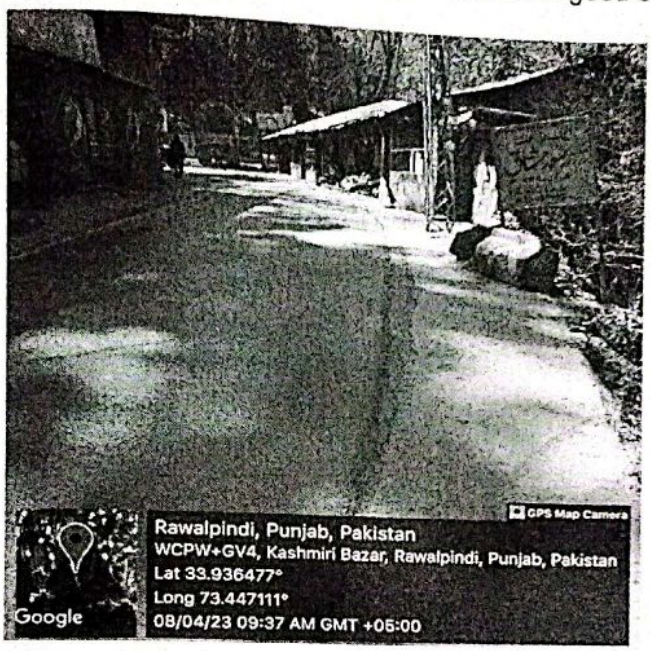
i.e. 17.5 m3 per day water consumption is foreseen during operation of the project in Pine Residencia apartments..

3.10.2 Energy

Approximately 500 KWH (maximum) electricity will be required which will be purchased from IESCO

3.11 Road Accessibility

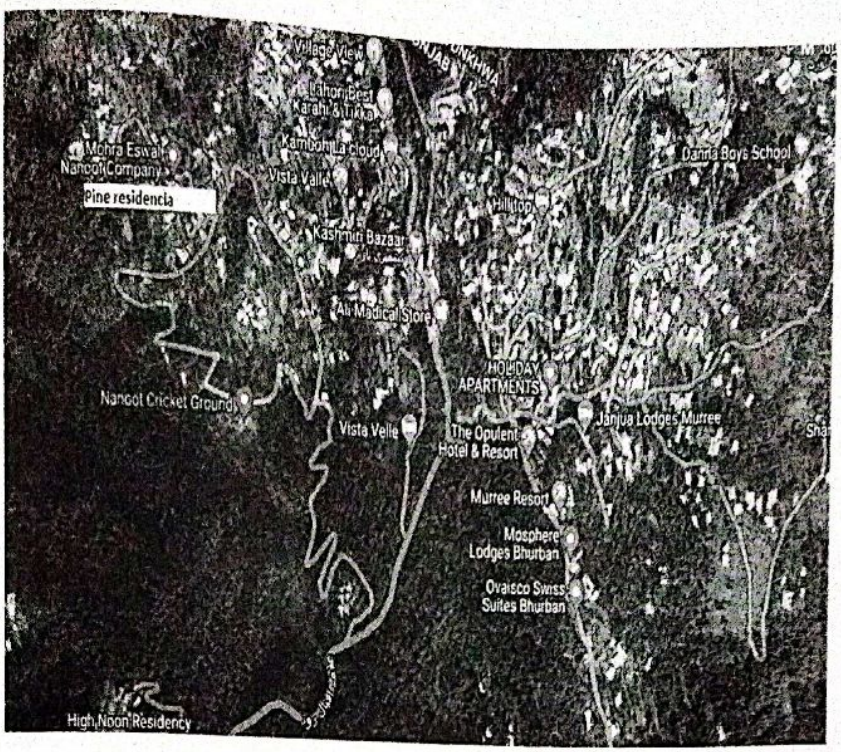
The access road is Bhurban PC hotel and Gharial Camp road which s main arterial road of the Murree. The road is wide and metaled in good condition.

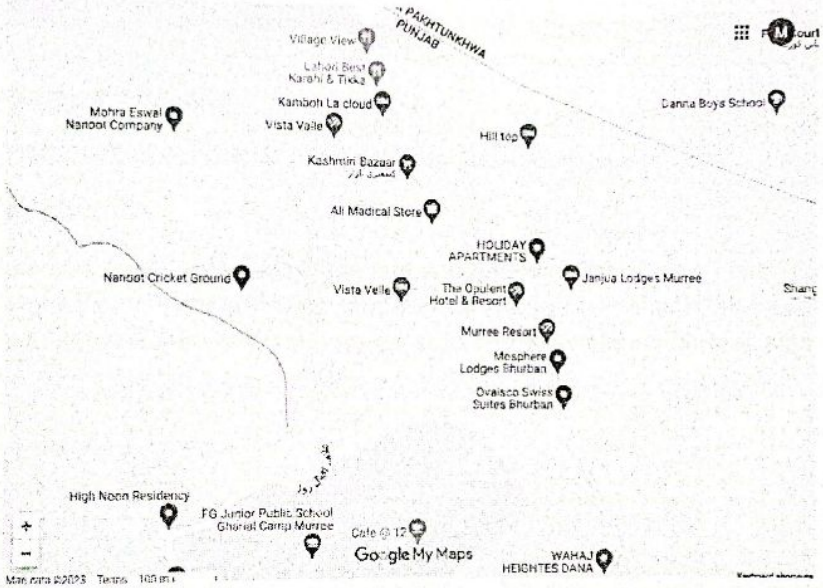


3.12 Location map

The location of the project is short of Kashmiri Bazar, Bhurban. It is also located near Gharial camp. The location map is fixed below in the maps.

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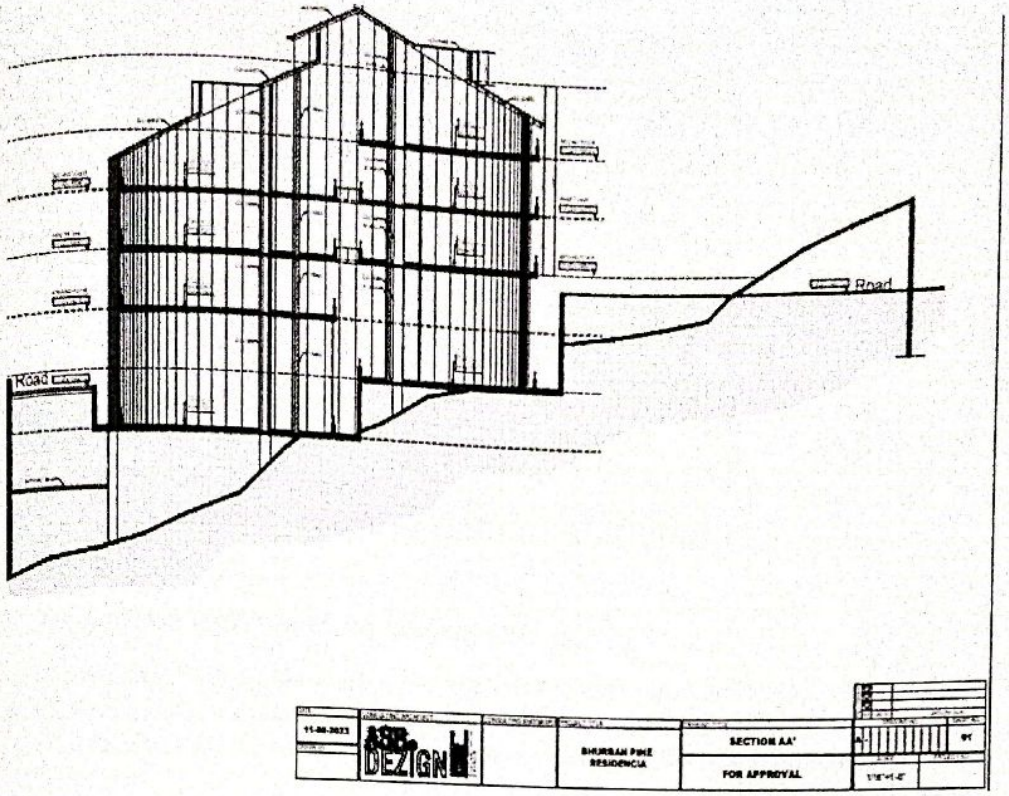




3.13 Layout of the project:

The layout of the project is given below:

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3.14 Land use on the site

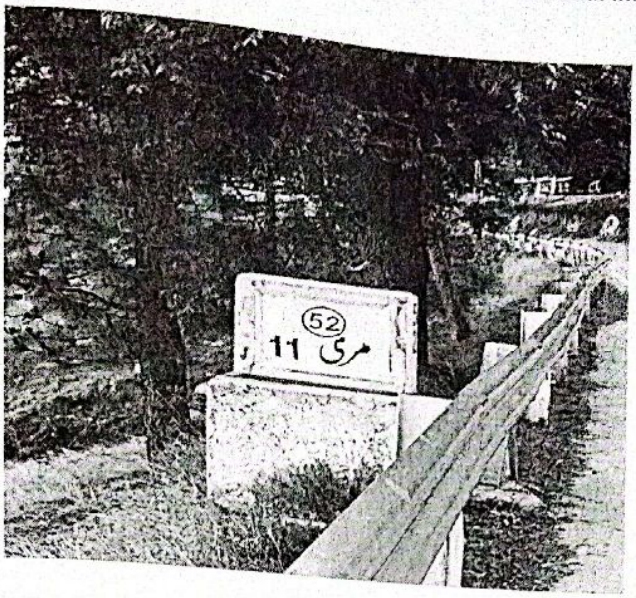
The proposed site is open land and no use is there at present.

3.15 Major Roads

Murree has access through two roads one is old route whereas the other Murree expressway which is new and wide road with very good condition. The journey to the Murree has become very safe after construction off the Murree Express way.



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3.16 Vegetation features of the project site

The site is part of the Murree hills which is sub-tropical temperate forest dominated with pine, maple leaf and popular trees along with a dozen of herbs and shrubs. But the site has no forest it has only herbs and shrubs are there. There are a few trees of pine which will not be cut and will remain intact in open area.



3.16 Cost and magnitude of the operation

The cost is about 500 million rupees which include cost of land of 10 kanal, construction and furnishing of the apartments. About 78 apartments will be constructed on ground plus building along with allied facilities. About 200-300 tourists are expected to be boarding in the prime tourism months from June to August.

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3.17. Restoration and Rehabilitation Plans

Project site is open land therefor no rehabilitation or restoration will be needed. However, the open space of the project area will be plated with indigenous species of the Pine and maple leaf to increase the beauty of the locality.

3.19 Government approvals

The map has been submitted in TMA and the case for environmental approval has been submitted in EPA for approval under section 12 of Punjab Environment Protection Act 1997.

3.20 Summary of the technical, economic and environmental features of the proposal

The project is construction of ground plus two building designed to be constructed for 78 apartments to cater the increasing the requirement of tourists in Murree. The population of Murree relies upon the tourism activity. These activities is a big source of income for the local people. The increasing magnitude of tourism has attracted the investors to invest in Murree. The main investment is being done in the tourism facilities and hotels and amusement activities like chair lift. This project will create employment for the local people for services in the apartments. Moreover, the land owner has also earned a reasonable cost of land which helps him to elevate his source of income and life style. This project intervention in the Murree will create positive social and economic impact for the people of Murree which will help them to boost the education and health alleviation.

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CHAPTER-4
DESCRIPTION OF THE ENVIRONMENT
(Baseline Conditions)

4.1 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 tourism department, Meteorological Department, EPD, archeology department, wildlife and forest offices and prevailing environmental laws and environmental quality standards present on the website of EPD Punjab and etc.

4.2 DESK STUDIES

Building design data was collected from management of Bhurban Pine Residencia whereas geo technical study was conducted by the UET Taxila team. 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 the environmental implications. Performa for social and economic baseline condition was designed for field survey.

The documents which were consulted and departments visited are Wild life Department, tourism Department, Archeology department, Meteorological Department, EPD, Forest offices, and other related officials and literature on internet.

4.3 SITE VISITS

A team of experts of "Grow Green Environment Consultancy" along with **Bhurban Pine Residencia team** visited the proposed site and had discussion on the structure and design of the project, water arrangements and options for disposal of domestic waste water.

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The project area is situated in Mauza Mora Aswaal short of Kashmiri Bazar on PC Bhurban Road in Tehsil Murree which is terrain slopes covered with trees and shrubs in nature. Environmental data on physical, ecological and socioeconomic aspects were collected for carrying out environmental assessment. Secondary data were also collected from various sources mainly reports and literature. An introductory leaflet was prepared about the features of the proposed plant among the people of the area. After some days, social survey of the project area was carried out through a questionnaire under which people living around the proposed project area were interviewed to have their views about the construction of apartments and the perceived impacts on the natural environment around the proposed project. This included information on socioeconomic conditions, project information and its possible impacts. Photographs of the various environmental aspects both inside and outside the proposed project area were also taken and are given as Photo logs.

