



**ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
OF**

WINSTON MALL & RESIDENCIA

**LOCATED AT 'MULTI GARDENS SCHEME' PLOT NO. C-5 MOUZA BHADANA
KHURD, TEHSIL TAXILA DISTRICT RAWALPINDI**

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EXECUTIVE SUMMARY

This executive summary presents an overview of the main findings of the Environmental Impact Assessment Report for **WINSTON MALL & RESIDENCIA LOCATED AT “MULTI GARDENS SCHEME” PLOT NO. C-5 MOUZA BHADANA KHURD, TEHSIL TAXILA DISTRICT RAWALPINDI** at an Area of (5373 Sq.Yds). The main goal of this project is to establish Mix-Use development comprising of Residential, commercial, corporate and entertainment components (3 Basements + Lower Ground + Ground +10) Floors.

1. Title & Location of Project

The said project is of “**WINSTON MALL & RESIDENCIA**”. This will consist of (3 Basements + Lower Ground + Ground +10) floors. According to Schedule-I of IEE and EIA Regulations, 2022; the project falls under **Category (H) Urban Development and Tourism**, Section 12 of Punjab Environmental Protection Act, 2012 i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for environmental approval.

The estimated project cost is **PKR 8 Billion**, the breakdown of the project cost is given in Chapter 2 of this EIA Report.

2. Project Description

The project aims to develop Mix-Use development comprising of Residential, commercial, corporate and entertainment components in an environment and economically friendly manner. The total area of the project is 5373 Sq.Yds and area around the project is commercial land. Plot No.05, Block-C, Multi Garden Scheme, Rawalpindi. Hence, the EIA of **WINSTON MALL & RESIDENCIA** is being submitted for environmental approval.

Table 1: Salient Features of Project

Sr#	Project Salient Features	
1	Project Title	WINSTON MALL & RESIDENCIA
2	Purpose of Project	To provide Facilities. i.e. residential, commercial, cultural, institutional, or entertainment, into one space in environmentally and economically friendly manner and to play role in economic developmental activities.
3	Project Location	Plot No. C-5 Mouza Bhadana Khurd, Tehsil Taxila District Rawalpindi Coordinates: 33°40'57.9"N 72°49'37.4"E
4	Area of Project	Total Area: 5373 Sq.Yds Covered Area: 51686.00 SFT
5	Cost of the Project	PKR 8 Billion
6	Proponent Name	Farhan Ahmed S/O Fateh Muhammad Qureshi
7	CNIC Number	37405-4059049-7
8	Address of Proponent	Apartment No. 918, Sliver Oaks, Sector F-10/4, Islamabad

9	Consultant Name	TETRA Tech Environmental Consultancy
10	Nature of Area	Commercial
11	Seismicity	2B-Medium Intensity Level
12	Tree Planation	At Designated Green Areas
13	Water Source	Groundwater
14	Water Requirements	During construction works water is used for concrete preparation, watering the construction sites, as well as for ensuring proper conditions for workers. Taking into account that construction activities will be implemented on one working site. In total water consumption for construction phase will be 15m ³ /day. Water used for concrete preparation and watering the construction site is considered as non- return water. Water required for drinking and domestic purpose would be 193,383 US Gallons per day.
15	Wastewater	No process wastewater will be generated as it is a commercial building. However, various activities like washing and cleaning of floors and domestic use will result in effluent discharge. Wastewater originated as a result of drinking water consumption domestic use is estimated at 60,000 US Gallons per day. The wastewater generated will be treated in septic tank. After treatment it will be discharged in the main drain.
16	Solid Waste	During the construction and operation phases, solid waste will be transported to the city's waste dumping site through solid waste bunkers.
	Source of Power	WAPDA(IESCO)
	Manpower/Staff	40-45 employees
*WAPDA=Water and Power Development Authority;		

3. Impacts and Recommended Mitigation Measures

In order to identify all the impacts associated with the project during constructional/operational activity with potential to cause adverse environmental impacts, a thorough review has been conducted. Although, there is very low chances of any adverse impact's occurrence on the surrounding environment. However, in case of impact arises from the project activity possible necessary measures will be adopted to control the same. Overall, the project has positive social impacts specifically on the local population and generally contributes to Pakistan GDP. The project may have some adverse environmental impacts of minor to moderate magnitude which will be controlled through mitigation measures proposed in Environmental Management and Monitoring Plan (EMMP). Moreover, clearing of the vegetation will be done during site clearance but restoration and reclamation will be carried out by the plantation of native species in specified green areas.

Environmental impacts have been identified and mitigation measures are recommended within the Project Area of Influence, which lies within 1 km boundary of the proposed project facilities. The major impacts on physical, biological and social environments are described as under:

Impact Summary

Environmental Parameters	Impact Assessment during operational Phase
	Operational
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-1p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Emission	-2t
Dust	-1t
Odor	NA
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-1p
B : Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+1p
Land Value Appreciation	+2t
D: Hazards	
Biological Hazards	NA
Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p

Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible

4. Environmental and Social Monitoring Plan

Environmental Management and Monitoring Plan (EMMP) were developed for effective implementation of the recommended mitigation measures. The EMMP includes check and balance to control and minimize the identified impacts and monitoring programs to oversee residual impacts, if any, during the operational phase. The EMMP describes procedures to be followed throughout the operation of the project. It also identifies the roles and responsibilities of all concerned personnel, including the persons reporting during the different project phases. Mitigations for physical, biological, and socio-economic parameters will be measured to determine compliance with standards established in EMMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. It will also check whether the prescribed national and provincial guidelines and plans are being followed and that the required mitigation measures and activities are being accomplished in time.

5. Monitoring Plans

During operational phase, monitoring is required to be carried out at least once in a month during rainy season to check the soil contamination and surface water level/condition. Moreover, periodic monitoring should also be carried out regarding ambient air quality, noise and dust level and worker safety. A detailed site monitoring plan has been developed and given in Chapter-7 of this EIA Report.

6. Conclusion

The findings of EIA Report showed that although the project is expected to have significant minor to moderate negative impacts on the environment during the operational phase, but the severity of these adverse impacts can be reduced significantly by adopting EMMP with true spirit as proposed in the Chapter 7 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by reviewing the documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMMP and best engineering practices.

7. Recommendations

The intensity and severity of impacts occurred due to establishment of commercial building varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require constant information

flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the “no project development” scenario.

- ☞ The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit.
- ☞ Proper PPEs including gloves, face masks, head gear etc. will be provided.
- ☞ No compromise on public health and environment should be allowed.
- ☞ Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment.
- ☞ A proper tree plantation plan should also be developed to make the process environment friendly.
- ☞ Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- ☞ It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

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CHAPTER 1. INTRODUCTION

1.1 Screening:

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the proposed project falls in Schedule- II, Category H, Category H, **Urban Development and Tourism.**

Purpose of Report:

The main objectives of this EIA Study were:

- To determine and record the state of the environment of the project area to establish a baseline in order to assess the suitability of the project in that proposed area
- To identify operation activities and to assess their impacts on environment
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in the cost-effective manner.
- To present mitigation and monitoring plan for smooth implementation of the suggested mitigation measures and supervise their efficiency and effectiveness
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development
- Prepare an EIA Report for submission to the EPA, Punjab for Environmental Approval (NOC).

1.2 The Proponent

The details of the proponent of the proposed project are given below:

Table 2: Details of Proponent

1	Name	Farhan Ahmed S/O Fateh Muhammad Qureshi
2	Project Name	Winston Mall & Residencia
3	Address	Apartment No. 918, Sliver Oaks, Sector F-10/4, Islamabad

1.4 Project Nature and Size

The proposed project is the “**WINSTON MALL & RESIDENCIA LOCATED AT “MULTI GARDENS SCHEME”** Plot No. C-5 Mouza Bhadana Khurd, Tehsil Taxila District Rawalpindi. The proponent’s objective is to develop Mix Use residential, commercial, corporate and entertainment facilities.

The estimated project cost is **PKR 8 billion**, the breakdown of the project cost is given in Chapter 2 of this EIA Report.

1.5 Project Location

The proposed location for the proposed project “WINSTON MALL & RESIDENCIA LOCATED AT “MULTI GARDENS SCHEME” Plot No. C-5 Mouza Bhadana Khurd, Tehsil Taxila District Rawalpindi.

The geographical location of the proposed area is 33°40'57.9"N 72°49'37.4"E. The elevation of the project area is 758 ft from the sea level. The total demarcated project area is given below



Figure 1: Demarcated Area of Rebuilt Plans for Winston Mall & Residencia.

Environmental sensitivity of the project includes the distance between the project area periphery from ecologically important features and socially significant infrastructures present in the study area. No ecology sensitive receptor such as; forest or reserved area is present within 3 km vicinity that could be impacted due to the establishment and operation of the proposed project.

1.6 Regulatory Compliance

As per IEE/EIA Regulations 2022, it is mandatory for the proponent of any development project to obtain Environmental Approval (NOC) from EPA by filing an IEE or EIA as the case may be. For this purpose, the proponent has decided to engage environmental consultants, **M/S TetraTech Environmental Consultancy** to prepare EIA Report. The purpose of this study is to identify the environmental and social baseline of the project and study area i.e., physical, biological, socio-economic, cultural changes and to assess all possible impacts anticipated during the installation and operation phases of the proposed project with the aim to find out

appropriate mitigation measures to either eliminate those impacts

Or to bring them to acceptable level as well as to formulate Environmental Management and Monitoring Plan (EMMP) for implementation in sustainable manner. This IEE Report provides relevant information as required under the officially approved format, to help the decision makers i.e., EPA Punjab before issuing for the Environmental Approval.

Following rules, regulations and acts are considered for the commencement of the proposed project:

- ⇒ Punjab Environmental Protection Act, 1997 (Amended 2012)
- ⇒ Punjab Environmental Quality Standards (PEQS)
- ⇒ Self-Monitoring and Reporting Rules (SMART)
- ⇒ Environmental, Health and Safety Guidelines

1.7 Details of Consultant

The proponent has engaged **TetraTech Environmental Consultancy** to carry out the EIA Study for the establishment and operation of aforesaid project in accordance with Punjab-EPA guidelines. For this purpose, the company engaged the group of professionals which comprises of environmental specialists and socialscientists. The details of the consultant are given below:

Table 3: Consultant Details

Sr#	Consultant Details	
1	Consultant	TetraTech Environmental Consultancy

To prepare EIA Report of the respective project the company engaged the following experts. The details of the experts are given below:

Table 4: List of Experts

Name of expert	Position held	Highest Qualification
Dr. Mateen Shafqat	Chief Advisor	PhD Environmental Sciences, PMAS, Arid Agriculture University
Mr. Shahzaib Ahmed	Social Scientist	M. Phil Development Studies, PIDE, Islamabad.
Jawed Shafiq	Environmentalist-1	BS Environmental Sciences University of Gujarat
Arslan Iqbal	Environmentalist-2	MPhil Environmental Sciences, UOL

Rahma Butt	Environmentalist-3	MPhil Environmental Sciences UET, Lahore BS (Hons) Environmental Science Lahore College for Women University.
Amna Hafeez	Environmentalist-4	M.Sc. Mountain Conservation and Watershed Management, University of the Punjab
Saba Nazir	Environmentalist-5	M.Phil. Environmental Sciences, UOL
Aishah Mushtaq	Environmentalist-6	MS in Environmental Sciences
Abeesha	Environmentalist-6	M.Phil. Environmental Sciences, University of the Punjab

CHAPTER 2. PROJECT DESCRIPTION

This section of the study concentrates on details of the project and its salient features; such as its location, site layout, objectives, selection of alternative sites and technology, cost and magnitude of operation.