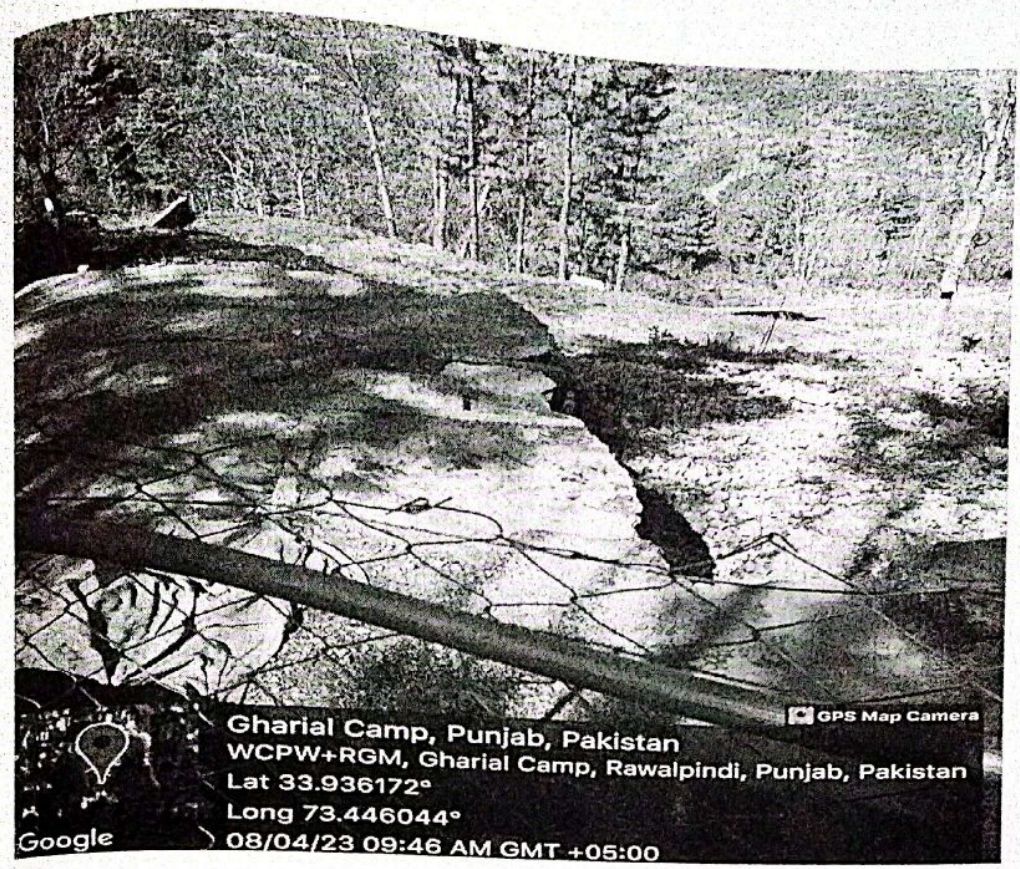
4.4 PHYSICAL ENVIRONMENT

4.4.1 Topography

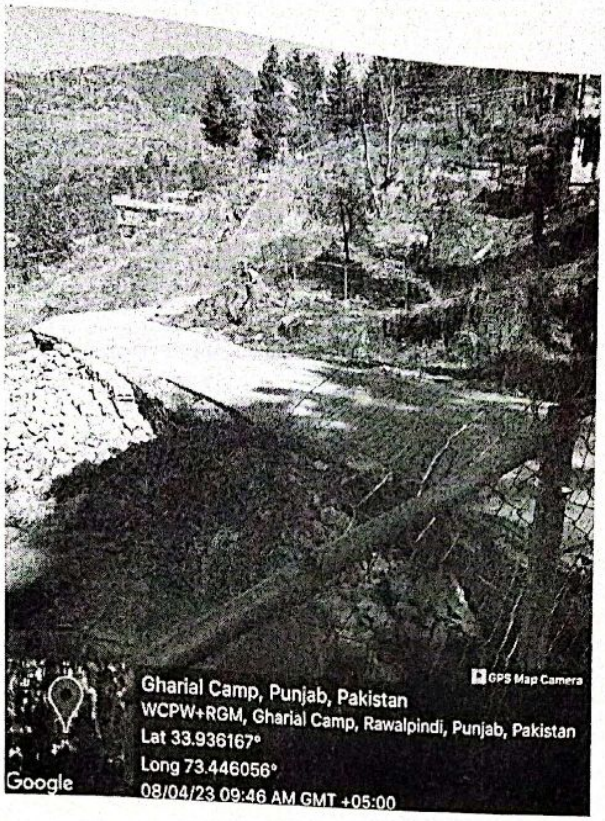
The project site comprises about 10 kanal of land situated in Mauza Mora Aswaal, Tehsil Murree and District Rawalpindi. The elevation of Murree hills ranges from 5000-6500 ft. The winter precipitation is in the form of snow. It lies in the area of Kashmiri bazar. The major part of the area is terrain slope covered with trees and shrubs along with scattered human settlements.

Proposed site View

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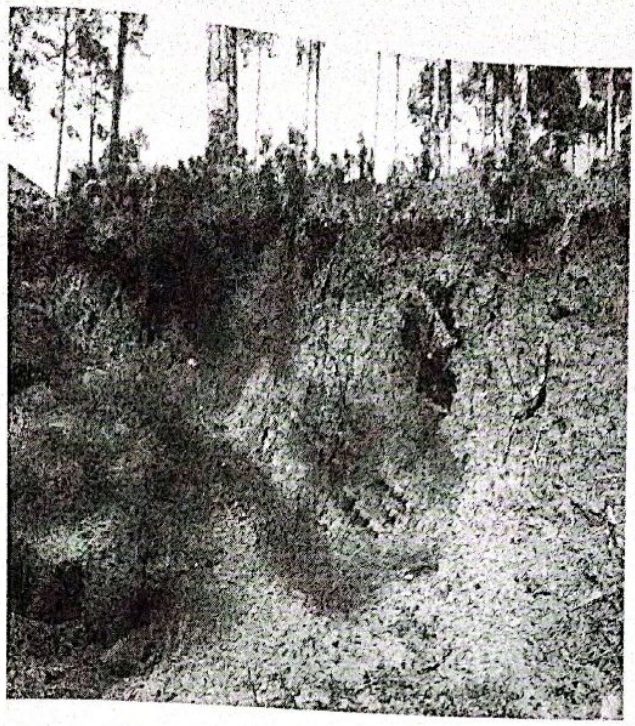


P.P 4.1 : Topography of the area

4.4.2 Soils

The soil texture of Murree hills varies with vegetation type and density and the level of biological activity in the soil. The soils are classified as Entisols and Inceptisols, with more acid forms predominating above 2,000 m and alkaline forms below this altitude. Rates of soil erosion are estimated to be around 150 t ha−1 y−1 on average in higher altitude areas of recent deforestation, and around 50–75 t ha−1 y−1. Murree Biodiversity Park (N 33 in areas of overgrazing at lower altitude. Susceptibility to erosion is high due to steep slopes, high silt and/or fine sand contents and low organic matter contents. Erosion control is being attempted by replanting the lower areas and by policing illegal felling of the higher forested areas.

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P.P 4.2 : Soil of the Murree Area

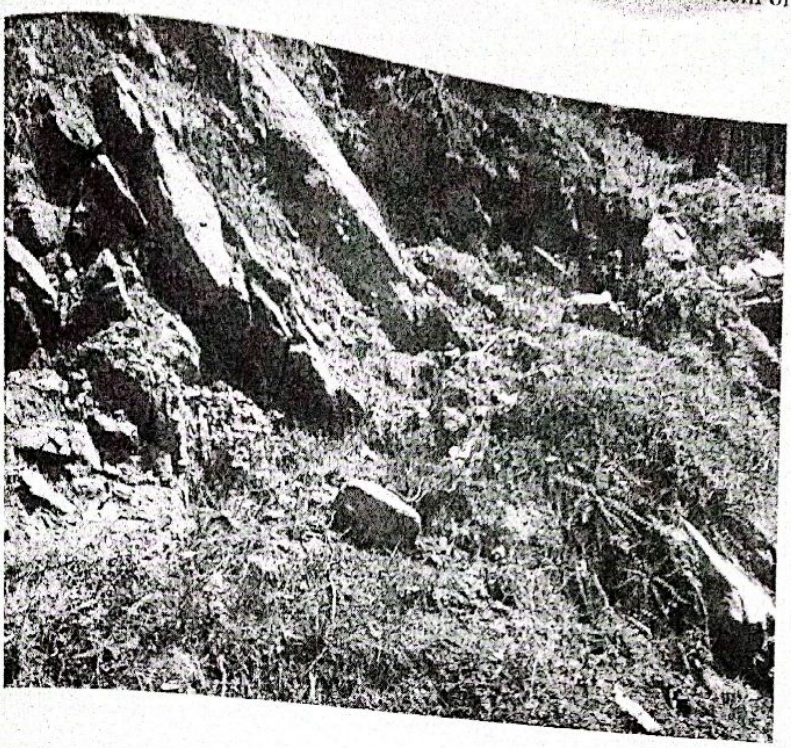
4.4.2 Soil Profile Type

Soil profile types are defined as follows:

SA= Hard rock with measured shear wave velocity, vs > 1500 m/s (4,920 ft./sec.).
SB = Medium hard rock with 750 m/s < vs < 1500 m/s (2,460 ft./sec. < vs < 4,920 ft./sec.).
SC= Very dense soil and soft rock with 350 m/s < vs < 750 m/s (1,150 ft./sec. < vs < 2,460 ft./sec.)
SD= Stiff soil with 175 m/s < vs < 350 m/s (575 ft./sec. < vs < 1,150 ft./sec.) or with 15 < N < 50
SE = A soil profile with vs < 175 m/s (575 ft./sec.) or with N<15 or with Su<50 kPa (1,044 psf).The hard rock, Soil Profile Type SA, category shall be supported by shear wave velocity measurement either on site or on profiles of the same rock type in the same formation with an equal or greater degree of weathering and fracturing. Where hard rock conditions are known to be continuous to a depth of 30 m (100 ft), surficial shear wave velocity measurements may be

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extrapolated to assess vs. The rock categories, Soil Profile Types SA and SB, shall not be used if there is more than 3 m (10ft) of soil between the rock surface and the bottom of the spread footing or mat foundation.



P.P 4.3 Soil profile of the area

Table no: 4. 1 Soil profile types

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Soil Profile Type	Soil Profile Name/ Generic Description	Average Properties for Top 30 M (100 ft) of Soil Profile		
		Shear Wave Velocity, $\bar{v}_s$, m/sec (ft/sec)	Standard Penetration Tests, $\bar{N}$ [or $\bar{N}_{ch}$ for cohesionless soil layers] (blows/foot)	Undrained Shear Strength, $\bar{s}_u$, kPa (psf)
S_A	Hard Rock	>1,500 (>4,920)	–	–
S_B	Rock	750 to 1,500 (2,460 to 4,920)		
S_C	Very Dense Soil and Soft Rock	350 to 750 (1,150 to 2,460)	>50	>100 (>2,088)
S_D	Stiff Soil Profile	175 to 350 (575 to 1,150)	15 to 50	50 to 100 (1,044 to 2,088)
S_E[1]	Soft Soil Profile	<175 (<575)	<15	<50 (<1,044)
S_F	Soil requiring Site-specific Evaluation. See 4.4.2			

1 Soil Profile Type S_E also includes any soil profile with more than 3 m (10 ft) of soft clay defined as a soil with a plasticity index, PI > 20, $w_c \geq 40$ percent and $s_u < 25$ kPa (522 psf). The Plasticity Index, *PI*, and the moisture content, w_c, shall be determined in accordance with the latest ASTM procedures.

4.4.3 Seismology

Earthquakes are generated due to tectonic processes in the upper part of the earth called lithosphere, which is divided into several rigid parts called "Plates". Due to the movement of these plates, stress build up takes place and results in the deformation of the crustal mass in the form of folding and faulting. The energy produced due to movement along the faults is depicted in the form of earthquakes. For the purpose of seismic design of buildings, Pakistan has been divided into five zones. These zones are based on the peak ground acceleration ranges summarized in Table 5.1.

Table no.4.2 - Seismic zones

Seismic zone	Peak Horizontal Ground Acceleration
1	0.05 to 0.08 g
2A	0.08 to 0.16 g
2B	0.16 to 0.24 g
3	0.24 to 0.32 g

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4.4.4 Foundation construction in seismic zone III&IV >0.32 g

The foundation shall be capable of transmitting the design base shear and overturning forces from the structure into the supporting soil. The short-term dynamic nature of the loads may be taken into account in establishing the soil properties. The connection of superstructure elements to the foundation shall be adequate to transmit to the foundation the forces for which the elements were required to be designed.

The Project site is located north of the collision zone between the Indian and Eurasian plates. This contact represented by the Himalayas has always been generating moderate to large earthquakes including Kashmir (2005), Kangra(1905),Nepal-Behar (1934) and Assam (1897 and 1950) that caused huge damage to life and property. Any major to large earthquake along Himalayan frontal faults can cause appreciable ground motion at site. The Murree hills, in which the Project is located, also shows low to moderate level of seismicity which is associated with the faulting in the Basement rocks covered by the alluvial deposits. A minor to moderate earthquake originated from the Basement rocks of Murree Hills could also produce appreciable ground shaking due to thick alluvial deposits. The project site lies in Zone III where ground acceleration of 0.24 to 0.32 g is expected.