2.1 Screening/Type and Category of Project

Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) states “No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effects an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof.” Punjab Environmental Protection Act provided the guidelines for categorizing the projects. According to Schedule-II of IEE and EIA Regulations, 2022; the proposed project falls under Category H, Urban Development and Tourism. i.e., the project requires an EIA Study. Thus, an EIA Report is being prepared and submitted accordingly for approval.

The proposed project is the establishment of Winston Mall & Residencia. Total cost is 8 Billion

Objectives of Project

Although the principal purpose of the building relates to the economic development of the city at national level, the proposed development also aims to:

- Fulfill the suburban demands of the area in an efficient manner by going vertical, providing resource building which are economically and environmentally approachable as well as secure.
- Be fully integrated with and supplement the existing infrastructure in the city.
- Enable working and recreation within a self-contained location.
- Become fully self sufficient to meet customer needs.
- Defend market share opposite an ambitious competitor & realize efficiency of scale.
- Remain competitive.

2.2 Alternatives

The details of the site alternatives and technology alternatives are discussed below:

2.3.1 Relocation Option

Relocation option to a different site is an option available for the project implementation. At present the proponent does not have an alternative site. Looking for the land to accommodate the scale and size of the project and completing official transaction on it may take more than three years although there is no guarantee that the land would be available. This would also lead to a situation like No Project Alternative option.

The other consequence of this is that it would be a discouragement for private/local investors. In consideration of the above concerns and assessment of the current proposed site, relocation of the project is not a viable option.

2.3.2 Project Alternatives

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions.

The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- I. Local skills would remain under-utilized.
- II. Reduced visitation due to lack of adequate accommodation in the community where the project is proposed.
- III. Reduced interaction both at local, national, and international levels.
- IV. Discouragement for investors

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people and proponent.

2.3.2 Site Alternatives

Since the proposed building is to be located in a commercial area, under the undisputed ownership of proponent the site is most feasible in context of environment as well as in achieving the intended objectives. The selected site also houses no ecologically sensitive area within a 3 km radius and status of current Environment is satisfactory, so, it is best suited for the project.

Moreover, the **site is considered suitable** because of the following features:

- The proposed site falls under the jurisdiction of the proponent and has been acquired for Establishment of a Mix-use building. It has been observed to be almost level in topography, with sparse vegetation located inside the site area.
- No endangered fauna/flora has been observed near the project site.
- The proposed site does not fall in any category of protected or environmentally sensitive area.

The location of project is best suited for proposed activities. So, no alternative for site is analyzed.

2.3 Location and Layout of Project

The proposed location for the establishment of proposed project Winston Mall & Residencia Located At “Multi Gardens Scheme” Plot No. C-5, Mouza Bhadana Khurd, Tehsil Taxila District Rawalpindi. The sanction letter from Tehsil Council Taxila is attached. The geographical location of the proposed area is 33°40'57.9"N 72°49'37.4"E. The elevation of the project area is 758ft from the sea level. The total demarcated project area is given below:



Figure 2: Project Area

Land use

The surface land in and around the project area is leveled and fertile being reserved for commercial purpose. No ecology sensitive receptor such as; forest or reserved area is present

within **05 km** vicinity that could be impacted due to the establishment of this project.

2.4 Road Access

The project site is well connected to road network **i.e., Main Peshawar Road**. The road network is shown below in Figure.

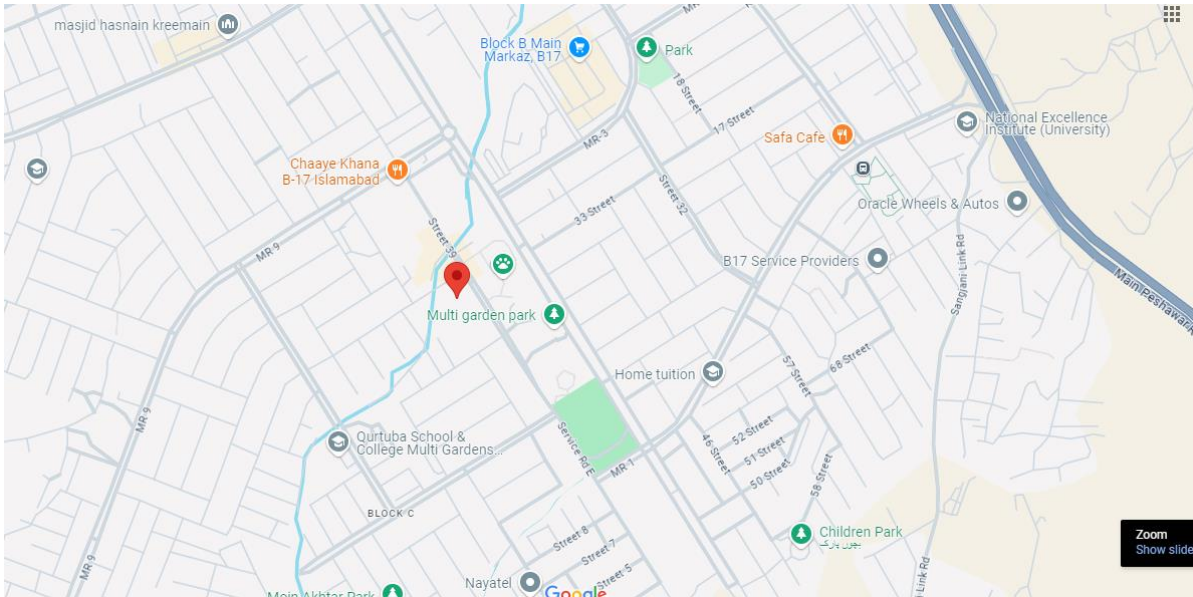


Figure 3: Road Access

2.5 Vegetative Features

The area around the project area is commercial. There are no such vegetative features in or around the area include except some self-growing trees of Paper Mulberry and wild grass.

Table 5: Vegetative Features of the Project Area

Sr.#	Local Name	Type	Biological Name
1	Paper Mulberry	<i>Throne Tree</i>	<i>Broussonetia papyrifera</i>
2	Wild Grasses	<i>Grass</i>	--

2.6 Project Description

The project will comprise of (3 Basements + Lower Ground + Ground +10) Building. The main purpose of the project is to provide residential, commercial, corporate and entertainment facilities. It is envisaged that the building will provide the benefits of proximity to jobs and/or public transportation to become the ultimate convenient place for work with ease.

2.7.1 Project’s Construction Activities

The following key steps will be mainly involved:

a. Site Preparation Works

The proposed project site will be prepared for construction. This will involve demolish of previous building, clearing of vegetation, excavation works and transportation of construction materials. This will be undertaken in a phased approach to mitigate soil erosion and the impacts of excessive dust generation. Due to the nature of the proposed project, construction will involve the use of heavy machinery such as excavators. The engineers will also utilize human labor where necessary so as to create employment to the local residents especially the youth.

b. Storage of Materials

Building materials will be stored on site. Bulky materials such as stones, ballast, sand, and steel will be carefully piled at designated areas on site. To avoid piling large quantities of materials on site, the proponent will order bulky materials such as sand, gravel, and stones in quotas.

c. Masonry, Concrete Work and Related Activities

The Establishment of the building walls, foundations, floors, pavements, drainage systems, and parking silo among other components of the project involves a lot of masonry work, laying of plumbing and related activities. General masonry and related activities include, concrete mixing, plastering, slab construction, construction of foundations, and erection of building walls and curing of fresh concrete surfaces. These activities are known to be labor intensive and will be supplemented by machinery.

d. Structural Steel Works

The building will be reinforced with structural steel for stability. Structural steel works involve steel cutting, welding, and erection.

e. Roofing Works

Roofing activities will include raising the roofing materials such as tiles and structural timber to the roof and fastening the roofing materials to the roof.

f. Electrical Work

Electrical work during construction of the premises will include installation of electrical gadgets and appliances including electrical cables, lighting apparatus, sockets etc. In addition, there will be other activities involving the use of electricity such as welding and metal cutting.

g. Plumbing

Installation of pipework will be done to connect sewage from the ablution blocks to a sewer system. Plumbing activities will include metal and plastic pipe cuttings, the use of adhesives, metal grinding and wall drilling among others.

2.7.2 Project's Operational Activities

i. Facility Users

The Proposed commercial development, when completed will target both local and foreign visitors.

ii. Solid waste

The proponent will provide resources for handling solid waste generated within the building. These will include dust bins/skips for temporarily holding waste within the premises before final disposal at the designated sites. The Abdullah Sharif intends to develop a solid waste management plan to ensure that the volume of solid waste generated within the entire development is minimized through the principles of reduce, re-use and recycle.

iii. Wastewater

It is proposed that an onsite solution will be implemented for dealing with wastewater generated on the site, to aid in recharge of the water table and discharge into surface water stream. Wastewater will be treated in septic tanks prior disposal to the main drain of the society. These will include conducting regular inspections for pipe blockages or damages and fixing them appropriately. Also, the proponent will conduct regular monitoring of the wastewater.

2.7 Project Area

The total area of the plot is (5373 Sq. Yrd) The details of each floor are described in project layoutmap attached. The schedule of area is given below:

Table 6: Statement of Area

Numbers	Floor	Covered Area (SFT)	Purpose of use
-3	Basement 3	44840	Parking
-2	Basement 2	44840	
-1	Basement 1	44840	
0	Lower Ground floor	43270	Mart
+0	Ground floor	32745	Retail Shops of different Brands
1	1 st floor	32745	
2	2 nd floor	32745	
3	3 rd floor	32745	
4	4 th floor	32745	Food Courts
5	5 th floor	27298	
6	6 th A floor	26481	Corporate offices
	6 th B floor	26481	
Service floor Covered area		26735	
7	7 th floor	25794	Entertainment and Fitness Centers
8	8 th floor	25794	

9	9 th floor	25794	Residential Apartments
10	Roof top	25794	

2.8 Amenities

The following social amenities are present at site and the management of the waste (solid waste and effluents) is explained in sub-sections below:

2.9.1 Electricity

During construction phase, power will be supplied WAPDA (IESCO). It is proposed that a back-up power supply of a generator of 75 KVA will be installed to power critical loads only, in the event of any emergency. The generator shall be silent set housed in approved acoustic enclosures, so as to control the noise pollution to 55/45 dBA at 1 m distance. While during operational phase electricity from WAPDA (IESCO) will be used.

2.9.2 Ground Water Resource

During construction works water will be used for concrete preparation, watering the construction sites, as well as for ensuring proper conditions for workers. In total water consumption for construction phase will comprise 15 m³/day. Water used for concrete preparation and watering the construction site is considered as non-return water. Water required for drinking and domestic purpose would be 3-4 m³/day. To supply the anticipated demand during operations, two underground water tanks (1 for rainwater harvesting of 60100 gallons) and other for domestic use with the capacity of 31600 gallons, and 2 over-head water tanks (one for firefighting of 52172 gallons) and other for domestic use with total capacity of 20867 gallons respectively will be constructed.

2.9.3 Construction Material

The major materials required for Establishment of the proposed project will be steel, cement, bricks, metal, flooring tiles/stones, wood, sanitary and hardware items, electrical fittings, water, and roof materials.

2.9 Management Plans

Following management plans will be employed to reduce the impact of the proposed activity:

Air Emissions

Particulate dust will be generated during construction phase there will be no air pollutants emissions during the operational phase. For safety purpose the workers dealing with the process activities will be provided with masks, safety shoes and all other necessary PPEs. To reduce the public nuisance native trees will be planted on the boundary to reduce the nuisance and to reclaim the disturbed soil effectively.

Wastewater Management and Disposal

The nature of wastewater generated from the operation of proposed project would be mainly domestic. This involves the construction of concrete-made tanks to store the sludge. The wastewater from the septic tanks is then channeled to main sewer. Given the size and magnitude of the project, this is a viable option to treat wastewater.

Waste Management

Most of the solid wastes that will be generated during the daily work can be divided into 3 main categories:

- i. The ordinary household wastes that the workers and the staff generate all-day around, e.g., kitchen and food residues, papers je sort, personal unneeded articles, etc.
- ii. Municipal residues, e.g., cardboard, strings, scraps je sort, etc.
- iii. While during operational phase domestic wastes will be generated.

An integrated solid waste management system is recommendable. First, the proponent will give priority to Reduction at Source of the materials. Recycling and reuse will be the second alternative in priority. The recyclables will be sold to authorized waste buyers. The waste that is not recyclable will be sent to designate sanitary landfilling.

2.10 Staff/Manpower

30-35 workers will be hired for construction phase. The staff for operational phase will be hired with respect to concern department according to their qualification and almost 20-25 persons will be required.

2.11 Emergency Preparedness

Emergency response preparedness committee will be formulated.

First aid facilities will be available at facility which will include; blankets, hot water bottles, sterilized dressing, snake bite kit, cotton and iodine (2% alcohol).

2.12.1 Safety Trainings

Skilled, semi-skilled and un-skilled staff will be provided with proper training about the work and safety practices that need to adopt during the process activities.

2.12.2 Use of Drugs and Narcotics

Drugs and narcotics are strictly prohibited during working hours in working area. Smoking will be only allowed during rest timings at properly isolated places.

2.12.3 Personal Protective Equipment

Following Personal Protective Equipment (PPEs) will be provided to the workers:

- Safety Helmet
- Safety Shoes/Dry Shoes
- Dust Mask
- Safety Gloves
- Safety Jackets
- Earmuffs
- Insulating Gloves and Suits

2.12.4 Emergency Response Plan

Emergency response will be determined in corresponding instructions.

- ⊙ There would be an evacuation plan, technical means/equipment necessary for handling small-scale emergency situations, protective and communication means (phone, fax machine) for personnel to protect themselves and call for corresponding emergency services (fire-fighting squad, ambulance).
- ⊙ Every accident will be registered, and its causes will be investigated. If necessary, remediation will also be ensured.

2.12.4 Fire Management

The Management shall ensure that:

- The Fire Safety Management needs are considered for all areas.
- Hydrants and fire extinguisher will be available at site.

- Layout plan will be displayed at the site.
- Fire exit will be readily accessible which would not be used otherwise.
- Necessary emergency lighting system along with emergency power back up system shall be provided. In addition, emergency public address system arrangement and signage for emergency exit route shall be provided.
- Necessary auto glow signage at all appropriate places shall be provided to guide the people towards exits and assembly points during the unforeseen emergency and untoward conditions.
- Training to the staff for the first aid and firefighting along with regular mock drill shall be made.

2.12 Cost and Magnitude of Operation

Following fixed and working capital requirements have been identified for operations of the proposed business. The activities will include:

- ❖ Land
- ❖ Building and Infrastructure
- ❖ Furniture and Fixture
- ❖ Office Equipment Health and Safety Management at site
- ❖ Transportation of raw material.
- ❖ Plantation of trees

The cost for the proposed project would be **8 Billion PKR**. Breakdown of cost is given in Table below. Environmental Budget: Approximately 10 million

Total Cost	8 Billion
Land Cost	2 Billion
Land development and infrastructure	6 Billion
Environmental Budget:	10 million
Construction	
Ambient air monitoring	1,20,000/-
Noise monitoring	30,000/-

Water quality monitoring	1,30,000/-
Health & safety	1,20,000/-
Worker's training	1,00,000/-
Operation	
Solid waste management	1,50,000/-
Wastewater management	1,50,000/-
Plantation/green belt development	2,00,000/-

2.13 Relocation and Rehabilitation Plan

There exists no human settlement of the selected project site to be displaced owing to the commencement of the proposed project. Moreover, no structure of any significance stands at the site is proposed to be relocated or dismantled. The project area is owned by the proponent. So, no restoration and rehabilitation are required.

2.14 Schedule of implementation

The completion duration for completion of proposed project is about 6 months. There will be a symmetrical process. The process is divided in to 3 phases.

Preconstruction phase

This phase includes:

- Site investigation & Evaluation
- Budgeting
- Design
- Schedules of working
- Obtaining all relevant NOC

Construction phase

This phase includes:

- Management team& Construction Crew
- Excavation
- Construction of building
- Provision of allied facilities

- Mitigation process
- Amenities Development
- Managing safety
- Monitoring & Evaluation

Operational phase

This phase includes:

- Implementation of fire safety, emergency evacuation plans
- Security management
- Finishing of amenities
- Availability for buying and rental purpose

2.15 Land ownership Documents

Land ownership documents have been attached as Annexure of this IEE Report.

2.16 Government Approvals

The proponent is seeking Environmental Approval from Punjab Environmental Protection Agency (Punjab-EPA)

CHAPTER 3 DESCRIPTION OF THE ENVIRONMENT

This chapter provides baseline data (physical, biological, and socio-economic parameters) related to the project and study area. The information has been compiled by using primary and secondary data resources. This chapter also refers to the theoretical analysis of the methodology adopted for collection of baseline data. The underlying principles and practices adopted in this regard are also discussed.

3.1 Methodology

The methodology employed to collect the baseline data and information regarding the social structure and various related parameters as discussed in sub-sections below:

3.1.1 Data Collection

The primary data was collected by visiting the project area and its communities in its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting relevant various government departments and their official websites. The biological parameters such as flora and fauna were studied by preparing a floristic list based on visual observation and fauna was studied by using opportunistic approach. The species were recorded with reference to their existence in the project area. Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government and Non-Government Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

3.1.2 Social Survey

The purpose of social survey was to record the present condition of the people living in the project area and to assess the expected project impacts on their life, subsistence systems and socio-cultural conditions. Prior to conducting the field surveys, the following steps were taken:

- Clear boundaries of the project area were identified
- Decided the sampling procedure in order to draw a representative sample size of the target population and households
- Developed the tools for data collection i.e., questionnaires to assess the socio-economic status of the area

3.1.3 Sampling Design

Social baseline data of the persons residing in the study area has been estimated and collected through random sampling by using pre-developed questionnaires.

3.1.4 Questionnaires

In order to test the validity and reliability of the proposed questionnaires, they were reviewed to assess whether questions needed to be clarified, changed or re-sequenced and then a final editing of questionnaires was conducted prior to their application in the project area. The sample of socio-economic questionnaires used is attached as Annexure.

3.1.5 Data Editing and Analysis

The filled questionnaires and recorded information were compiled by the same field investigators who were involved in the data collection. This was done immediately after completing the field investigations. Data sets were processed. Analysis of the data and preparation of conclusions in the minimum possible time was done using statistical techniques of data analysis.

3.2 Review of Legal and Administrative Framework

The objective of reviewing legal and administrative framework is to obtain information on all legislation pertaining project development. The Socio-Environment Team of Tetrattech Environmental consultancy reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the development of project which helped in systematic identification of impacts.

3.3 Baseline Conditions

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area

3.4 Physical Environment

Pakistan can be divided into five broad physiographical regions. These are the mountainous regions of the north, the western highlands and plateaus, the sub-mountains Indus region, the Potohar Plateau, Salt Range, and the Indus Plain. Brief description of these regions are given below:

Region	Characteristics	Location	Height
Northern Mountainous	Hindu Kush Karakoram and Himalayan Mountain Ranges	Northern Part of KPK, Gilgit Agency, Northern Areas and Kashmir.	Rises above 8,000m
Western Highlands and Plateaus	Toba Kakar, Sulaiman, Central Baruhi, Saihan, Central Makran, Makran Coastal and Kirthar Ranges	Mainly in Baluchistan, also parts of Sindh and KPK	Between 1,200 to 3,000 m
Sub-Mountains Indus	Alluvial filled Basins	Plains of Peshawar Kohat and Bannu	Less than 1,000 m
Potohar Plateau and Salt Range	Flat to gently undulating surface, broken by gullies,	Mainly northern parts of Punjab, some parts of KPK	Less than 1,000 m
Indus Plain	Flood plains of the Indus, Jhelum, Chenab Ravi and Sutlej Rivers	Punjab and Sindh	Less than 1,000 m

3.4.1 Topography and soil

Rawalpindi lies between 72° 38' and 73° 37' east longitudes and 33° 04' and 34° 01' north latitudes. On the north it is covered by the Federal Capital, Islamabad. Islamabad- Rawalpindi terrain contains mountains and plains exceeding 1175 m and is mainly uneven. Rawalpindi District is a district located in the northernmost part of the Punjab province of Pakistan. Parts of the district form part of the Islamabad Rawalpindi metropolitan area. Rawalpindi city is the district capital. The district has an area of 5,286 km² (2,041 sq mi). Originally, its area was 6,192 km² (2,391 sq mi) until the 1960s when Islamabad Capital Territory was carved out of the district, giving away an area of 906 km² (350 sq mi). It is situated on the southern slopes of the north-western extremities of the Himalayas, including large mountain tracts with rich valleys traversed by mountain rivers. The chief rivers are the Indus and the Jhelum, and it is noted for its milder climate and abundant rainfall due to its proximity to the foothills.

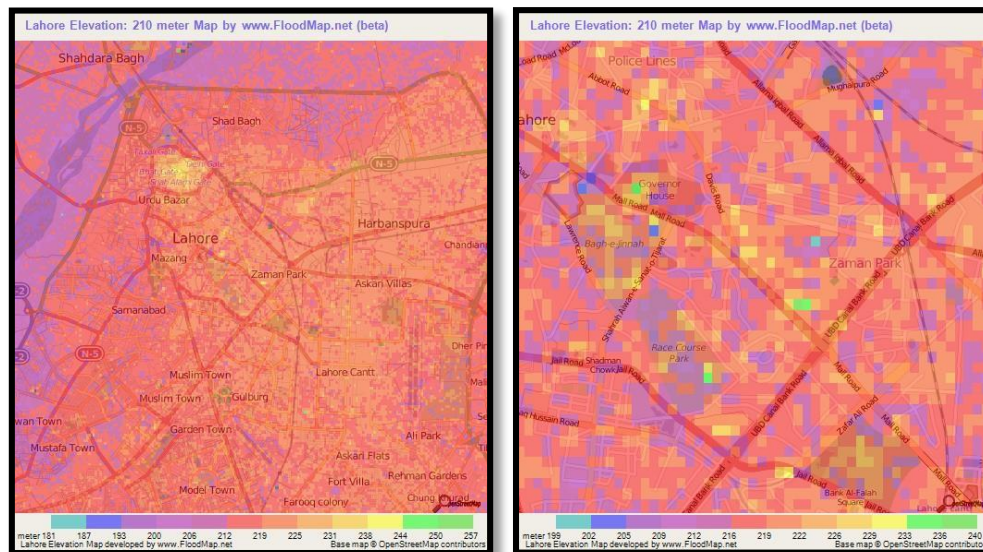


Figure 4: Topography of District Rwp

3.4.2 Climate and rainfall

Records for the Islamabad station of the Pakistan Department of Meteorology indicate a monsoonal climate of rainy hot summers and cool dry winters; precipitation is characteristic of the semiarid zone of Pakistan. The monsoon rains usually start in June, peak in August, and end by September. A much smaller winter monsoon peaks in March. The four monsoon summer months always have some precipitation, but any of the other months can be completely dry. Annual rainfall of only 249.1 millimeters (mm) was recorded in 1982. The high of 1,732 mm was recorded in 1983. The average for 1931–87 was 1,055 mm. The maximum recorded temperature was 45.9 degrees Celsius (°C) in June 1972, and the minimum was -3.9°C in one January before 1961. Freezing temperatures are rare and have been recorded only in November, December, and January. There no record of snow (Pakistan Department of Meteorology, 1988.