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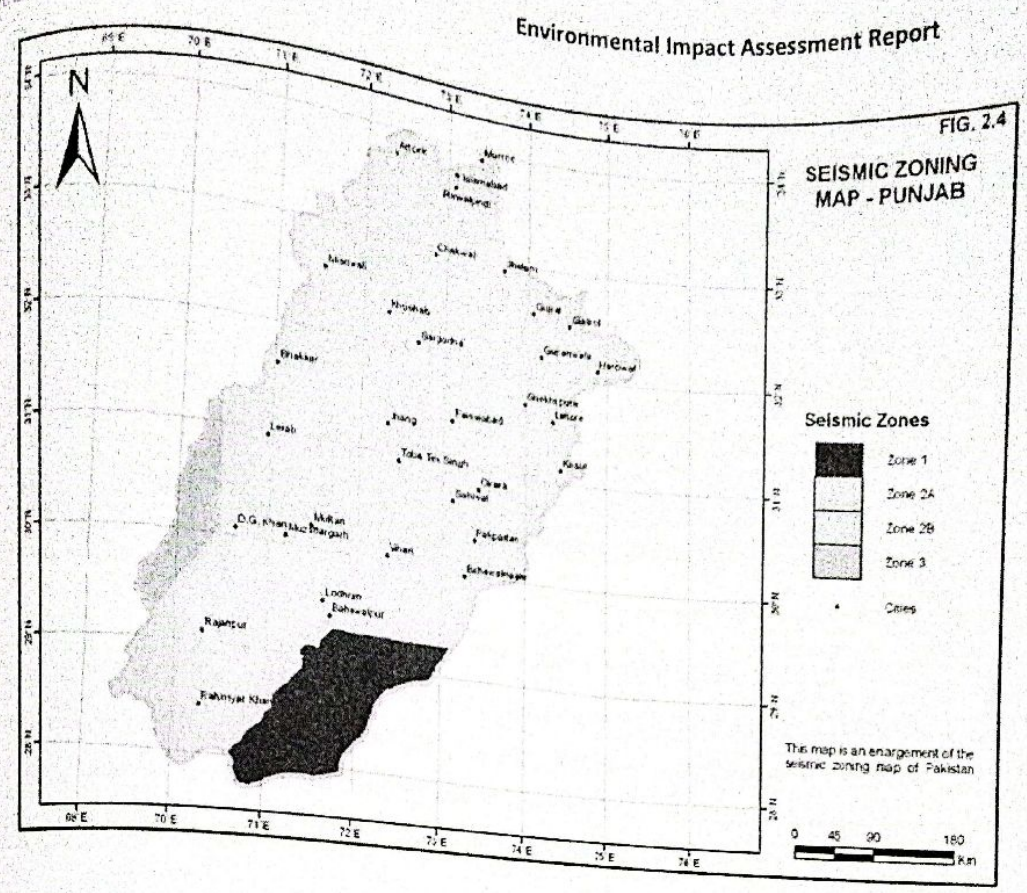


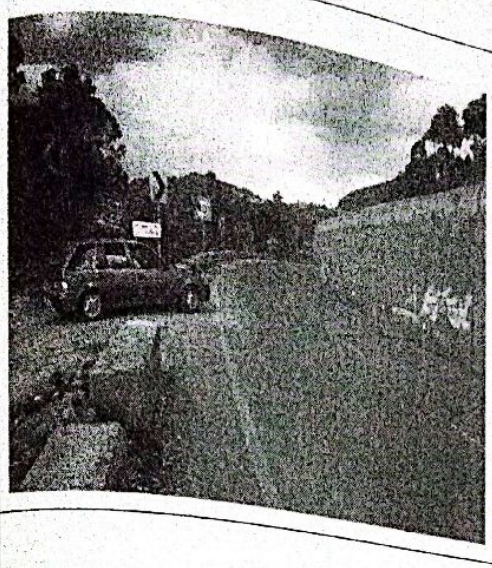
Fig 4.1 revised seismic Zone of Punjab

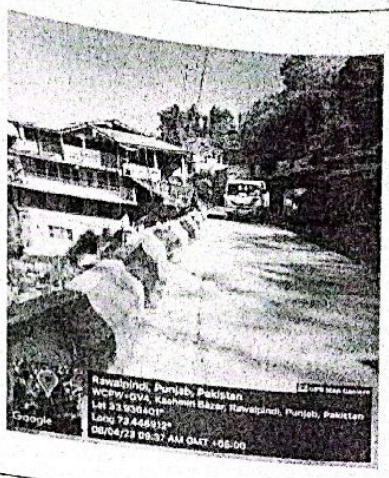
According to Seismic Zoning Map of Pakistan included in the Pakistan Building Code Seismic Provisions (2007), district Rawalpindi falls in Zone 2B and Tehsil Murree falls in zone 3, therefore project structures should be designed in accordance with the requirement of seismic designing Zone 3 after giving due consideration to the foundation material about 0.24 to 0.32 g.

4.4.4 Traffic

The site is adjacent to the Kashmiri Bazar on Allama Ibal Road which is about 18 feet wide. The area is a busy part of Murree. Pearl Continental Hotel and Marcopolo resorts are located in this area. The traffic varies from Monday to Sunday. The weekends experience more traffic whereas mid-week days have less traffic. Cars, vans, mini trucks, motor cycles and loaders are main motor vehicles plying on the road.

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PP 4.4: Traffic movement near the site

Traffic density is very low. About 35 vehicles per hours were counted during the month of April 2023 and 07th August, 2023. Motorcycles, tractors, rickshaw, car, bicycles, loader van, passenger van were among the motor vehicles. This traffic density has very limited contribution noise and air pollution generation.

4.4.5 Meteorology and Climatology

The project area lies in the hilly lands of Punjab. Summers are quite hot with moderate humidity, whilst winters are of extreme cold. Mean winter temperature (December/January) ranges between 14°C and 17°C. Mean summer temperature remains around 17 to 20.6°C. The mean of the maximum temperature ranges between 21 to 25.6 °C and mean of the minimum ranges from 0.1 to 8.8 °C. Spring and autumn seasons are the most pleasant parts of the year and full of colorful activities. The meteorological and climatic features of the project site are shown in **Table 5.1.**

Murree has a cool climate with rainy, long and extremely winter, dry and cold winters, a monsoon and dust storms. The weather of Murree is pleasant during the months of May, June and July, when the temperatures reaches up to 17–20.6 °C. From late June till August, the monsoon seasons starts, with heavy rainfall throughout the province. The highest temperature recorded in summer is recorded in June that is 35°C while the lowest was recorded in September that is 05°C. Recorded-lowest temperature of

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12 °C was recorded on May 2012. The high amount of precipitation has given it a good cover of vegetation. The bulk of precipitation is received during the monsoon in July and august. The average rainfall is 100 inches. In winter, snow falls above an altitude of 1200 meters. The snow persists above 1800 meters elevation during January and February, especially on cooler northern slopes the hiss generally an average of about 1.25 meter of snow annually.

Table-4.2 Meteorological and Climatic features of the project site

Climatic features of the project area	
Classification of climate	Sub-tropical (cold / humid)
Predominant wind direction	South West/ North East
Wind intensity	Weak to moderate
Average annual precipitation	1788.6 mm
Rainy season	July to August
Dry season	October to June
Average annual temperature	3.7-12.3°C
Average summer temperature	17.3- 20.6°C
Average winter temperature	3.7-8 °C

Murree has cold, snowy winters, relatively cool summer with drastically escalated rain, in relation with lower altitudes, and frequent fog. Precipitation is received year-round, with two maximas, first one during winter and second one at summer, July–August. Total mean precipitation annually is 1,789 mm (70.4 in). Observations show maximum rain fall in July and August (130-inch max & 70.4-inch average), temperature even below 0 ^{0}C minimum in Dec. Jan. and max 25 ^{0}C in June.**Table-4.3** summarizes month-wise temperature, precipitation, and relative humidity.

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Table 4.3: Extreme Monthly Temperature and Precipitation
Source: Meteorology Department Lahore

Month	Temperature Extremes		Precipitation (mm)
	Maximum	Minimum	
January	18	-11	98.6
February	22	-12	107.9
March	26	-7	163.6
April	29	-2	100.6
May	35	3	101.6
June	35	6	126.7
July	35	8	254.8
August	31	8	211.1
September	28	5	204.5
October	26	0.0	95.5
November	25	-03	98.3
December	21	-07	107.5
Annual	**27.58**	**-12**	**1788.9**

4.4.5.1 Winter Season

Winter starts in December and normally brings heavy snowfall. Murree and its surrounding areas are covered with thick layer of snow during most part of the season. Temperature mostly hovers around the freezing point.

4.4.5.2 Spring Season

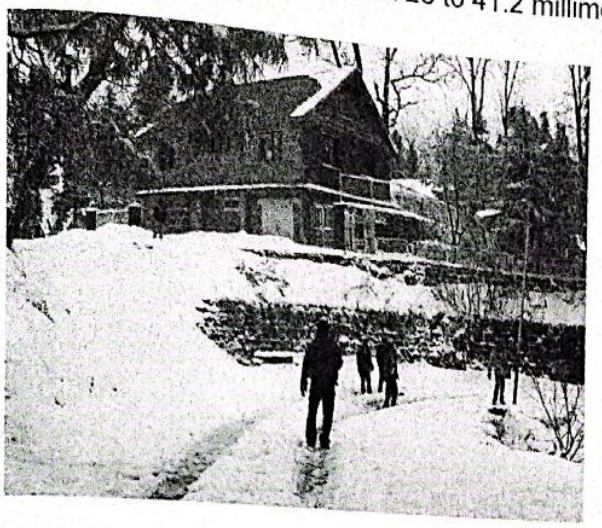
Spring in Murree starts in March and ends in middle of May. Maximum temperature during this period hovers between 12 ^{0}C to 20 ^{0}C and minimum between 4 ^{0}C and 10

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°C. The area receives heavy rain and hail storms during this season. The fruit trees laden with flowers give a spectacular view.

4.4.5.3 Snow fall

Towards end of June monsoon condition appears and during the following 2 and half months spell of season alternates with intervals of sultry weather. The winter rain falls during January, February and March ranging from 23 to 41.2 millimeters.



P.P 4.5: View of snow fall in Murree

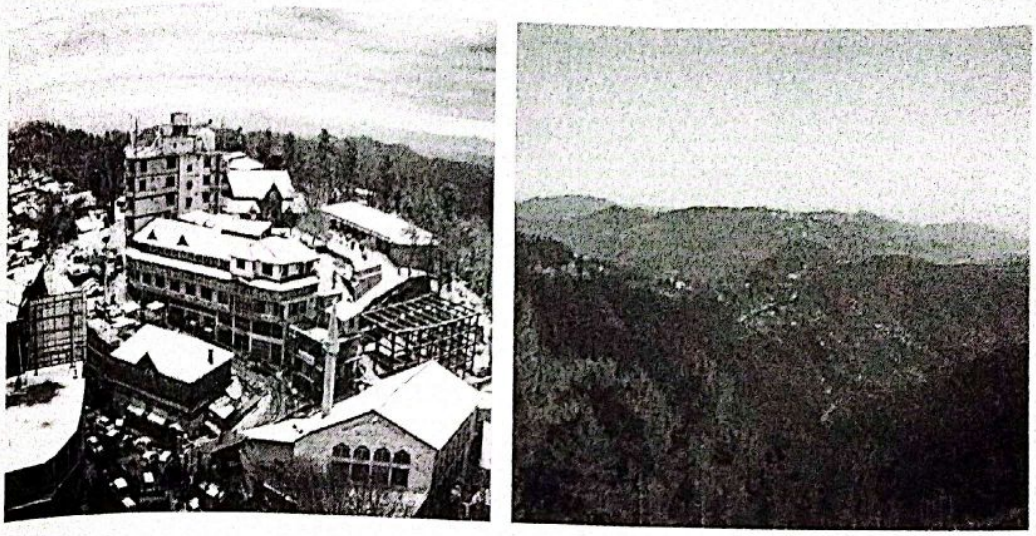
4.5 Demography of the Area

4.5.1 Murree

Murree is an exurb of Islamabad and the administrative center of Murree Tehsil, in the Punjab province in Pakistan.it has area of 380 km^2. Murree was the summer capital of the Punjab Province of British India until 1864. According to 1998 Census, Murree Tehsil had a population of 176426 (90780 male, 85646 female) including 155,051 inhabitants of rural areas and 21,371 urban dwellers. The civilian and military component of urban population includes 13462 and 7400 respectively. The hill station is a popular getaway destination for Islamabad's populace. It is located on the southern slopes of the Western Himalayan foothills as they ascend northeastwards at an average altitude of 2,291 meters (7,516 ft). Islam is the main religion of Murree, however Christian churches from the British era can still be found in Murree

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and Nathia Gali. There is an Anglican church, built in 1857, located at the center of the town, which is still used as a place of worship. The Dhond Abbasi is the main tribe of the area. The Kethwal Rajputs is the second largest tribe in the area. Their origins lie in Kerman Persia; they travelled eastwards and settled in the hills. The Kethwals are well established in the Charhan, Ghel and Ban areas of Murree (Tehsil). The Dhanyal is the third largest tribe in area. The Jasgam are the fourth largest tribe.



P.P 4.6: Different view of Murree hills

4.5.2 Education

Murree is among the most literate areas in the country and easily surpasses major cities in this regard. Murree is also known for its elitist educational institutions which have been attracting students from across the country since independence. Lawrence College Gora Gali, established as Lawrence Memorial Asylum in 1860 for children of serving or retired British soldiers away from tropical climate of sub-continent. Various educational institutions are offering their best educational services to educate the people of its region. The overall literacy rate of Murree is 69.3% and it will increase in near future due to the educational policies.

- Lawrence college, Ghora gali
- Cadet college, Lower Topa
- Army Public School

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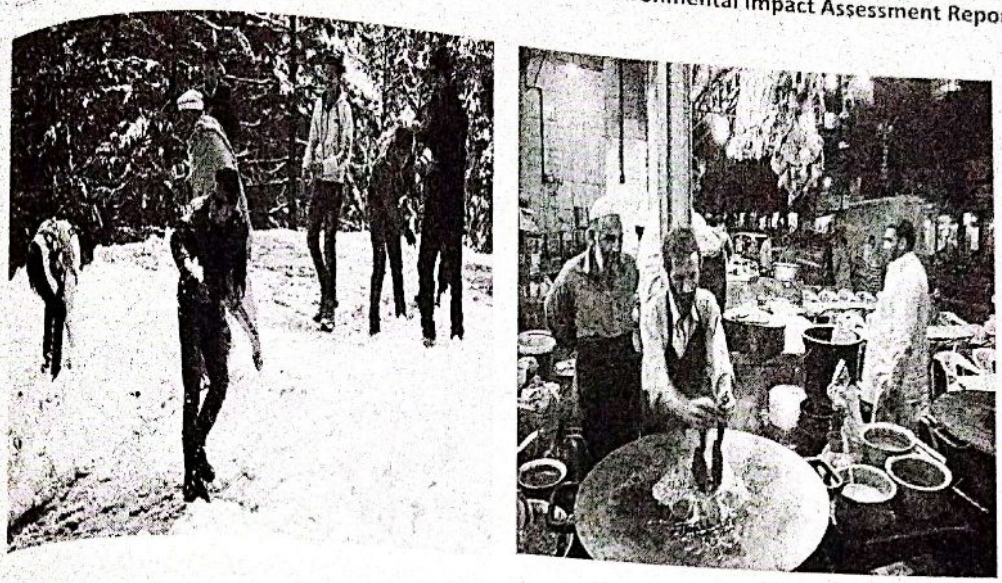
- Government college for women, Murree
- Murree Grammer secondary school
- Government boys degree college, Murree
- FG Public school, Murree
- Military college Murree
- Murree university

4.5.3 Recreation and Tourism

The Murree Galliat region is known for its scenic vistas of pine- and oak-covered mountains, crisscrossed with springs and rivulets and dotted with lawns and orchards. On clear days a good view of the snowy peaks of Kashmir is possible, and the crest of Nanga Parbat can sometimes be seen. Tourist attractions in the area include the Murree Wildlife Park. Whereas Arjun Bhandari, a senior journalist of Nepal, says the place looks like Nagarkot, a tourist destination of Bhaktapur, Nepal.

Patriata is one of the pivotal attractions of Murree. This place, which is 15 km away from Murree Hills, is famous for its chairlift that gives a bird-eye view of the Kashmir green hills. It is at the highest point of Murree Hills that subsequently makes it the highest point of Punjab as well. Ayubia is also a center of attraction in Murree, which comprises four hill stations including Khanspur, Ghor Daka, Changla Gali, Khairagali. Ayubia Chairlift and shops offering cultural shawls, caps and necklaces are the major appeal of this place. Scenic Nathia gali, situated in Abbottabad at a distance of 2500m from Murree, is popular for its maple, pine, walnut and oak trees. Mall road in Murree is the center of major economic activities. The entire road is full of shops selling a multitude of things for the tourists. Major Banks, hotels and restaurants are situated at Mall Road.

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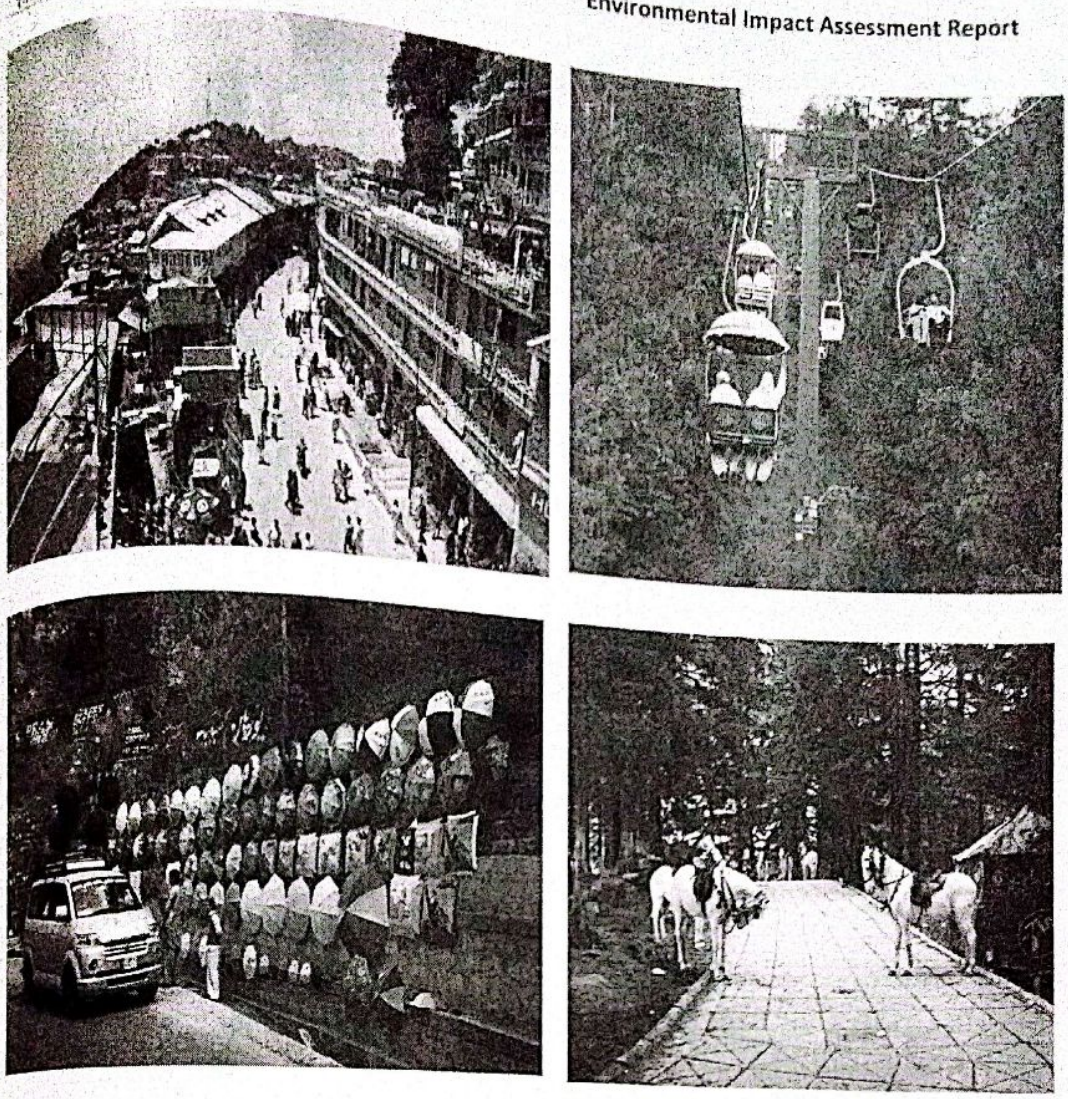


P.P 4.7 : Tourists activities in Murree

4.5.4 Business Activities in Murree

Murree has always been considered one of the best holiday destinations for adventurous excursion, especially for people coming from warmer areas. The hill station has much to offer its visitors; clean air thanks to lush green trees, stunning natural sights, good food, and of course, the Mall Road, lined with beautiful street markets. Mall road is the famous market place in Murree. A road full of life, hotels, restaurants, and handicraft shops and happy faces. People who visit Murree, get their rooms on Mall road. This is the place where people just walk till 2am or 3am in morning and enjoy the beautiful weather. The entire road is full of shops selling a multitude of things for the tourists. Major Banks, hotels and restaurants are situated at Mall Road.

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P.P 4.8: Economic acitvities in Murree area

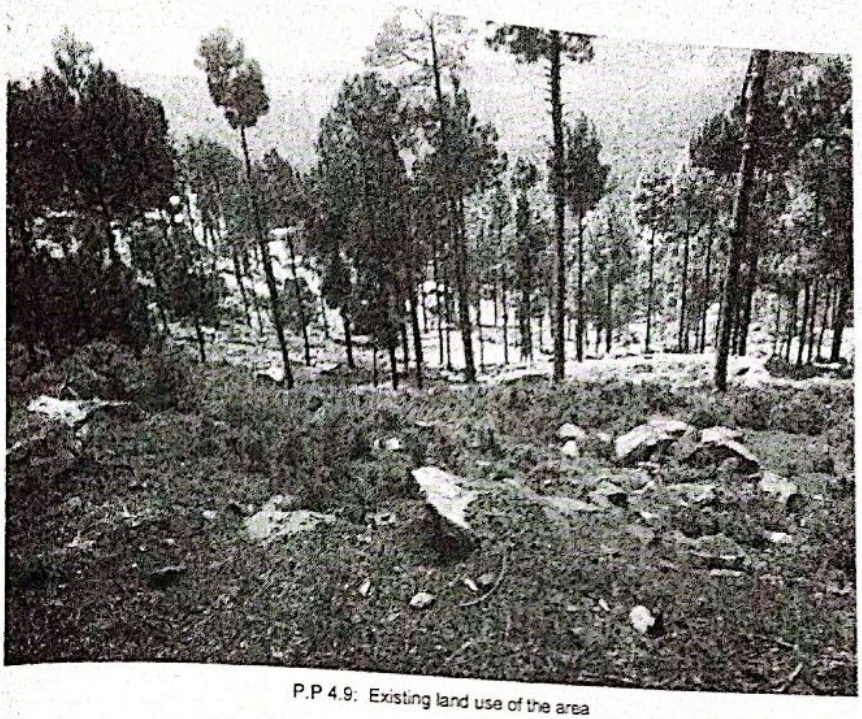
4.5.5 Religion and ethnic groups

The majority religion in Tehsil Murree is Islam, making up 97.46% of the city with small minorities of Christians (2.00%), Hindu (0.54%), and mainly Hindu and Ahmadis. The majority of Muslims belong to Sunni, Hanafi, and Barelvi schools of thought and Shiites are also present. The main tribe groups in tehsil Murree is, Sattis, Kathwals and Danials. Besides there is a sizeable population of Gujars and some Jats as well as members of artisan classes across the Tehsil Murree. But Abbasi clan is dominant in project area. The language spoken in Murree is an amalgamation of Hindko, Potohari and Hindko languages spoken in Rawalpindi.

4.6 Land use

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The area is dominantly terrain slope in mountainous region of Murree which is covered with trees and shrubs. There are some animals like cow, goat buffalo were grazing at site. These animals are the income source of the local people.



P.P 4.9: Existing land use of the area

4.7 Infrastructure and Basic Facilities

The project area is semi developed one. It is about one Km from the Kashmiri Bazar. It is about 03 Km away from Gharial Camp, Murree. The pearl Continental Hotel Murree is also situated in this area, hence its road infrastructure is better

There are many well equipped medical centers in Murree. There is a military hospital "CMH" situated on Murree mall road.

4.8 WATER RESOURCES

4.8.1 Rivers

The site area is located in the catchment area of Soan River. Rain Nala passes about 1 km on its down slope side. The area is a mountainous with terrain slope. It is located away from the river Soan which acts as the major recharge source of the subsoil water. River Soan

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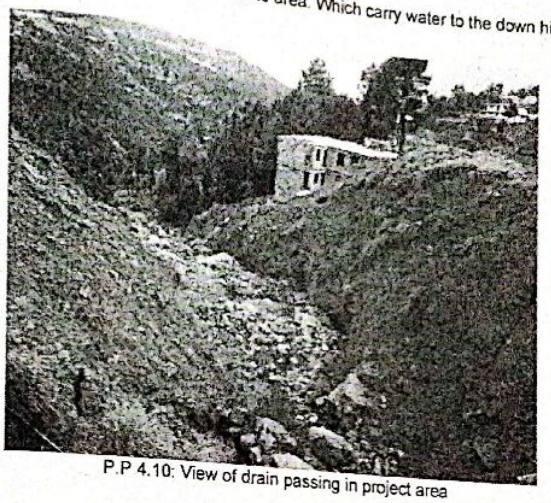
provides water to Simly dam. Spring water is used as source of water for domestic and agriculture purpose. Therefore, there is no usage of river water in this project.

4.8.2 Springs

There are three small springs present in project area. Water for construction and operation phase of the project will be drawn from existing springs.

4.8.3 Drains

There are three water channels passing through the proposed site area. Which carry water to the down hillside.