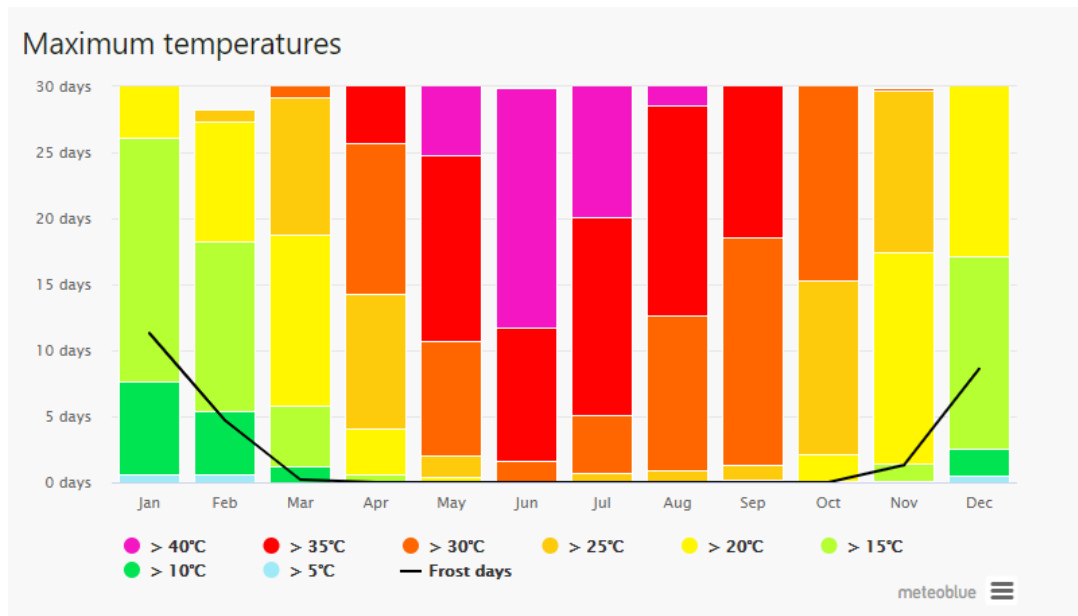


Figure 5: Temperature Data of RWP Region
(Data Source: Worldweatheronline.com)

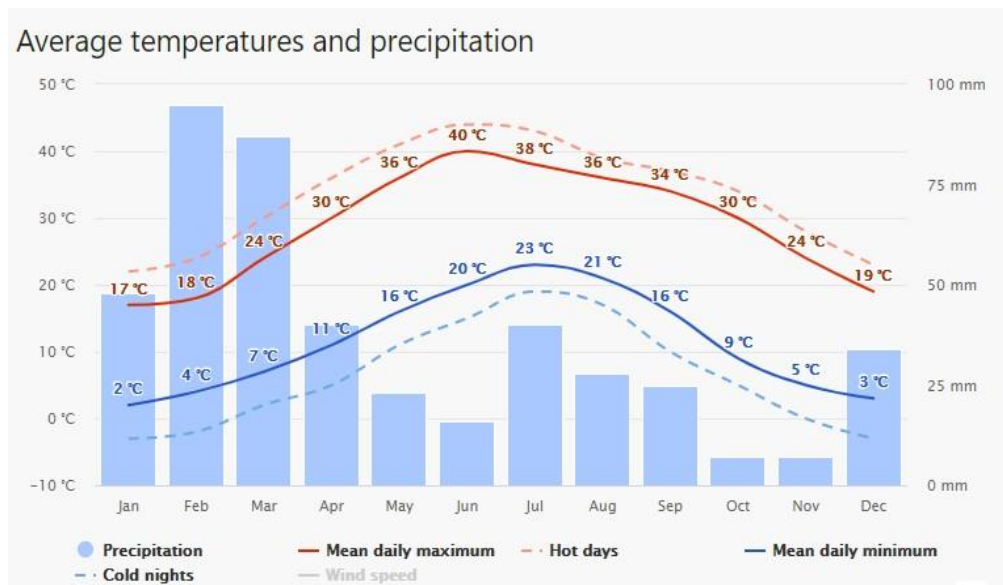
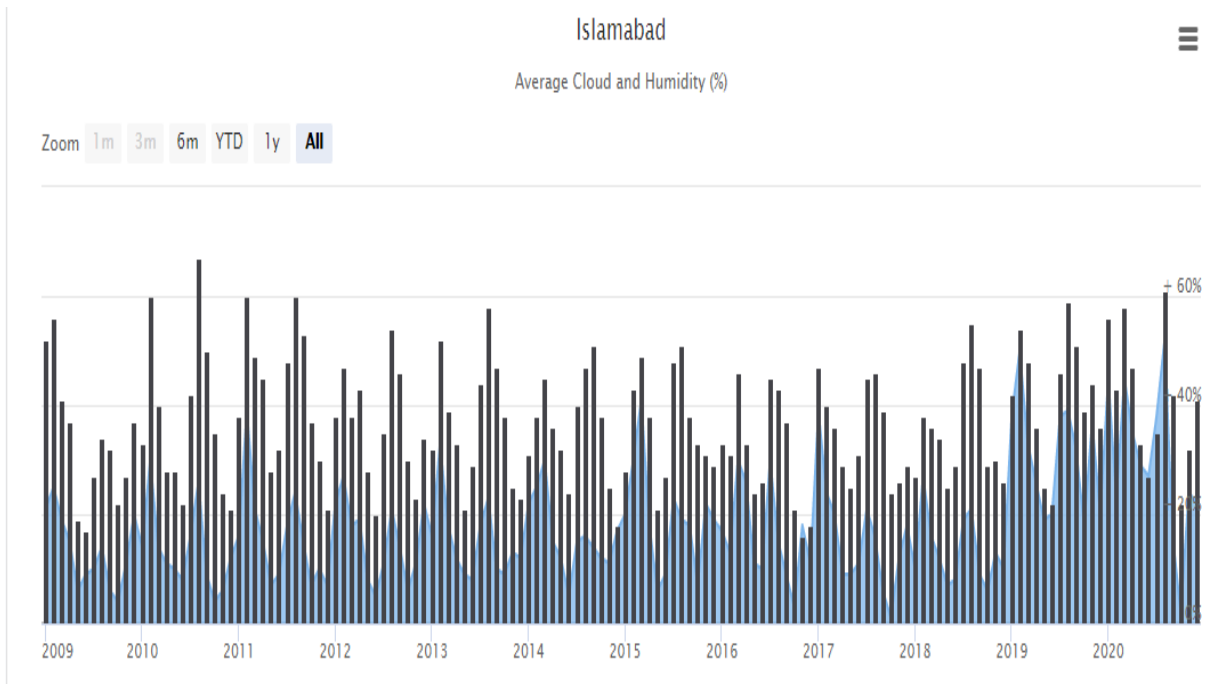


Figure 6: Average Quarterly Rainfall of RWP Region
(Data Source: Data Source: Worldweatheronline.com, 07-07-2018/2:00 PM)



**Figure 7: Average Humidity of Rwp Region
(Data Source: Worldweatheronline.com)**

3.4.3 Surface water

No surface water body is present in vicinity of project area

3.4.4 Groundwater

The water requirements for the site for construction work will be extracted from groundwater aquifer by the help of turbines. Groundwater was encountered at around 118 feet depth below the site. Given a margin for seasonal fluctuations, the groundwater may be considered to rise/fall beyond this depth by about 10-15 feet.

3.4.5 Geology / seismology

Probabilistic seismic hazard assessment recently carried out for Rawalpindi area as part of the revision of seismic provisions of the Building Code of Pakistan shows that the project area falls in Zone 2A. Seismic zone of Pakistan is shown in figure 9. It is therefore recommended that the project structures should be designed to cater the requirements of Zone 2A of Building Code of Pakistan (2007). Based on the evaluation of tectonic setting and seismicity of the project region, the important project structures are designed to withstand a horizontal peak ground acceleration of 0.15g with 10% exceeding probability in 50 year.

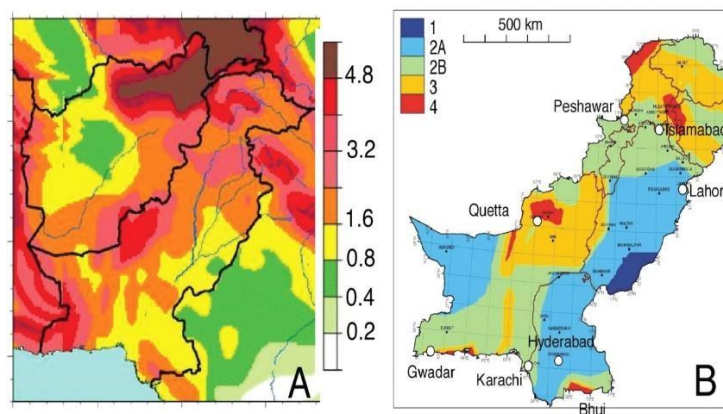


Figure 9: Seismic Zone of Pakistan (Geological Survey of Pakistan)

3.5 Description of the biological environment

The project area neither contain any forest nor falls in protected area or archaeological site and so no jurisdiction on the proposed sire area of the relevant legislations.

3.5.1 Flora

The project area is surrounded by commercial & commercial land, and does not support rare, endangered or threatened plant species. There are no plant species present in the site. However, the proponent intends to plant these to enhance beauty of building and for environmental purpose like kekar (*Acacia nilotica* L.), sheesham (*Dalbergia sissoo roxb.*), mango (*Mangifera*

indica L.), Phulai (*Acacia modesta wall.*), amaltas (*Cassia fistula L.*), dharek (*Melia azedarach L.*), bohar (*Ficus benghalenses L.*), pepal (*Ficus religiosa L.*), kala toot or mulberry (*morus nigra L.*), eucalyptus (*eucalyptus camaldulensis*), guava (*psidium guajava L.*), jaman (*syzygium cumini L.*), pomegranate (*punica granatum L.*), bair (*ziziphus jujube mill.*), rose (*rosa indica L.*) and simbal (*bombax ceiba L.*) etc and some plants are ornamental like *Alastonia*, Golden Ficus, green Ficus, Dronta Weeds, and Palms etc. these are the tree species that are generally planted along the margins of fields. Among the above- mentioned tree species mostly are used for landscaping purposes in houses some plants are used as biomass in homes near the selected site.

3.5.2 Fauna

Only few common animals are found near the project site like dogs, cats, rodents like squirrels, rats, mice and bats. Common species of birds found include the common house sparrow, crow, pigeon, and dove, yellow and white eyed mynas.