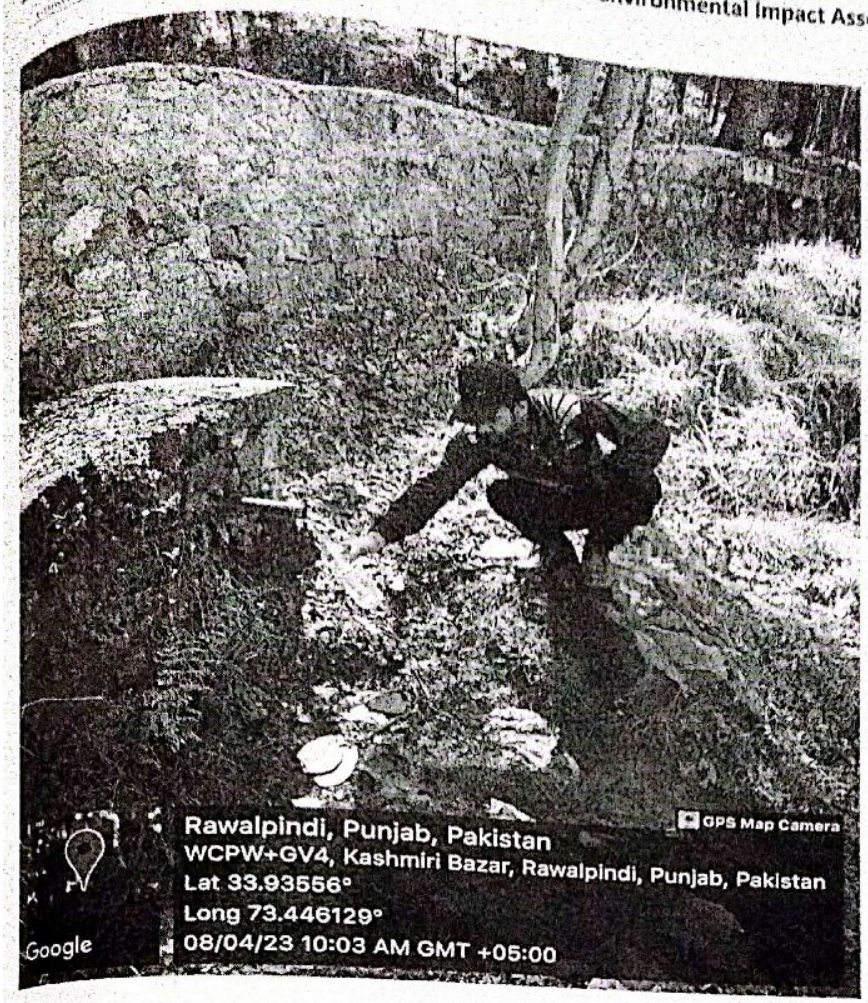


P.P 4.10: View of drain passing in project area

4.8.4 Groundwater

According to the Pakistan Council of Research in Water Resources report of tehsil Murree indicates that 85 number of samples were collected and analyzed. The water analysis result showed that 76% water samples were found unsafe for drinking and 24 % water samples were safe for drinking purpose.

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PP 4.11: Sampling of existing clean water point

The analysis showed that the water is chemically fit with respect to PEQS for drinking water 2016. TDS concentration is below the PEQS standard but it is relatively higher side for industrial use. The chemical analysis of the groundwater is **summarized in Table 4.3.** The results of ground water are attached at **Annex VII**

Table 4.3: Analysis of Groundwater Samples

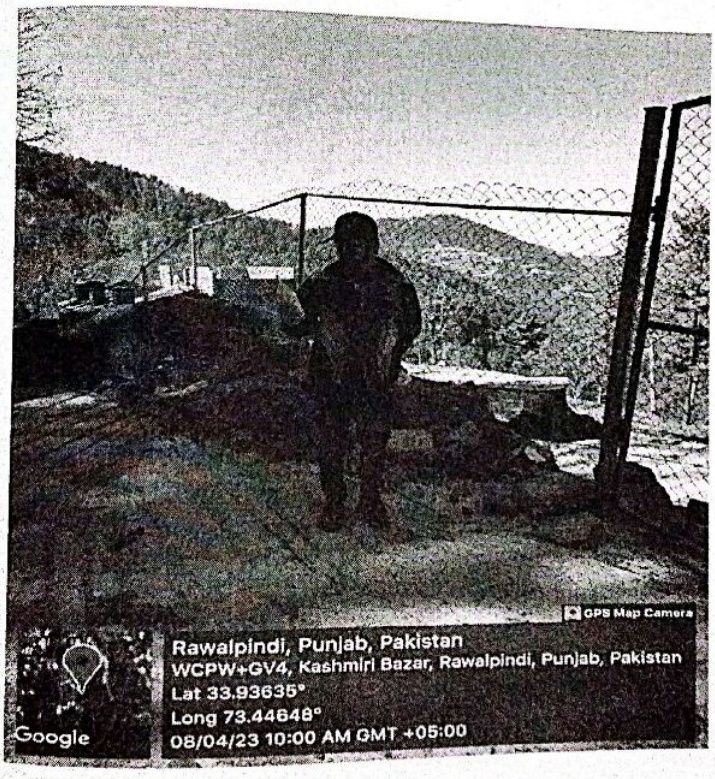
Sr. No	Parameter	Value
1	Colour	Colorless
2	pH	
3	Conductivity	us/cm
4	Total Dissolved Solids (TDS)	mg/L

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Sr. No	Parameter	Value
5	Total Hardness	mg/L
6	Bicarbonate alkalinity	mg/L
7	Arsenic	mg/L
8	Fluoride	mg/L
9	TSS	mg/L
10	Temperature	^{0}C

4.9 Noise Levels

The major source of noise at the project Site is the vehicular traffic on the. The log equivalent of noise inside site boundary was measured 51.2 dB whereas average noise level outside of the site boundary was measured 52.2 dB (A). The noise at main road was measured 46-65 dB (A). When any motor vehicle presses horn the noise level goes up to 70 dB (A) which is not routine at this sight. Project area, however, fall under a sort of silence zone, i.e. noise level is around 50.15 dB (A).The result of ambient noise monitoring is attached at Annex VI



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PP4.12: Measurement of noise levels

4.10 Air Quality

The air quality of the project area is clean, but there is no permanent environmental monitoring station in the whole Area. During the site visits it has been observed that ambient air is clean at present as no heavy industry or other source of air pollution exists in the project area. The only source of air pollution is traffic on the road which has the least impact on the quality of the air. The results of environmental laboratory are attached at **Annex- VI.**

Table-4.4: Air quality Monitoring Data at Project Site

Sr. No.	Parameters & their Concentrations					
	CO (mg/m^3)	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	O3 ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)
	1.5	13.1	3.9	24.4	124	20.31
NEQS for Ambient air	5	80	120	130	150	35

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PP4.13: Measurement of air quality

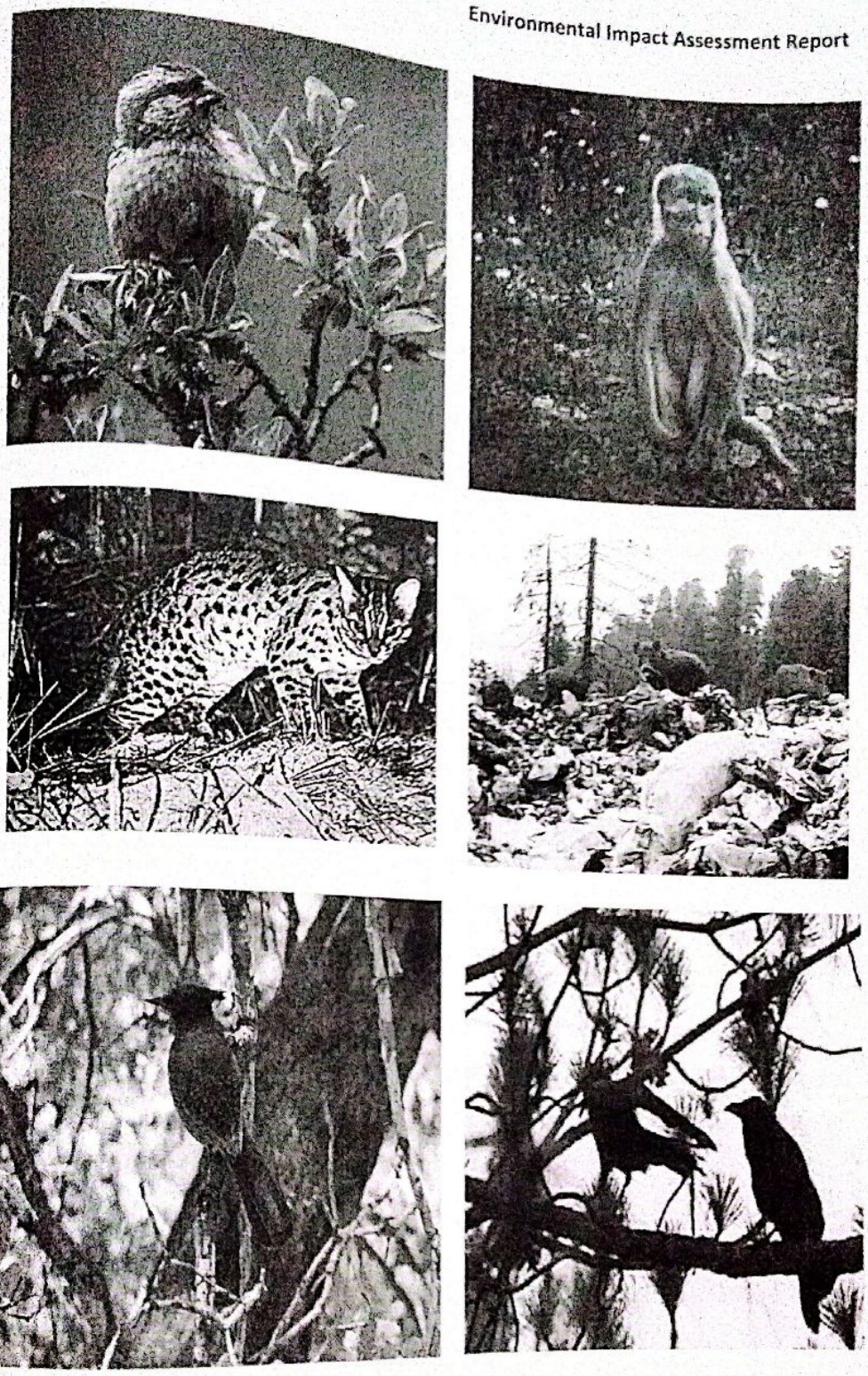
4.11 BIOLOGY

The project area lies in sub-tropical region of Murree. Soil quality is good. The project lies adjacent to the Forest area owned by Forest department.

4.11.1 Fauna

In Murree there are areas which can truly be classified as places of breeding, nesting and roosting for several bird species. The common animals at site are dog, cat, cow, goat, buffalo, sparrow, snake, turtle, black kite, booted eagle, Barn Swallow, common wood Pigeon, kalij pheasant, sheep, squirell, crow, nightingale, and cuckoo. Some of them are reared as livestock while some of them are native to this area.

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PP. 4.14:Fauna species of the project area

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Only some of them were seen in the project area i.e sparrow, pheasants, crow, crane, frog, duck, dove, and larks.

Not only the birds, but different other classes of the animal species also play an important role for the habitat of the area. The main animals which may be found in Sindh are as shown in **Table-4.5.**

Table-4.5: List of Different Classes of Animals

Mammals	Reptiles	Amphibians	Insects
Leopard	Monitor Lizard	Indus valley bullfrog	Dragonfly
Rhesus Monkey	Geckos	Common frogs	Damselfly
Donkeys	Snakes	Toads	Butterflies
Cows	Himalayan skink	-	Honey bees
Bats	-	-	Earthworms
Goats	-	-	Centipedes
Wild Boar	-	-	-
Barking Deer	-	-	-
Buffalo	-	-	-
Murree Mole	-	-	-
Horse	-	-	-
Sheep	-	-	-
Fox	-	-	-

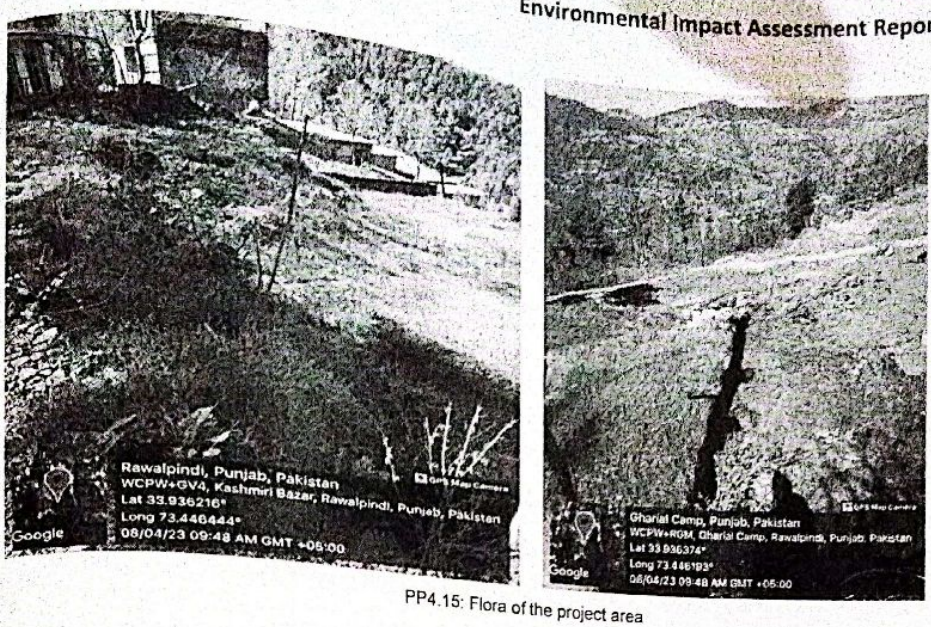
Source: WWF

However, site area lies near forest region in nature and therefore, it is the habitat of the animals like indian sparrow hawk, koklass pheasant, Grey partridge dove, squirrels, crow and two ducks which were swinging in the rain water accumulated at site. The pet animals of farmers were seen near the proposed site.

4.11.2 Flora

The present site topography shows that it is mountainous area. It has grass and shrubs on the site. About 10 trees of pine and maple leaf were seen on the site. No other species was noted at the proposed site.

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PP4.15: Flora of the project area

4.11.3 Endangered Species

In Murree hills, Leopard is the endangered species of Murree area however in project area there is no endangered species present.

4.11.4 Sensitive Habitat

Environment Protection Agency declared Kotli Sattian Kahuta and Murree as environmentally sensitive a vid their letter No. 304/56-G/LS/EPA dated 5th November, 2008.

Keeping in view the environmental sensitive nature of Murree hills, all developers are required to submit Environmental Impact Assessment instead of IEE and get approval before commencement of construction.

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CHAPTER -5

PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

5.1 SOCIO-ECONOMIC SURVEY OF THE PROJECT AREA

Consultation with the stakeholders is a tool for managing two-way communication between the project sponsors and the public. Its goal is to improve decision making and build understanding by actively involving individuals, groups and organizations which have a stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stake holders.

5.1.1 Methodology

5.1.1.1 Identification of stakeholders

Stake holders in this project were identified keeping in view the **Guidelines for Public consultation published by Pak EPA**. The stake holders were identified from the following groups.

a) Local people

b) Proponents

c) Government Agencies

d) Influential people

e) Technical persons

f) Poor People

5.1.1.2 Techniques for Public Consultation

The following principals were kept to select the techniques or public consultation

- Provision of material / information in easy language

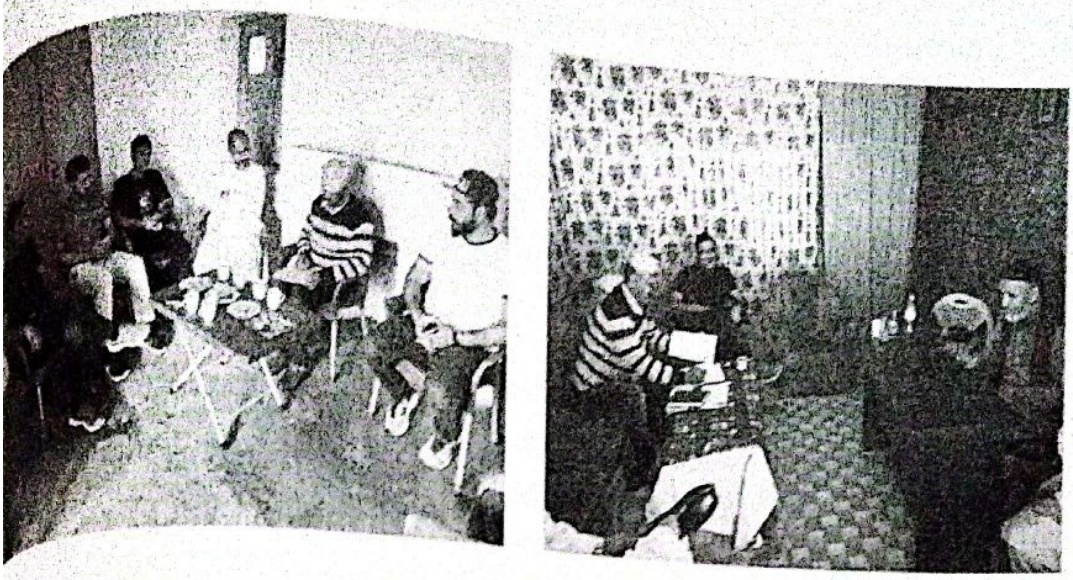
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- Providing sufficient time to understand
- Providing discussion to understand the information in a friendly way
- Portraying the actual issues relating to the project
- Discussion at the place which has easily access to the people
- Selection the time when maximum people are available
- Selection of influential people of project area
- Including of poor people
- Selection of people who give true presentation of community make up
- Concerned government departments were selected who had liaison with the execution of the project and environmental approval.

5.1.2 Dissemination of information

The EIA team reviewed the available information, held meetings with the proponent and designer. The pamphlet was distributed to the public in informal meetings group discussion and corner meetings at Public and work places of Murree villages and proposed site. An ample time of one week was given to the people to understand and discuss the issue with each other and make any opinion about the project. The image of the meeting with is given below:

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P.P 5.1: social survey at project area

5.1.3 Public Meetings and Group discussions

The area is hilly region and rural in nature therefore we decided to hold physical contact instead of using print or electronic media. The group discussion is the way of opinion making used in the Sindh since hundreds of years. It is reliable and unbiased way to get opinion of the people. The seminar or public gathering was avoided as the poor people cannot attend and unable to express his views without duress or influence of Chaudhry or wadera of the area or village.

5.1.4 Convenient Time and Place

The people in villages do not move away from village except in case of urgency. We went to them on their residences or work places. In this way no time and money of the people was spent and we got indiscriminate access to the concerned people. In this way the people who do not have money to travel to go to government departments got access to information and had opportunity to express his opinion in a liberal way.

5.2 Limitations of the Public Consultation

We tried our best to include all segments of life in to account according to education and professions as per local distribution of the social formation. They do not want to give any sign or photograph. Almost 34 people from different segment of society have

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been interviewed to know the public aware and response towards the implementation of this project in Tehsil Murree who were interviewed these were some educated who had clear and positive opinion about the Construction of Bhurban Pine Residencia. They want prosperity of the area. They showed their interest for the construction of Bhurban Pine Residencia.

5.3 Questionnaire

After review of the available information a questionnaire was developed containing all necessary information and question covering positive and negative aspects of Bhurban Pine Residencia. The questionnaire comprised of two parts. First part has brief description of the project and part II was divided in the following parts:

- Socioeconomic background
- Positive impact of Bhurban Pine Residencia
- Acceptance level of the Project.

5.4 Public Consultation

The following stake holders were identified and meetings were held with them to inform them about the project design and know their response

- Land owner of project site
- Builder & Developer
- Land lord
- Tourists
- Thekedars
- Retired officers

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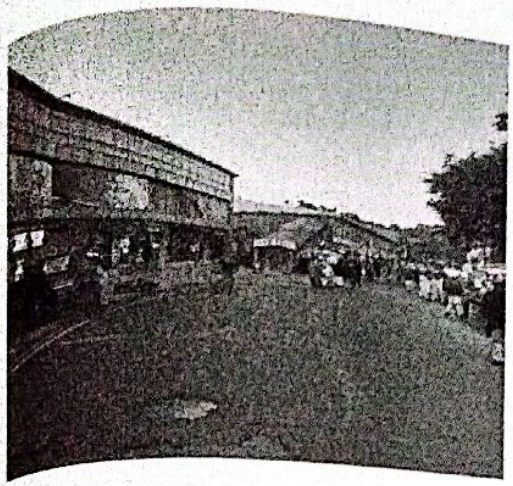
- Shopkeepers of Kashmiri bazar
- Property dealers
- Businessman
- Students
- Laborers
- Management of the Bhurban Pine Residencia
- Residents of the area
- TMA Murree
- Forest Department
- Rawalpindi Development Authority office
- Environment department of Murree

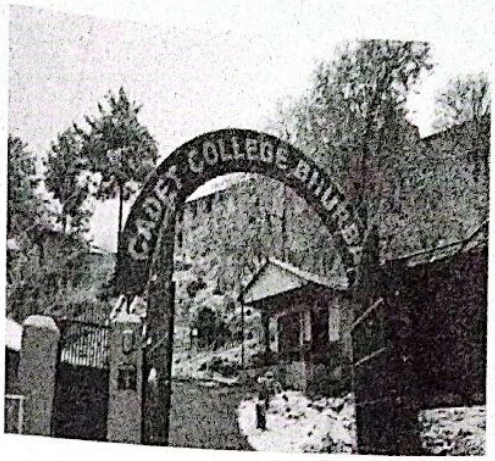
After one week of the distribution of the leaflet on the project information, a socio-economic survey of the Project Area was carried out with the help of structured questionnaires to identify various stakeholders and to record their feedback regarding the proposed Project. The socio-economic information was gathered through different techniques and methodologies and is derived from primary and secondary sources. Primary data were collected through following data collection tools: (i) Village profiles; (ii) Socio economic survey; Village profiles were carried out for all villages/settlements falling in Project Area.

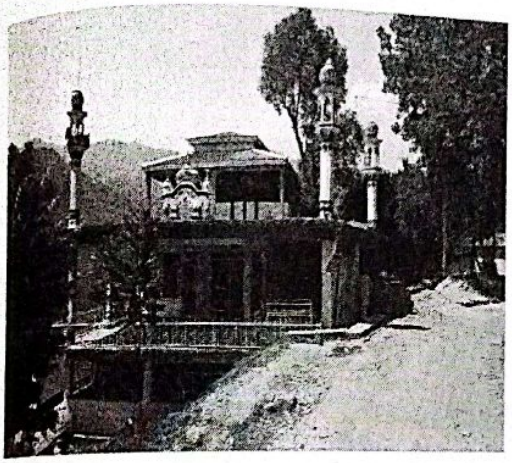
An introductory leaflet about basic information of the project was prepared in Urdu and distributed among the people at public places. This helped the people to understand about the project pros and cons. After one week the area was revisited by the team of experts and again asked the opinion of the people about the project in the form of well-

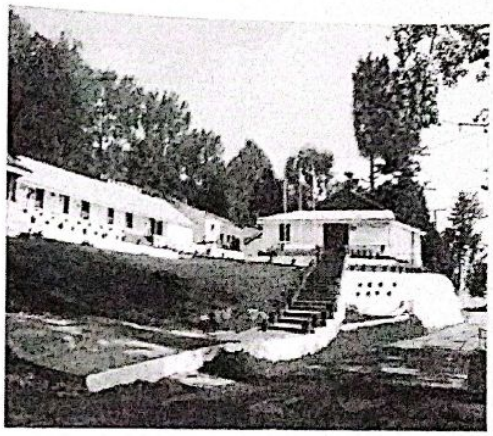
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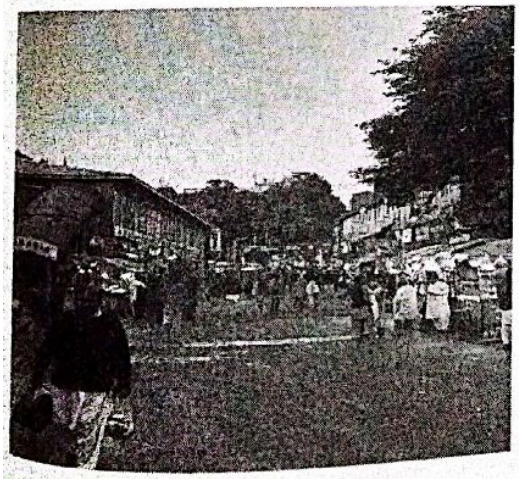
designed social survey questionnaire. Public consultations were also conducted in the villages of Mauza Mora Aswaal.

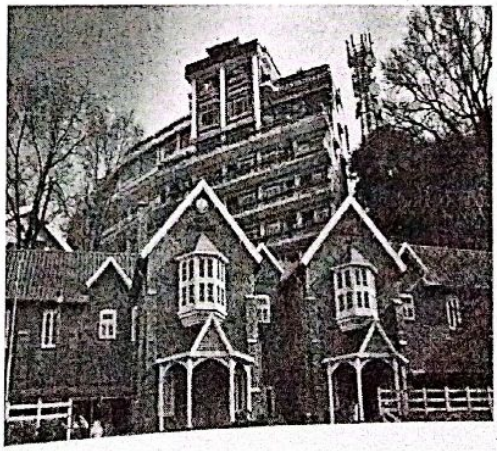












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P.P 5.2: Social buildings near project area

5.5 Issues Discussed

Following issues were discussed during the stakeholder consultation:

i) Personal information

ii) Education status

iii) Income level

iv) Residence status

v) Information about project

vi) Possible impacts on natural vegetation, land and properties;

vii) Beneficial factors and involvement

viii) Opportunities for the local people.

ix) Adverse effects of the project

x) Scope of the report

xi) Acceptance of the project by the people of the area

xii) Scope of the environmental assessment report

Different segments of the society were included to reflect the true and unbiased opinion. From Landlord to labor all segments of the project area were interviewed. Were also interviewed through a questionnaire which showed the following results:

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Table 5.1: Socio Economic Survey

1. **Gender:**

Male	34
Female	-

2. **Education level:**

Uneducated	01	2.9 %
Under matric	5	14.7%
Matric	16	47.1 %
F. A	6	17.6 %
Graduation	5	14.7 %
Post-graduation	01	2.9 %

3. **Occupation:**

Thekedar	01	2.9 %
Retired officer	02	5.9 %
Shopkeeper	06	17.6 %
Property dealer	02	5.9 %
Businessman	15	44.1 %
Student	03	8.8 %
Labor	03	8.8 %

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Retired person	02	5.9 %

4. **Water pollution problem:**

Concerned about water pollution	2	6 %
Don't show any concern about water pollution.	32	94 %

5. **Employment chances Direct and indirect:**

Yes	34	100 %
No	0	0 %

6. **Consent on project implementation:**

Yes	30	88 %
Conditional (yes)	2	6 %
No	2	6 %
What People of the area want from company	Employment to Local people Water supply facility Sui gas facility	
Conditional concerns about project implementation	Deforestation Water pollution Land pollution	

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No (Not in favor)	Because of social customs of the area

5.6 Apprehensions of the people of the area

- Low employment offers to local people during operation phase
- Drinking Water supply for the people of Mauza Mora Aswaal
- Sui gas facility

- **Table 5.2: People participated in Social survey**

Sr. No	Name of village	population	People participated in briefing	Questionnaire filled	Concerns
1	Mauza Mora Aswaal	Approx. 6500	50	30	Employment to local people Sui gas facility Water supply facility
3	TMA		Offered no comments		
4	Forest		Offered no comments		
5	EPA, Murree		Although development in Murree area can be conducted with approval of EIA after submitting EIA in the DG EPA Punjab. Yet the Apex court has		

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		discouraged the establishment of development projects in Marghalla and Murree hills due to polluting of Simly dam catchment area with untreated sewerage disposal by the human settlements and removal of vegetation cover and changing the climate of beautiful hill station.
6	Rawalpindi development Authority	The area is environmentally sensitive and hence Detailed EIA is required. The project activity should not contaminate the catchment area of Simly dam. Solid waste may be disposed off properly. Cutting of the trees is discouraged by the Apex court in Murree area. The debris of construction should be disposed off properly. The company should perform community development for the betterment of the people of the area. Local people should be offered job on priority basis.
7	Deputy Director EIA	Although development in Murree area can be conducted with approval of EIA after submitting EIA in the DG EPA Punjab. Yet the Apex court has discouraged the establishment of development projects in Marghalla and Murree hills due to polluting of Simly dam catchment area with untreated sewerage disposal by the human settlements and removal of vegetation cover and changing the climate of beautiful hill station.