3.6 Socioeconomic Resources and Quality of life values

Socio-Economic Questionnaire and Environmental Checklist were used as survey tools by the TetraTech Environmental Consultancy survey team to collect desired information. Most of the respondents had the basic social facilities such as; basic health facility, electricity, watersupply, roads, rail, public and private transportation to sustain life. Most of the respondents were working with the Government and Private businesses.

3.6.1 Population and communities

Mostly community around the proposed project area is the urban. Most of them have their own business. Some of them have private jobs in different profession. Only a few are government employees. Punjabi/Potohari is the predominant language being spoken near the proposed project site, representing 55 % of the population, followed by Urdu and Pashto spoken by 40 % and 4.8 %. Sindhi is spoken by 0.2%.

3.6.2 Infrastructure

The project area is situated in Rawalpindi/Islamabad border and provides round the clock transport access. All the areas are connected with metaled roads. The buses, motorcycle rickshaws, vans and pickups provide very convenient mode of transportation throughout the area. All bounded area has electricity provided by IESCO along with telephone and natural gas facilities. RWP has well developed drainage system which fulfills the requirement of the town in rain season as well as in dry weather. The project site area will also be provided with the modern facilities like electricity by IESCO, natural gas by Sui Northern gas pipelines limited, phone facilities by Pakistan Telecommunication Company limited, and very well-designed drainage system along with a septic tank for primary treatment of sanitary water before throwing it to public sewerage. No surface water is available to the area and only source of water to the area is groundwater, which is extracted by means of motor turbines, tube wells and hand pumps.

3.6.3 Educational institutions

High level education is available near site area well renowned schools and colleges are present at very a lesser amount of distance. The private education schools also exist near the project site. The project area has fortunately privileged of big colleges and universities.

3.6.4 Transportation

The project area is situated in RWP District provides round the clock transportation access.

Transport services include buses, trucks, vans, cars, pickups, motorcycles, and bicycles. For railway services, one can go to Rwp Railway station from where rail service is available throughout Pakistan.

3.6.5 Power sources and transmission

Electricity services are provided by Islamabad electric power company to the area, and it shall provide same services to the proposed project as it is the only authority which deals with the electric power sources and their availability to the expected area.

3.6.7 Public health

The medical facilities are available near the project site area as very good hospitals are situated in nearby area, whole area is full of clinics and hospitals thus providing very good medical facilities to the people of area.

3.6.8 Archaeological and cultural sites

No Major archaeological sites are observed in the vicinity of proposed project.

3.6.9 Gender analysis

The section describes the importance of role of women in the project area. Responsibilities of women in the area belongs to their household activities like cooking the daily meal. In the area, awareness regarding formal education is present and approximately every child in the area especially girls are getting education from the educational institutions. This is also because govt. of Punjab has made formal education totally free and also provides free of cost course books to the students till their matriculation. Majority of the working-class women are teachers in govt. school as well as in private institutions while remaining are doctors and nurses in the hospitals. The female population is found to be 49% of the total population of RWP district.

3.8 Quality of Life Values

Socio-Economic Questionnaire and Environmental Checklist were used as survey tools by the Central Environmental Services survey team to collect desired information. Most of the respondents had the basic social facilities such as; basic health facility, electricity, water supply, roads, rail, public and private transportation to sustain life. The common diseases observed in that area were Diarrhea, cough, diabetes and heart diseases.

3.8.1 Occupation of Respondents

Majority of the respondents (26%) belongs to the business, 33% have their own business, 10%

daily wagers, 13% attached with Govt. employee, 15% shopkeepers and remaining 18% are private employees. During survey, efforts were made to interact with people representing all walks of life. The detailed graphic representation of occupational status is given below:

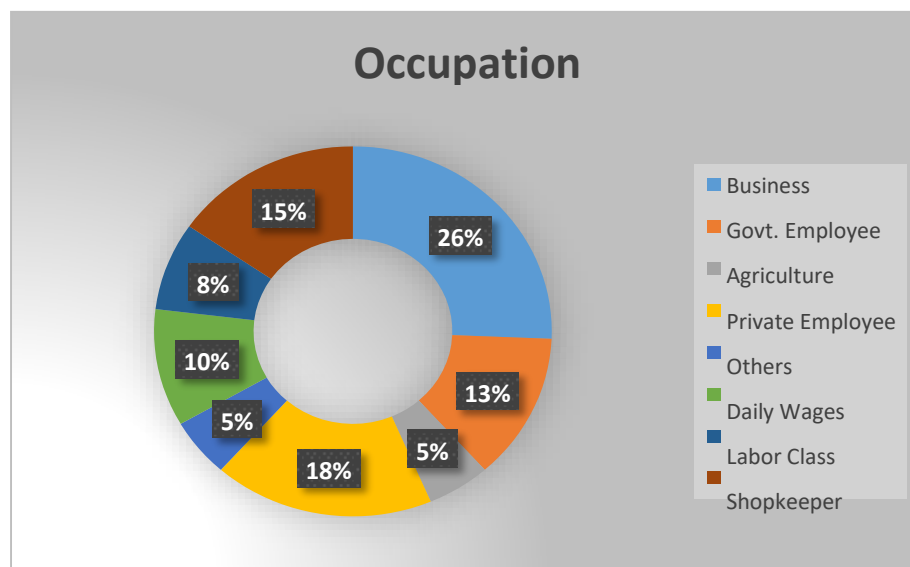


Figure 10: Occupation of Respondents

3.8.2 Personal Income

Based on the sample survey results, as the figure shows that nobody was earning less than 20,000 rupees, 69% of respondents fall within the income range of 20,000 – 25,000, 23% respondents earn 30,001 – 40,000 while only 8% of the respondents earn within the range of 40,001 – 45,000.

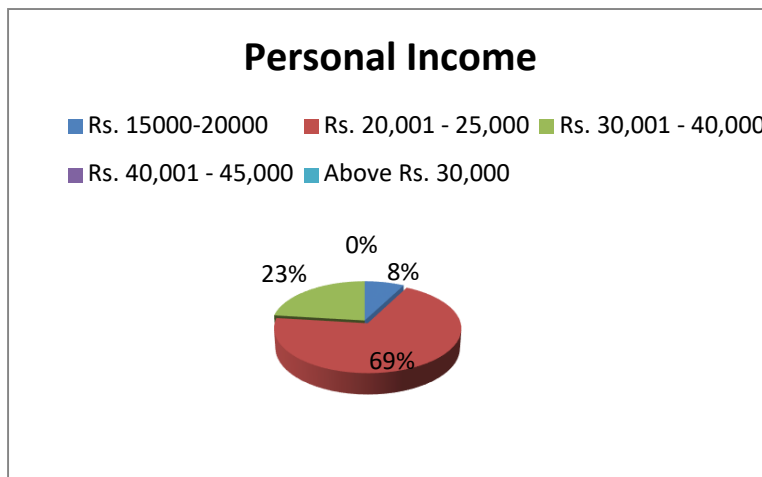


Figure 11: Personal Income

3.8.4 Facilities Available

Facilities available at the houses, shops and factories are depicted here. It shows that electricity, water supply, telecommunication, sewerage, gas supply and every other routine facility is available in study area.

3.8.5 Literacy Rate

From survey results, it was found that 14% of the studied population was illiterate, 7% was up to primary level, 43% studied up to middle level and only 36% of the respondents studied up to higher secondary level.

3.8.6 Common Diseases

According to the survey the common diseases recorded in the project area were, Diabetes, Fever, Hepatitis, Hypertension, stomach problems, Malaria, Typhoid, Nephritis and Diarrhea¹.

3.8.7 Favor for the Project

Respondents were inquired about their views regarding the proposed project. Out of total 14 respondents 70% of the respondents knew about the project whereas, rest of the respondents

doesn't have prior knowledge of the project planning and commencement. Almost 85% respondents of were in favor of the establishment of commercial building in their vicinity as this will increase the employment opportunities and raise the overall socio-economic status of the area.

Table 7: Concerns and Solutions

Main Theme	Concerns	Solutions
Employment	The hiring during operational phase, locals should be considered realistically	The proponent will try to engage local people on priority basis
Environmental Impact	Air pollution, improper handling of wastewater and mitigation of noise impacts	<ul style="list-style-type: none"> • Based on the result of ambient air and noise sampling, necessary mitigation measures will be adopted • To mitigate the impact of the contamination from the generation of wastewater, waste will be handled properly. • Tree plantation will be carried out in the designated green space
Social Impact	Public nuisances' issues may arise due to the spread of diseases in the case of improper disposal of the solid waste and the air emission may cause issues	<ul style="list-style-type: none"> • Proper handling of the waste such as segregation and composting of the solid waste will be carried out to reduce the public nuisance and to improve the public health • A registered will be maintained to register the complaints of the local community

3.8.7 Community Issues

Community was asked about the burning issues they are facing. The majority of respondents complained about solid waste management system, lack of safe drinking water supply, proper health and educational facilities.

3.9 Lab Reports of Environmental Analysis

Testing of different parameters was done from a certified laboratory named SEAL to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is attached at Annexure of this IEE Report.

3.10 Suitability of Site:

Keeping in view the above facts and figures, it shows that the site is suitable for the project and have no significant impact on the environment. No environmentally sensitive receptor is present in the vicinity of project.

Chapter 4. IMPACT ASSESSMENT METHODOLOGY

This section discusses the potential environmental impact of proposed project. The impacts may include the disturbance of area's geomorphology, soil, water resources, air, biological resources, and socio-economic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

4.1 Objectives

The objective of screening is identification of the adverse as well as beneficial impacts and then mitigating the effect of adverse impacts up to acceptable limits or within NEQS. Following are the objectives of screening out all significant environmental and social impacts:

- To find different alternatives and ways of carrying out the project activities which may cause adverse impacts.
- To enhance the Environmental and Social benefits of project
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept within acceptable limits.

In the sub-sections below the impact's assessment methodology for the establishment of Mix-use building located in RWP district has been defined. It includes the magnitude, the extent of the impact and the nature of the anticipated impact.

4.2 Methodology

This Section discusses the project's potential environmental impact of establishment of commercial building on the area's geomorphology, soil, water resources, air resource, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in the sub-sections below is based on potential impacts on overall environmental receptors within the project area. Impacts are evaluated based on magnitude, immediacy, and sustainability. Evaluation criteria are as follows:

4.2.1 Magnitude

The magnitude of the impacts associated with the establishment of commercial building include the type of impact project commencement will cause to its immediate environment and social structure. It could be direct, indirect, and cumulative.

4.2.2 Immediacy

Immediacy of the impact focus on the following parameters:

- Temporal Extent (during operation)
- Spatial Extent (local or widespread)

4.2.3 Sustainability and Reversibility

Sustainability and reversibility of the impact focused on the following parameters:

- Mitigation (Fully/Partially)
- Monitoring (Fully/Partially)

4.3 Purpose of Mitigation Measure

The basic purpose of mitigation measures is to reduce the impacts of the establishment of commercial Building for Allied Bank Limited on the socio-environment up to the maximum possible extent. The mitigation measures are suggested based on the following parameters:

4.3.1 What is the problem?

The proposed project is the establishment of a commercial building. The study area is leveled and commercial land. In addition, to the noise and fugitive dust emissions during the development phase solid waste also requires proper management. The major impact associated with the operation of building includes wastewater, air emissions and the management of the solid waste.