7 Mitigation of the Peoples Apprehensions

i) No resettlement is involved

ii) More opportunities will be offered to local people of the area during construction phase and operation phase.

iii) There will be an increase in dust, noise and smoke emissions during construction which may be mitigated through compliance for NEQS for

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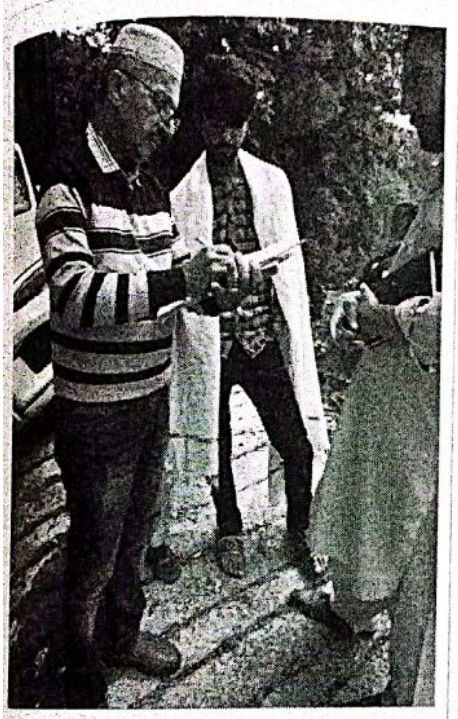
motor vehicles, dust suppression through sprinkling of water and controlled speed of motor vehicle during construction phase and paving of the access road within the project area.

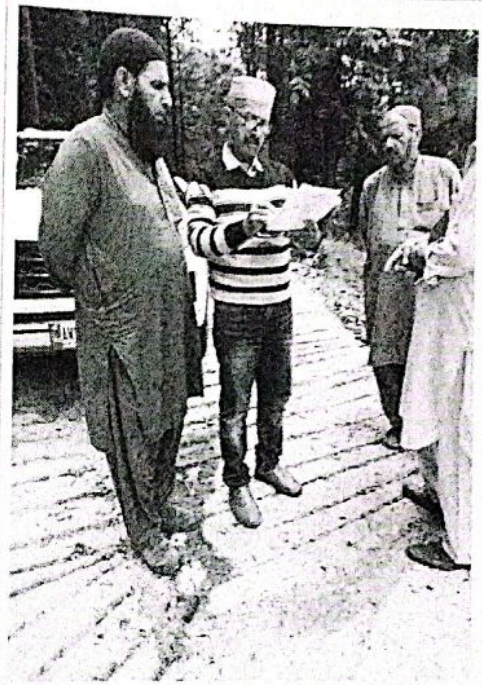
iv) Proper parking area should be provided in the design for the supply of construction machinery/material during the construction phase and during the operations.

v) Water supply facility will be given to the local people from three springs

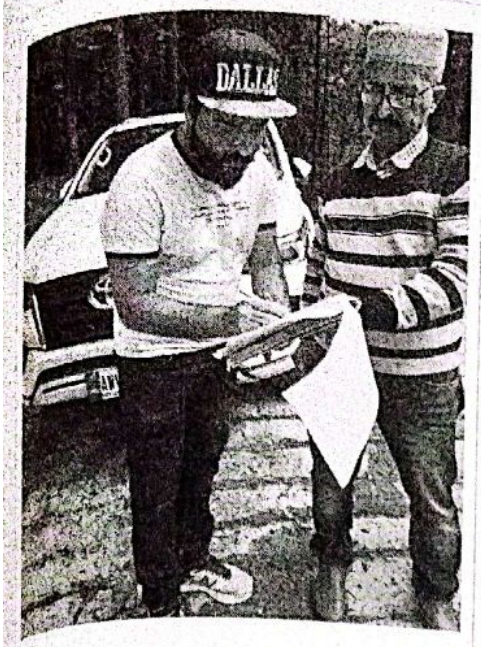
vi) It will enhance the life standards of the community.

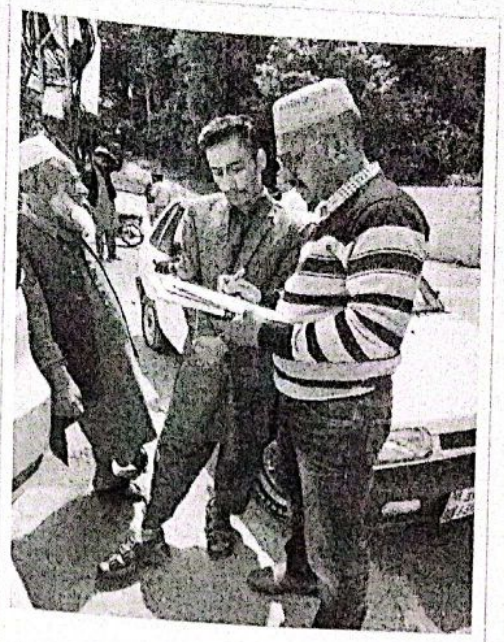
vii) It will create employment opportunities.

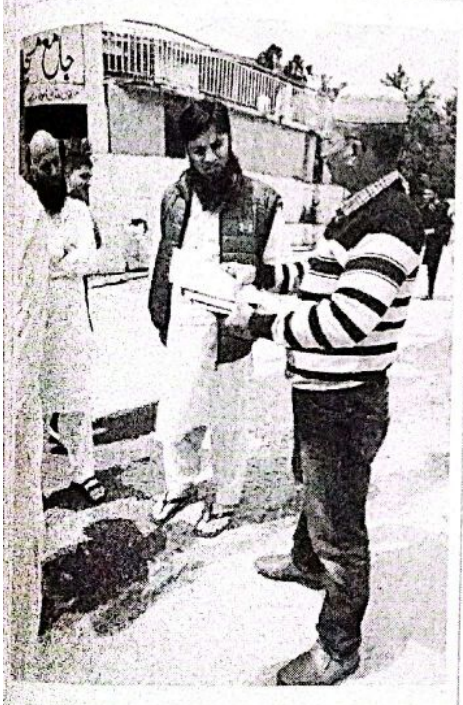




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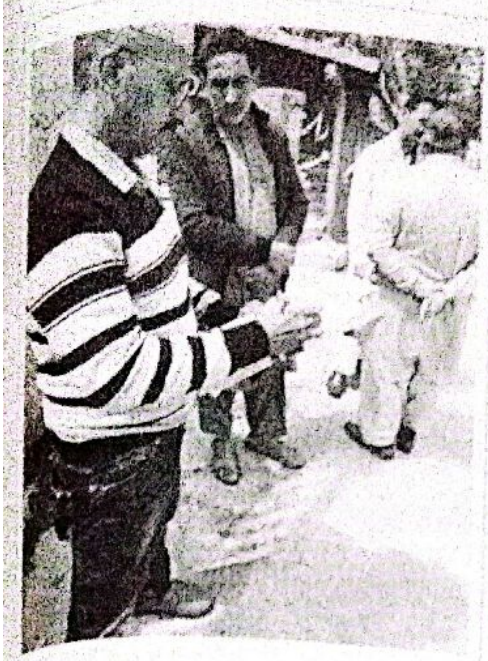
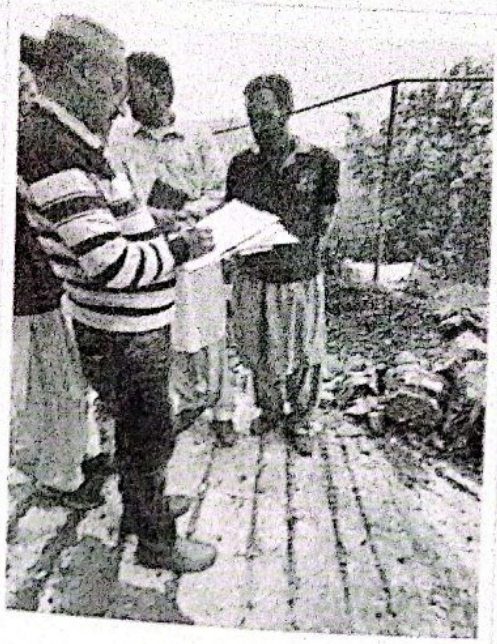
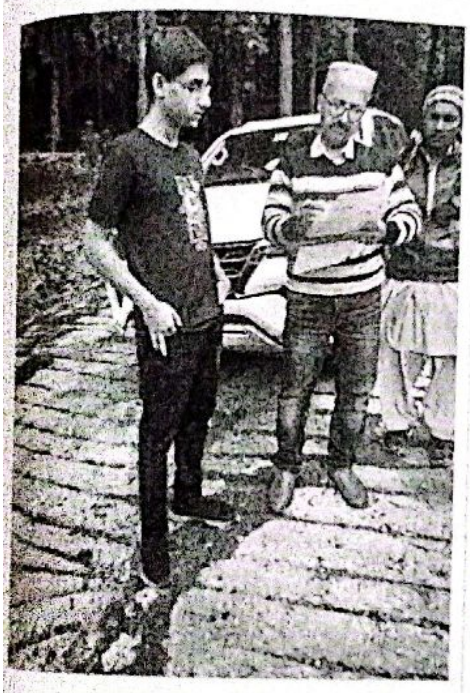
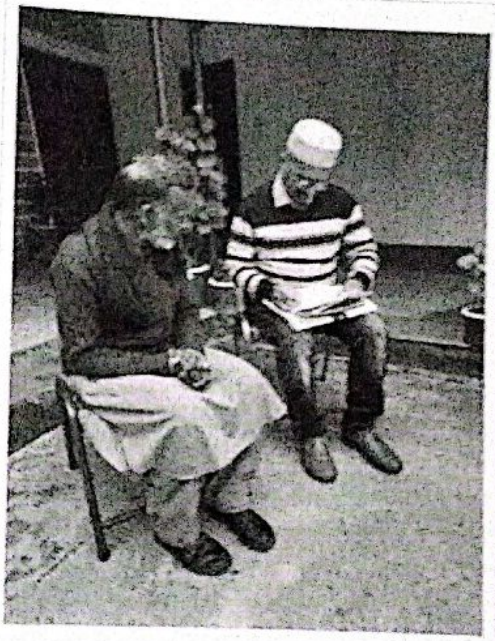








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PP5.3: Pictorial presentation of social and economic survey of the area

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CHAPTER -6

ANTICIPATED ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

6.1 INTRODUCTION

The proposed project may have impact on the environment during construction & operation phases. During the construction phase, the impacts may be regarded as temporary or short term; while long term impacts may be observed during the operation stage. Spatially the impacts have been assessed over the study area of 2 km radius of the project site. It will accommodate the tourists in nearby Murree area.

6.2 POTENTIAL ENVIRONMENTAL IMPACTS

Determining the significance of impacts identified is one of the main purposes of this EIA and it enables the identification of necessary mitigation and a determination of environmental and social costs associated with the project. Environmental and social impacts of any project are identified taking into account all phases of the project cycle, including planning, construction, operation and decommissioning. The environmental issues and impacts of a project depend on the nature of the project activities, and the types and extent of interventions involved. Strict environmental management will be observed during the project construction and regular operation phases. Legal requirements of the Pakistan Environment Protection Act 1997 (amended 2012) and the PEQS Pakistan will the rating standard for the activities. The project is construction of a residential building which has minor impacts during the construction phase whereas operation phase limited impacts limited to discharge of waste water and solid waste.

During the construction phase, the following activities may have impacts on environment:

- Excavation and levelling
- Hauling of earth materials and wastes Cutting and drilling

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- Leveling of land
- Construction of Foundation and structure
- Road pavement
- Painting and finishing
- Furnishing with furniture and other facilities
- Landscaping and afforestation

Due to these activities following will be the major pollutants/wastes or project related pollution aspects:

- Soil erosion
- Soil degradation
- Water runoff
- Particulate matter/dust and gaseous emissions from construction machinery and vehicles transporting materials.
- Noise from construction machinery and vehicles transporting materials
- Garbage as construction waste including clay, sand, crush stones, paper, plastic, wood pieces, iron and steel as scarp, wires, rags, ropes etc.
- Dust during raw materials unloading and its use in construction
- Sewage and solid wastes from construction camp of workers.
- Health and Safety of workers

6.2 Environmental Impacts during Construction Phase

The environmental impact during construction phase is localized and of short-term magnitude. Impact is primarily related to the civil works and some intensive impact due to erection of the equipment. The details of the activities and probable impacts are given below in table 6.1.

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TABLE 6.1: ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION PLAN (CONSTRUCTION PHASE)

onstruction Activities	Environment Attribute	Probable Impacts	Mitigation Measures
Procurement	Land	• The land has been purchased and possession has been by the project proponent. No impact will be there.	No mitigation required
	Socio-economics	• No adverse Impact due to Rehabilitation & Resettlement	Positive outcome is expected in implementation of the project in the form of job opportunities and investment by the owner of the land in any further project.
clearing and ing (cutting, ng, excavation, movement, action	Air	• Fugitive Dust Emissions • Air Emissions from construction equipment and Machinery	• Water sprinkling for dust suppression, pavement of access roads, cleaning of the roads, low speed of trucks • PEQS for vehicular emission will be complied by the construction machinery and

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		exhaust of the same will be monitored and reported
Noise	• Noise pollution	• The contractors should ensure the use of low noise and low vibration construction equipment. • Regular service for construction equipment should be ensured and some workers may be trained in machinery operation to hold charge of some machines according to operation specifications • Truck drivers should be instructed not to play loud music at night and stop use of horn. • Low noise generators may be employed.
	• The site is terrain slope therefore runoff level may happen	• The soil will be removed as soon as generated. The extra soil will be used to

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			upgrade the low-level area in the site. Water runoff will be controlled
	Land	• Loss of top soil at limited level	• Construction are placed above the ground level and hence top soil will remain intact.
	Landslide	• Land sliding may happen during construction phase	• Retaining wall will be provided in such zone to avoid any land sliding issue.
	Ecology	• There will be minimum loss of vegetation or habitat as the site is devoid of trees. However, it is in mountainous area of vast vegetation cover.	• Indigenous species of cover will be done in the open part of the building.
sportation and age of struction Material.	Air	• Air Emissions from vehicles • Fugitive Dust Emissions due to traffic movement	• PEQS for vehicular emission will be complied by the construction machinery and exhaust of the same will be monitored and reported to EPA Punjab. • Speed of traffic will be kept slow to avoid any

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			dust emission. Pavement of access roads, cleaning of the roads and water sprinkling will be done on the loose soil, soil will be removed as soon as it is generated
	Rain Water	• Runoff with sediments from Storage Areas of construction material	The rainy season in the area is to the moon soon period. Proper rain water disposal will be done through adequate system to be provided at all levels of the building.
	Public Utilities	• Slightly Increased flow of traffic on access road	• There is very few traffic on this road and addition of almost 5 trucks a day can be easily accommodated.
gs And Elec. ction Activities	Air	• Air Emissions from Machines or activities	• All the machinery employed during construction will be compliance of PEQS for vehicular emissions.
t. of Labor and ruction of porary houses	Socio-economics	• Employment opportunities shall increase	• Construction Camps will be maintained within the project area premises

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		• Stress on infrastructure to minor level.	• Local people will be employed during construction phase
	Land	• Change in land use pattern	• There will be positive impact of the project on land use.
	Water	• Sanitary effluents from labor camps	• The sanitary waste water will be collected and treated in three stage aerated septic tank before its disposal into existing Nallah.
portation and of sal nction debris	Air	• Air Emissions from Transport Vehicles • Fugitive Dust Emissions due to Movement of traffic.	• Employment of trained staff • Speed of traffic will be kept slow to avoid any dust emission. Pavement of access roads, cleaning of the roads and water sprinkling will be done
ic congestion		• A minor Traffic problem may be created due to movement of few numbers of trucks or loaders on access road.	• The security guards will manage the movements of limited Traffic and keep the traffic moving.

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...ding from ...nsoon		• Low level of flooding may occur due to rains in monsoon season.	• Proper flood rain water seepage extruders will be provided in the building to let the extra water seep out.
...on labors	Health, Safety and Environment	• Accidents can occur during construction phase.	• First aid facility will be provided at site. Suitable transport will be provided to take injured or ill person to the nearest hospital. • Training of workers on health and sand safety.

6.2.1 Impact on Land Use

The land required for the proposed project will be about 10 kanal. The construction of apartments will change the land use of the site which will bring positive changes in the area. It will stop the land sliding potential during the rains. Moreover, employment to the people during operation phase of the project will make the people economically easier as compared to now.

6.2.2 Impact on Soil cover

As the construction activities apartments' project would be confined in unpopulated area, the impact on soil will be minimal and confined. There will be minimum loss of vegetation cover as a result of construction activities. Vegetation cover will be maintained after completion of the project.

6.2.3 Soil degradation Impact

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Due to construction activities soil in the area where the construction will take place is going to be affected at minor level, mainly due to excavations. In this case the soil with humus shall be removed. Also, equipment engaged in activities might cause light contaminations of soil. After construction vegetation cover will be recovered into its initial state.

6.2.4 Impact due to Solid Waste

Solid waste during the construction phase consists primarily of scrapped building materials, excess concrete and cement, rejected components and materials, packing and shipping materials i.e. Pallets, crates, Styrofoam, plastics etc. and human waste. During the construction there will be generation of garbage, for which selected practices of solid waste disposal will be adopted. Recyclable or reusable material will be separated while other non-hazardous waste will be disposal on the designated solid waste disposal facility of TMA Murree.

6.2.5 Impact on Air Quality due to transportation of material

As the proposed project is a construction of apartments, the impact during construction of project is expected to be minimal as terrain sloping land of project area. Particulate matter in the form of dust would be the major pollutant affecting the air quality during the construction phase. Dust will be generated mainly during excavation, back filling and hauling operations along with transportation activities. However, a high boundary wall will prevent the dust generated due to construction activities going outside the project area. However, a high boundary wall will prevent the dust generated due to construction activities going outside the project area. The main source of gaseous emission during the construction phase is movement of equipment and vehicles at site. Equipment deployed during the construction phase is also likely to result in marginal increase in the levels of SO_2, NO_x, and particulate matter. The impact is reversible, marginal and temporary in nature.

6.2.6 Impact of Noise

The major noise generating sources during the construction phase are vehicular traffic, construction equipment like dozer, scrapers, concrete mixers, cranes, generators,

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pumps, compressors, rock drills, pneumatic tools, vibrators etc. The operation of this equipment will generate noise ranging between 75 – 90 dB (A).

To minimize the impact on nearby communities, construction schedules have been optimized. Also, the noise level is substantially lower near the plant boundary due to attenuation caused over the distance. Overall, the impact of generated noise on the environment during construction period is insignificant, reversible and localized in nature.

6.2.7 Impact on Water Quality

The limited construction personnel would be housed in temporary camps. These camps would discharge some amount of domestic wastewater. Stagnant pools of water may increase breeding of mosquitoes and generally create insanitary conditions. The municipal waste water from the project area will be treated in three stage aerobic septic tank before final disposal into the drain passing by the project area.

6.2.8 Ecological Impact

The project site is mainly terrain slope with no human settlements on the site. The do not have any forest or animals. The impact of the construction activities would be primarily confined to the project site. Thus, the site development works would not lead to any significant loss of important species.

6.2.10 Health and Safety of Workers

Workers safety can be endangered as a result of missing protective equipment and by eventual accidents during construction activities. Accidents might happen for different reasons in the work with excavators, trucks and other related equipment.

Potential hazards might be:

- Inadequate lightning during the night working hours or limited level of visibility in cases of storm that create difficulties for staff driving the heavy equipment.
- Work without protective equipment and/or safety belt.
- Driving equipment with improper brake system.

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- Loss of attention and lack of concentration while working

Health and safety awareness and training will be conducted at site. Personal Protective equipment will be provided during construction activities.

6.3 Environmental Impacts during Operation phase

6.3.1 Impact due to solid waste

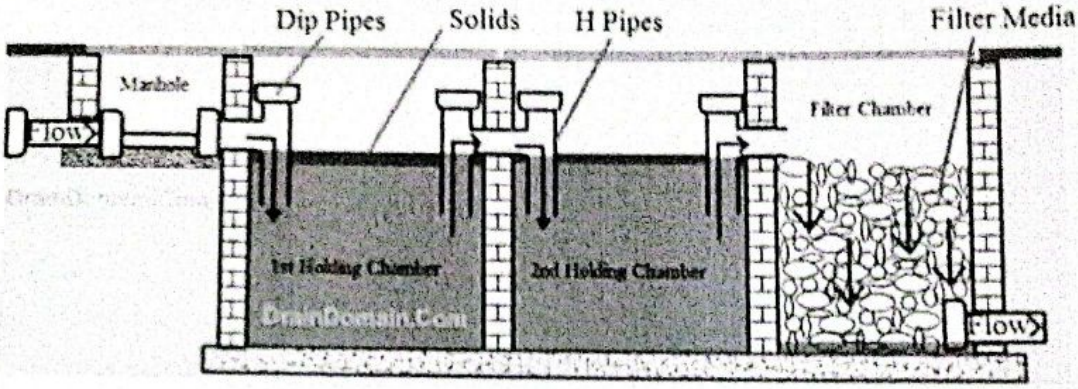
Solid waste of residential units and apartments may create pollution problem due to human activities. The solid waste generated from the apartments will be collected with the colored bins. Which designate re-cycle able and non-cycle-able. About 250 gm per capita of the municipal solid waste is expected to be generated. The apartments will be used by the tourist who do not do cooking there or washing hence small amount of solid waste is expected to be generated. The major waste will be shopping bags, papers, metal/ aluminum cans, pet bottles, fruit husks and extra food (leftover). The segregation into recycle able and non-recycle able waste will reduce the solid waste pollution load. Each apartment will be provided with two colored waste bins. The recyclables will be sold to the market and rest of the 30 percent of the waste will be sent to the TMA designated land fill site. The green bin will have leaves, branches, grasses, organic kitchen waste, fruit husks. The blue will have the re-cycle able wastes.

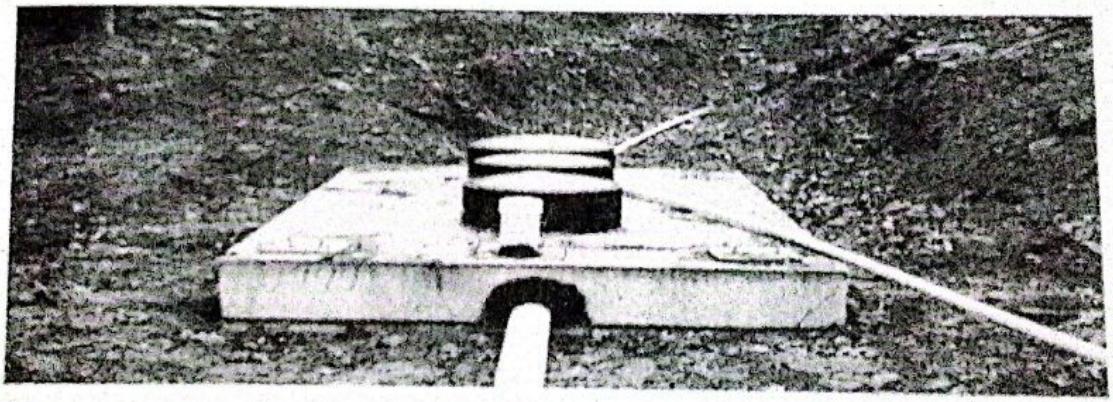


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6.3.3 Impact due to water pollution

The apartments will be expecting the turnout of about 200 -300 persons per day during peak summer season. Whereas less than 100 tourists will be expected to About 50 l/c/d water consumption is expected. It means 1.5 cubic water will be consumed and about 1.25 m3 waste water is expected to be generated per day from the apartments. This waste water will be treated into three stage pre- fabricated septic tanks will be installed to treat the municipal waste water. The treated waste water will be disposed in the nearest drain of the hilly terrain.





Three stage septic tank for treatment of the waste water.

6.4 Environmental Management Plan

The management plan of the project comprises of the following components:

- Solid waste Management

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- Waste water treatment and disposal
- Maintenance of trees and other indigenous plants

The solid waste will be managed through segregation and safe disposal of the solid waste whereas waste water will be treated in septic tanks before disposal. The maintenance of the greenery and indigenous trees will be made by the management by employing the person with horticulture experience.

6.5 Cost of EMP

6.6 The cost of the EMP is expected to be one million rupees which include waste water treatment septic tank, colored waste bins, disposal of the solid waste, and plantation.

6.7 Health and Safety

The building will be provided with emergency firefighting system which include fire extinguishers, water tank, water pump and water hoses. Each apartment will be provided with smoke detectors and alarm system. Emergency exit gates and stairs will be provided as per international practices. A dedicated car would be ready to act as ambulance to carry the patient in case of emergency to the hospital. The piping and wiring of the building will be made according to the international safety standards to avoid any fire incidence. The building will be provided with the fence to avoid any slipping or fall of the visitors down to the valley.

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