4.3.2 When problem will occur and when it should be addressed?

The impacts from the establishment of commercial building will occur during the construction and operation due to the civil work involved and the people residing in the project area. These issues included noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

4.3.3 Where problem should be addressed?

The problem will be generated from site development and operation of the unit. So, it should

be addressed on source i.e., at site within the same timeframe.

4.3.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems.

4.3.5 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the manufacturing unit:

4.3.6 Changing in Planning Design

There is no endangered and threatened species present in the project area. Moreover, there is not any human settlement or infra-structure that will be dislocated or dismantled due to the proposed project development. Hence, there is no need to change the design of project.

4.4 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise, and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

a. Compensation in Money Terms

Due to the construction of proposed project, the vegetation present on-site will be removed and the geography/landscape of the area will be changed on the permanent basis, however, there is no protected or environmentally sensitive area present within 10.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms will be required. However, for the removal of the one tree from the project area 3-5 trees will be planted as the compensation.

b. Replacement/Relocation/Rehabilitation

The proposed project site is located in commercial area reserved for the establishment of aforesaid building. No replacement, relocation and rehabilitation will be required for the commencement of the aforesaid project.

4.5 Impacts Associated with Project Location

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

- ☞ There is no community or human settlement present on-site or in the project proximity that could be impacted due to the commencement of the proposed project.
- ☞ There is no fauna or flora belonging to an endangered species present on-site.
- ☞ The site has accessible through road network i.e., connected to the main road via access roads.
- ☞ There is no ecologically sensitive or declared protected area like; Reserved Forest, Fish Hatcheries, Wildlife or Game Reserves. Moreover, there is no socio-cultural significant structure (historical or archaeological site or religious structures; Masjid, temples, etc.) located within 5 km of the selected site that could be impacted.

It can be concluded in view of these reasons that the selected site is best suited for the project and will not pose any adverse impact or threat on any component of the environment.

4.6 Impact Assessment Methodology

The impact assessment methodology for the establishment of Re-Build Commercial building by Mr. Umair Ikram for Offices is given below:

4.6.1 Screening of Potential Impacts

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

4.6.2 Identification of Mitigation Measures

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

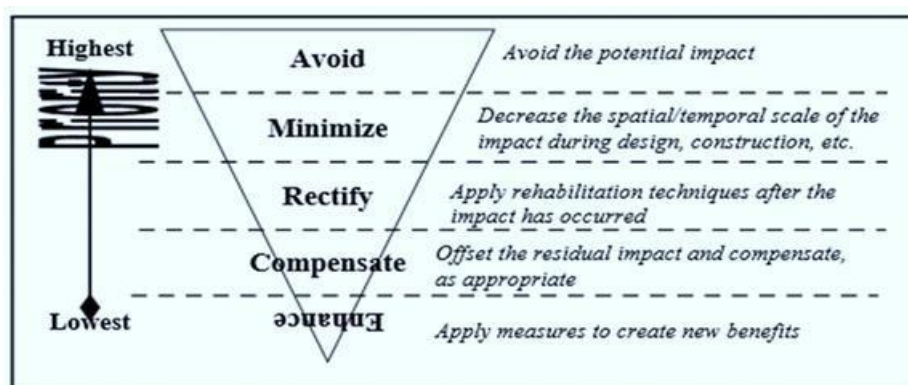


Figure 12: Hierarchy of Mitigations

4.6.3 Evaluation of the Residual Impacts

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of the project but sometimes, it may fail in bringing them within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

4.6.4 Identification of Monitoring Requirements

The last step in the assessment process is the identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if acceptable limits are being breached.

5 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

Public consultation refers to the process by which the concerns of local affected persons and others who have a plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

5.1 The Responsible Authority

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

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

It is envisaged, there will be no social impact being foreseen due to the construction and operation of building at the proposed location. The building is located in commercial area. This IEE Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the project.

5.2 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the public is all the more essential, as it leads to better and more acceptable decision-making. The overall

objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-development phase, goes a long way in updating the knowledge and understanding.

5.3 Identification of Stakeholders

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted which enlisted below. They are the key players including; shops, public and government offices, schools, university, hospitals, hotels, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for this project:

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

5.3.1 Direct Stakeholders

As, no disturbance in the local community is being foreseen due to the development of commercial building as the minimum distance between the community and the project area is minimal. No property loss is being envisaged due to the construction of the proposed project.

5.3.2 Indirect Stakeholders

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the establishment of the proposed project.

Other Departments & Agencies:

- Government agencies responsible to deal with the project related activities
- Government Agencies directly, indirectly, or widely involved in the execution and monitoring of the proposed project.
- Government departments such as TMA and Planning & Development Department, working on the other development activities are considered as indirect stakeholders.
- Workers of political, cultural, religious, or social scientific bodies, directly or indirectly related to the project.

5.4 Public Disclosure

Public disclosure is the outcome of all such activities where the public is involved at least in the information sharing process. This is an integral part of the process. So, before the proponent applies for NOC to the Punjab-EPA, this disclosure will be distributed properly among all stakeholders. It is the responsibility of the proponent and the consultants to display a public disclosure document in prominent places where community has easy access.

5.5 Consultation Process

Information disclosure, public consultation, and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the IEE Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socioeconomic resources falling within the immediate AOI of the project. Primary data collection included:

- Data collection regarding the socioeconomic condition of the study area
- Pre-testing of socioeconomic survey tools in the field
- To consult the locals for collection of information on biological environment
- Various meetings with the stakeholders were held the following objectives:
- Share information with stakeholders on the proposed project and expected impacts on community in the vicinity of the project.
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities.
- Provide an opportunity to the public to influence the project design in a positive manner.
- Obtain local and traditional knowledge, before decision making.
- Increase public confidence about the proponent, reviewers, and decision makers.
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions.
- Dissemination of information through discussions, education, and liaison.
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders.
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback.
- Create a sense of ownership of the proposal in the mind of the stakeholders.

5.6 Environmental Practitioner & Experts

Officers of government departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance.

5.7 Affected and Wider Community

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts, including; employment opportunities, income generation activities, change in living standards and provision of the amenity.

- Disclose the proponent plan of the construction of the proposed project.
- To share information on the design and specifications of proposed project works
- To analyze the expected impact on the socioeconomic environment
- To understand their concerns regarding various aspects of construction and operation

5.7.1 Views, Concerns and Suggestions of Various Stakeholders

Community showed a lot of concerns; a few are being mentioned here:

- The project will become the source of income for local to earn their livelihood easily and honorably.
- The area will become further developed.
- For the solid waste management and waste disposal, proper disposal techniques should be adopted.
- Employment opportunities will be generated, and locals should be hired on the priority basis.
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions.
- Removal of shrubs and trees should be avoided to the extent possible
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training.
- The contractor should prefer hiring local labor from nearby villages.
- Indigenous trees around the facility should be planted to control air pollution and as the compensation.

- Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies close.

Concerns

- Workers should be hired from local community.
- Proper disposal of solid waste should be practiced.
- Indigenous trees around the facility should be planted to control air pollution.
- Removal of shrubs and bushes should be avoided to the extent possible.

5.7.2 Addressing Public Concerns

The best mechanism of effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

a) Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the proposed project, if any.

5.8 Acceptance Level of the Project

The opinions of the respondents were noted during the public consultation. The majority of respondents (93%) were in favor of the proposed project. They expect that establishment of commercial building will also increase the economic value of local assets. According to them the proposed project will boost the employment opportunities, mobility access to resources and social amenities.

Table 8: List of People Consulted

Sr. No.	Name	Fathers' name	CNIC	Concerns/views
1	Saqib Ali	Riaz Ali	35202-4225635-9	Positive
2	Muhammad Shabbir Ali	Syed Farooq	35201-6650791-1	Positive
3	Mohsin Mahmud Dar	Irfan Dar	35202-2607775-3	Positive
4	Haider Muzaffar	Muhamad Muzzafar	35202-4567566-3	Concerned about Water pollution
5	Abdul	Khurram	35202-	Concerned about

	Khurram	Imtiaz	3483674-5	high rates
6	Umar Ali	Faisal Manzoor	35202- 2701116-1	Positive
7	Jawad Ahmed	Muhammad Boota	35202- 4202245-7	Positive
8	Azhar Aziz	Nisar Ahmed	34401- 5144918-9	Positive
9	Behzad Taimur	Muhammad Taimur	38401- 6768711-1	Positive
10	Aslam Pasha	Bilal Pasha	34401- 0223636-3	Positive

CHAPTER 6 SCREENING OF IMPACTS AND THEIR MITIGATION

MEASURE

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to the establishment of the proposed project. It also identifies measures that will help to mitigate the adverse environmental impacts and will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement.

6.1 Impact Evaluation

Impact screening checklist and project impact evaluation matrix have been developed to evaluate the potential impacts of the establishment of Commercial Building for Offices on the basis of set procedures as given in the environmental guidelines by Punjab EPA.

6.1.1 Methodology for Impact Evaluation

These tools have been used to identify the significance and magnitude of the impact as well as the nature, reversibility, and extent:

1. An Impact Screening Checklist
2. Project Impact Evaluation Matrix

Following is given a brief description of assessment tools:

a) Impact Screening Checklist

The impact screening checklist is developed to screen out the potentially insignificant environmental and social impacts from the potentially significant adverse environmental and social impacts during planning & designing, and operational phases of the project. The objective of the impact screening process is to assess the significance of the issues related to the air, water, noise, soil, transportation, communication, the hazards and external constraints. The positive and adverse impacts of the project during planning & designing, and operational phases are identified based on their duration, location, frequency, extent, significance and reversibility. Each activity impacts on various environmental parameters are given below:

Table 9: Impact Screening Checklist

Sr#	Environmental Component	Impact Characteristics												
		Duration		Location		Frequency		Extent		Significance			Reversibility	
		Long	Short	Direct	Indirect	Cont.	Intermittent	Wide	Local	Large	Moderate	Minor	Rev.	Irrev.
Beneficial Impacts														
1	Employment Opportunity	☑		☑		☑			☑		☑		☑	
2	Availability of Raw-Material			☑		☑			☑		☑		☑	
3	Appreciation in Land Value	☑			☑	☑			☑			☑		☑
4	Energy Availability	☑		☑		☑			☑		☑		☑	
Adverse Impacts														
1	Air Pollution		●	●			●		●			●	●	
2	Wastewater		●	●		●			●			●		●
3	Solid Waste and By-Products	●		●		●			●		●			●
4	Health and Safety		●		●		●		●			●	●	
5	Chemical Hazards		●	●		●			●		●		●	
6	Physical Hazards		●	●			●		●			●		●
7	Security Risks		●		●		●		●		●		●	

b) Project Impact Evaluation Matrix

The Project Impact Evaluation Matrix was developed by placing different environmental parameters that are likely to be affected by the proposed project actions, grouped into categories i.e., physical, ecological and socio-economic environment. For the impact assessment risk assessment methodology was used. Moreover, the risk assessment was done on the basis of project phases (planning & designing, and operation). A Project Impact Evaluation Matrix is attached as Table below:

Table 10: Impact Evaluation Matrix

Environmental Parameters	Impact Assessment during operational Phase
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-2p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Pollution	-2t
Dust Emissions	-1t
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-1p
B : Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+3p
Land Value Appreciation	+2t
Availability of Local Raw-Material	+2p
Economic Uplift	+3p

D: Hazards	
Physical Hazards	-1p
Chemical Hazards	-1p
Health and Safety	-1p
<i>Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible</i>	

6.2 Impact and Mitigation Management

Purpose of mitigation is to evade, reduce or balance the expected antagonistic effects in suitable way and to integrate these for devising environmental management strategy or plan. At every stage of the project, mitigation plan for all the adverse impacts should be predicted to find out the best alternative. The objectives of mitigation are to:

- ⇒ Invention of best substitution, better alternatives, and ways to reduce the adverse environmental and social impacts on the surroundings.
- ⇒ To improve the environmental and societal payback of the project
- ⇒ To prevaricate, remedy or reduce, pro-vocative impacts.
- ⇒ To certify that remaining negative influences are kept within permissible limits.

In this part of the IEE Report, several complications including cleanliness, environmental health and safety, societal and environmental managing and inspection, industrial vulnerability, tools and apparatuses and during operational activities, influx of workers and procurement of land have been deeply elaborated.

6.2.1 Approaches for Mitigation Measures

Following approaches may be used to mitigate the impacts of the project:

Table 11: Approaches for Mitigation Measures

Avoid: Change of route or site details, to avoid damage
Replace: Regenerate similar habitat of equivalent ecological value in different location
Reduce: Filters, precipitators, noise barriers, dust, enclosures, visual screening, wildlife corridors and changed time of activities to reduce the impact
Restore: Site restoration at the end of the operational activities
Compensate: Relocation of displaced communities, facilities for the affected communities, financial compensation for the affected individuals, etc.

5.3 Expected Positive Impacts

Following are the expected outcome of the establishment of the said project:

6.3.1 Increase in Employment Opportunities during Construction Phase

Due to the establishment of Mix-Use building in Rwp district the employment opportunity will be enhanced. It will include technical and non-technical staff. Locals will also have the

opportunity to diversify their income by being employed. Hence, there will be an increased employment opportunity for the local people which will have a positive impact on the socio-economic status of the area.

6.3.2 Efficient and Economic Commercial Availability

In addition to all these benefits, the project will result in the general economic and social uplift in the areas of the Taxila.

6.4 Adverse Impacts and Mitigation Measures

This section identifies the potentially significant and insignificant adverse environmental and social impacts anticipated during the operation phase for the establishment of proposed project. Appropriate mitigation and management measures, where applicable, have also been suggested to reduce the severity of the anticipated impact up to the extent possible.

6.5 Impacts Due to Project Location

The development will have both socio-economic and environmental implications as discussed in the sub-sections below.

6.5.1 Relocation of People

Currently, there are no infringements on the project site that may be affected therefore relocation exercises are not required.

6.5.2 Loss of Vegetation

Considering the scale of the project and commonly found flora and fauna within the project influence area, no significant adverse effects are envisaged on the ecology of the area.

6.5.3 Shifting of Utilities

There will not be any shifting of existing utilities such as water supply pipelines, sewers, electrical lines, etc. due to the proposed project.

6.5.4 Impact on Archaeological/Cultural Property

Within the project influence area there are no significant archaeological properties, hence no impact in this area is anticipated.

6.6 Impacts Due to Project Design

Design of the proposed project can have impacts on the environment if it is not prepared accordingly. It is necessary to consider a sustainable project approach. Sustainability is an important issue to consider in design, not only due to environmental concerns but also due to economic and social matters, promoting architectural quality and economic advantages.

Mitigation Measures

- The design process should be carried out in recognition of identified hazards and risks assessment. Accepted design solutions should focus on maximum possible opportunity for risks reduction.

- Carry out engineering surveys including environmental surveys depending on the level of complexity and potential hazards of the planned facilities in the area of construction.
- Integrate within the existing environmental infrastructure at site to facilitate sharing of services and amenities (e.g., power, water, solid refuse collection and roads), safety arrangements and waste management systems among others. This has already been catered as per the designs annexed.
- Minimize risks to health and impacts to external environment. Suitable anti-pollution facilities (solid waste containment and organized removals, wastewater purification) should be part of the design.

6.7 Impacts Due to Project Construction

Project constructions typically change the natural environment, creating negative impacts in some cases. These are short-term impacts of low magnitude, which are easily managed.

6.7.1 Contamination of Soil and Water Quality Degradation

If not properly disposed of, the spillage of oil from the machinery, cement residue from concrete mixer plants, sewage and solid wastes, might contaminate the soil.

No impact is expected on potable water, since this will be directly supplied. Surface or ground water and soil, however, may be impacted as follows:

- Chemical contamination from construction materials such as cement, paint, and mechanical fluids
- Increased siltation caused by surface runoff (as a result of the removal of vegetation and the placement of raw materials e.g., sand)

Mitigation measures

- Open stockpiles of construction materials (e.g., aggregates, sand, and fill material) on site should be covered with tarpaulin or similar fabric during rainy season.
- Measures should be taken to prevent the washing away of construction materials, soil, silt, or debris into any drainage system.
- Maintenance and servicing of vehicle, machinery and equipment must be carried out in a designated area and where oils are completely restrained from reaching the ground. Such areas should be covered to avoid storm water from carrying away oils into the soil or water systems. Wastewater/wash water from these areas should be properly disposed.
- Areas dedicated for material storage should be provided with spill containment and facilitate clean up through measures such as dedicated spill response equipment.

6.7.2 Impact on Air Quality

Potential impact on the air quality during the construction stage will be due to the fugitive dust and the exhaust gases generated in and around the construction site. Dust is a major component of air pollution, generated mainly from the following construction activities:

- Site clearance and use of heavy vehicles and machinery/equipment etc. at construction site.
- Procurement and transport of construction materials, such as sand and cement to the construction site
- Excavated materials (soil) stockpiled.

Mitigation measures

- Construction equipment will be maintained in good operating condition to reduce exhaust emissions.
- Construction site, transportation routes, diversions, and materials handling sites to be water-sprayed on dry and windy days.
- Haulage trucks must be covered, or the aggregates sprayed with water before loading the haulage trucks.
- All diesel fuel in use should be ultra-low Sulphur diesel.
- The project area will be cordoned off to minimize dust migration to nearby facilities by wind.
- Speed controls by temporary speed bumps on diversions where necessary within the construction site
- Staff working in dust generating activities e.g., site preparation, excavation, concrete mixing, stone dressing should be provided with personal protective equipment (PPE) the use of PPE shall be enforced.
- Avoiding open burning of solid wastes.

6.7.3 Soil Erosion

Ground surface alterations during the project site preparation and the transportation of construction materials and equipment, using heavy trucks will disturb the soil surface, making it highly susceptible to soil erosion occurrence. The disturbed soil could easily be transported by surface runoff, causing clogging of nearby drains and sewer pipes. This is likely to be temporary impacts, ceasing after the project construction stage is completed. It is anticipated that the proposed project will not have a significant soil erosion impact if preventive measures are undertaken during the project design and construction stages.

Mitigation Measures

- The soil erosion problem will be addressed during the project design and construction stages when the necessary control measures would be considered and incorporated in the project design and implementation.
- The soil on site should be investigated prior to site preparation for building construction and appropriate safety procedures developed to reduce the occurrence of increased soil erosion.
- Measures taken to control erosion will include clearing and grading the ground surface within approved work limits, stripping the topsoil layer from the subsoil, stockpiling the removed soil in approved areas to be retrieved during landscaping and site restoration.
- Replanting the original vegetation after construction is completed.
- The soil removed from the building site will be used in landscaping around the paved areas for enhancement of environmental quality.
- The surrounding areas will be replanted with grass and flowers, and other suitable plants, and administration staff will be asked to monitor the recovery of the planted natural vegetation.

6.7.4 Noise Pollution

Noise is perceived as one of the most undesirable consequences of construction activity. Though the level of discomfort caused by noise is subjective, the most commonly reported impacts of increased noise levels are interference in oral communication, and disturbance in sleep. Noise levels in the vicinity of the site were found to be above normal limits for commercial areas. Due to the various construction activities, there will be short-term noise impacts in the immediate vicinity of the project corridor, which may exceed acceptable limits and reach nuisance levels for residents. These include:

- Concreting and mixing
- Excavation for foundations with driller (if used)
- Construction plant and heavy vehicle movement (e.g., cranes)

Since the project site is surrounded by Covered Areas, no major adverse impacts are envisaged in the project area. Also, the noise levels are not expected to exceed occupational limits; therefore, no adverse effects on employees should result.

Mitigation Measures

- Reduce equipment noise at source by proper design, maintenance and repair of Construction machinery and equipment.

- Minimize noise from vehicles and power generators by use of proper silencers and mufflers.
- Use noise-abating devices wherever needed and practicable.
- The movement of vehicle should be restricted during nighttime.
- Providing workers with noise related PPE's
- Planting of trees that could serve as sound buffers.
- Noise barriers must be put in on and around the project boundary.
- Hauling trucks shall be operated at low speed to minimize vibration, promote road safety, etc.

6.7.5 Traffic Congestion

The proposed site is located in commercial area and has easily accessible roads. There is expected be a short-term impact on traffic, especially if construction materials are being delivered during peak times. The transportation of construction material from source to site will entail the use of slow-moving heavy trucks, which have the potential to contribute to traffic build-up.

Mitigation Measures

- Construction activities that might substantially disrupt traffic e.g., delivery of materials should not be performed during peak travel periods to the maximum extent practicable.
- Warning signs should be used as appropriate to provide notice of road hazards and other pertinent information to motorists and the general public.
- Signage and barricades should be used as part of the typical construction traffic controls.
- Temporary manual traffic control should be used when construction occurs at the site entrance.

6.7.6 Solid Waste

Construction activities will lead to the generation of solid waste in significant amounts, mainly in the form of construction debris. Solid waste will be generated at the site during site preparation and construction phases. The waste may consist of excavated materials, paper/cement bags, empty paint and solvent containers, broken glass among others.

Unfit disposal of construction waste or spoil could have medium or long-term environmental and public health impact. Extent of this impact will be local to areas where waste is dumped or their immediate neighborhoods.

Mitigation Measures

- Waste, including excavated soil and debris should be properly disposed of by backfilling and landscaping.
- Construction waste should be recycled or reused to ensure that materials that would otherwise be disposed of as waste are diverted for productive uses. In this regard, the proponent/contractor should be committed to ensure construction materials left over at the end of construction will be used in other projects rather than being disposed of. Some of the waste can be sold or recycled/reused by construction companies.
- Contracted waste handlers should be licensed to transport and dispose waste at approved dumpsites only.
- During transportation of waste, it should be covered to avert dispersion along the way.

6.7.7 Ecological Impact

The proposed project site has a very limited value as wildlife habitat because of lack of vegetation cover. There are no threatened or endangered biodiversity (flora and fauna) species and protected areas known to exist within the proposed project site. For these reasons it is expected that any activities for vegetation removal, ground excavations and leveling are likely to cause minimal or no biodiversity impacts in the proposed project site.

Mitigation Measures

- Measures taken to control loss of biodiversity will include:
- Strict instructions will be given to all personnel working in project area to refrain from killing, capturing, or disturbing any species of bird, reptile or mammal encountered during project activities, except in self-defense.
- No removal of vegetation will be done at the project site.
- Replanting the original vegetation after construction is completed.

6.7.8 Social Impacts

Positive Social Impact:

There will be a long-term, positive impact on the social landscape of the project area. Social impacts could result from an influx of migrant workers and associated induced development. This will ensure a rise in the consumption of consumer goods in the local area, which will further affect the wider economy. As far as possible, local labor within the project influence area will be utilized for construction purposes.

Negative Social Impact:

- Safety and Health Risks
- The generation of solid waste, sewage, fugitive dust and gaseous emissions can impact on public health and safety, if not properly managed.

- Construction activities have potential to pose occupational risks, some of which could be life-threatening, for example, fatal falls if workers do not use safety harness when working at heights. In addition, falling debris could injure workers if personal protective equipment (PPE) is not provided or properly used. Back injury could occur if workers lift heavy objects using inappropriate body posture.
Other potential hazards might be; driving equipment with improper brake system, lack of concentration while working and exposure to hazardous wastes such as paints, cement, adhesives and cleaning solvents. This impact is expected to be short term.

Mitigation Measures

- Regular drills shall constantly follow on various possible incidences. This will test the response of the stakeholders. Such drills will keep workers alert and ensure response mechanism in the case of incidences are improved.
- Use signage to warn staff and/ or visitors that are not involved in construction activities.
- Restrict non-essential staff from the construction sites.
- Strict instructions shall be given for drivers of heavy equipment.
- Supervision of works shall be done regularly to ensure that safety conditions are met while any deviation from safety regulations is immediately reclaimed following the best practices regarding safety at work.
- Develop evacuation procedures to handle emergency situations.
- Truck drivers should maintain a speed limit of not more than 20Km/hr.
- Speed controls by temporary speed bumps where necessary within the construction site.
- Clear marking of work site hazards and training in recognition of hazard symbols.
- Training of all personnel in fire prevention and protection.
- Regular inspection, testing and maintenance of equipment and machinery.
- Provide full first aid kits at the construction yard.
- Use of water sprays to arrest dust.
- Containment of hazardous materials.
- Provide adequate protective gear to construction workers.

6.8 IMPACTS DUE TO PROJECT OPERATION

During the operation phase, there will be impacts on the air, water, and land environment, as well as on socio-economic aspects. The following sub-sections present the impacts due to the operation of the proposed project.

6.8.1 Air Environment

During operational phase, air environment may be affected by:

Generator emission: NO_x and SO_x will be generated. The level of Sulphur Oxides (SO_x) depends on the percentage sulphur in the oil being used in the generator.

Vehicular emissions: Carbon Monoxide (CO) is the major pollutant emitted by motorvehicle exhaust systems. This is highest when vehicles are poorly maintained, causing incomplete combustion to take place.

Mitigation Measures

- Low sulphur fuel will be used to reduce SO_x emissions.
- Proper maintenance and tuning of vehicles will be ensured to reduce emissions.
- Internal roads will be maintained properly to reduce fugitive dust and for the smooth movement of vehicles.
- Adequate greenbelt will be developed and maintained.
- High quality fuel having low sulphur contents will be used

6.8.2 Noise

During operational phase, no issue of noise is envisaged as it is a commercial building.

Mitigation Measures

Not Required.

6.8.3 Water Environment

Water will be required for various purposes at proposed project like for drinking a domestic use and floor cleaning and washing. During operation of the building only domestic wastewater will be generated.

Mitigation Measures

- Domestic wastewater generated will be treated in septic tank and then discharged to main drain.
- 3rd party monitoring will be carried out on quarterly basis.

6.8.4 Solid Waste

It expected that certain quantum of solid waste, domestic in nature will also be generated during the operation stage. Such waste will be collected separately once a day and disposed of in a suitable manner; hence no major impact is expected.

Mitigation Measures

- For the collection of solid waste, receptacles will be provided at each floor and arrangements will be made to manage waste properly.
- Waste from such containers shall be collected separately on daily basis.

- All the collection bins shall be properly maintained on regular bases.

6.9 Potential Environmental Enhancement Measures

6.9.1 Tree Plantation

Shade trees including sheesham, neem will be grown outside boundary of project. Grasses, median plants and median shrubs will also be grown. Aesthetic and beauty plants including roses and jasmine will be planted. Trees height will be between 3-7 ft. Spacing between plants will be 6-8m. Tree plantation will be done in open spaces and along boundary of project site.

CHAPTER 7. ENVIRONMENTAL MANAGEMENT AND MONITORING

PLANS

This chapter summarizes the various mitigation measures as outlined previously in this IEE Report that will be implemented during the construction, operational and decommissioning stages of project. It does not discuss further the mitigation measures which have been adopted within the design and planning of the project, as these are comprehensively covered in previous section of this IEE Report.

Outline and key features of the EMMP for operations phase is presented. As per the environmental legislation in Pakistan, the EMMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require monitoring.

7.1 Objectives

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

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

7.2 Management Approach

The organizational roles and responsibilities of the key players are summarized below:

7.2.1 Proponent

The project proponent will undertake overall responsibility for compliance with the EMMP. The concerned departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

7.2.2 Contractors

The contractors will implement the majority of environmental and social mitigation measures. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

7.3 Components of EMMP

The EMMP consists of the following:

- ⇒ Institutional arrangements
- ⇒ Mitigation plan to reduce the severity of associated impacts.
- ⇒ Monitoring plan to monitor the impacts and their severity.
- ⇒ Environmental and social trainings to raise awareness.

7.3.1 Remedial and Mitigation Measures

The objective of remedial and mitigation measures in any project is to identify practices, technologies or activities that would prevent, minimize or mitigate all significant negativities that are likely to occur due to the proposed project.

7.4 Proposed EMP reporting & reviewing Procedures

The purpose of the environmental management and monitoring framework is to facilitate the implementation of environmental commitments, included in the environmental impact assessment. The proponent is committed for the protection of the environment and to the sustainable management of its related operations and activities.

Table 12: Environmental Management and Monitoring Plan

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Operational Phases					
Land Resource	Solid Waste and By-Products	Implementation of SW* Management System	Record keeping and timely transfer of SW from bins to the	Weekly and annually	Proponent

			disposal site for ultimate management and disposal		
	Soil Contamination	Implementation of Management Plans	Visual monitoring and regular site inspection	annually	Project Manager
Air Resource	Air Emission	Air quality will deteriorate due to transportation related activities	Monitor the emissions as per NEQ standards	Once before start of operation and after that as when required during operational phase	EA**
Ecological Resource	Flora	Uprooting of trees during Construction phase and maintenance of photographic record	Re-vegetation during operation phase	During Baseline Survey, once in a year and after the completion of the Project	Project Manager
Wastewater		Wastewater will be generated mainly from domestic use.	Installation of septic tank in building design and regular testing of the	On the monthly basis	Project Manager

		effluents that are being discharged		
*SW= Solid Waste, **EA= Executive Agency				

7.4.1 Environmental Management Team along with their roles & responsibilities

The proposed institutional arrangement for the implementation of EMMP is based on the discussions held with the Forest Department, Environmental Protection Department, Local Union Council Office and Proponent. The discussion concluded that three types of institutional arrangements are essential for the effective implementation of EMMP, these are follows:

- ☞ Establishment of Environment/Social Management Group
- ☞ External Monitoring by EPA certified laboratory
- ☞ EMC established by Proponent after consultation with consultant

a. Roles and Responsibilities

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

Table 13: Roles and Responsibilities

Roles and Responsibilities		
Sr#	Concerned Persons	Duties
1	The Project Manager	Following will be the responsibilities of the Project Manager <ul style="list-style-type: none"> • Monitor the implementation of the EMMP throughout the project by means of site inspections and meetings. This will be documented as part of the minutes of the site meeting documents. • Ensuring project execution within defined budget and timelines • Conducting regular check of the project status and meetings with project team • Provide support and guidance to project team as and when needed • Project Manager is expected to continually monitor and improve the overall performance of their operation
4	HSE Manager	In addition to the health and safety responsibilities held by

		<p>staff, managers and supervisors must do whatever is reasonably practical to ensure that both the workplace and the work itself are safe. This includes:</p> <ul style="list-style-type: none"> • Ensuring that staff are appropriately trained and supervised • Identifying, assessing, and managing health and safety risks • Consulting with workers (including staff, affiliates, and contractors): <ol style="list-style-type: none"> i. Health and safety risk assessments ii. Decisions are made about the measures to be taken to eliminate or control these risks iii. Health and safety risk assessments • Implementing health and safety risk management programs relevant to their operations, teaching, research and consulting functions and work environment • Reporting (to the Human Resources Unit), investigating and responding to all hazards, accidents, incidents and taking action to control the risk • Assisting with the development, implementation and maintenance of a return-to-work program for injured staff. • Be fully conversant with the IEE and conditions of its approval • Be fully conversant with the EMMP • Be fully conversant with all relevant environmental legislation, policies and procedures, and ensure compliance • Undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMMP • Take appropriate action if the specifications contained in the EMMP are not followed. • Monitor and verify that environmental impacts are kept to a minimum, as far as possible • Review and approve construction methods, with input from the Site Manager, where necessary • Ensure that activities on site comply with all relevant environmental legislation
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		<ul style="list-style-type: none">• Compile progress reports on regular basis, with input from the Site Manager, for submission to the Project Manager, including a final post excavation audit• Liaise with the Site Manager regarding the monitoring of the site• All environmental problems arising on the construction area will be reported to the Site Manager by the Environmental Manager. Reports on such problems will be submitted to the Project Manager by the Site Manager
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7.4.2 Impacts Management and Monitoring Plans

The following environmental issues are considered to warrant specific management actions for the implementation of project. These issues have specific regulatory requirements (contained in the development consent or Environmental Approval) and/or are considered to have the potential to result in a non-compliance with a legislative requirement or generate community complaints. To manage the adverse environmental impacts on the physical parameters of the environment following management and monitoring plans will be adopted:

Table 14: Environmental Impacts and Monitoring Plan

Activity (Summary of Impacts)	Mitigation Measures	Implementation Schedule (Timing/Frequency)	Institutional Capacity (Responsibility)
<u>DESIGN/PRECONSTRUCTIN STAGE</u>			
<p>Layout and Design</p> <p>Preparation of design documentation for proposed construction.</p> <p>Procedures for approval of design documentation</p>	<ul style="list-style-type: none"> • The design process should be carried out in recognition of identified hazards and risks assessment. Accepted design solutions should focus on maximum possible opportunity for risks reduction. • Carry out engineering surveys including environmental surveys depending on the level of complexity and potential hazards of the planned facilities in the area of planned construction. • The detailed engineering and equipment specifications must conform to acceptable national and international standards. • Include enhancements, techniques to reduce impacts. 	<p>During preliminary surveys and investigations</p>	<p>Proponent/ Environmental Specialist/ Contractor</p>

<p>Access to Site</p> <p>Sound environmental principles must be followed whilst establishing access to the site</p>	<ul style="list-style-type: none"> • The location of all access points to the proposed project site must be identified and confirmed. • Marking of survey points must be done with the Proponent's approval. 	<p>Prior to moving onto site</p> <p>During surveys and preliminary investigations</p>	<p>Proponent/ Contractor</p>
<p>Training of Site Staff on General Environmental Conduct</p> <p>These points need to be made clear to staff on site before the project begins</p>	<ul style="list-style-type: none"> • Ensure that all site personnel have a basic level of environmental awareness training. • The Contractor must submit a proposal for this training to the workers for approval. • Site policy also needs to be explained to the construction workers. • No alcohol / drugs to be present on site. • No firearms allowed on site or in vehicles transporting staff to / from site (unless used by security personnel). • Prevent excessive noise. • Prevent unsocial behavior. • No harvesting of firewood from the site or from the adjacent areas. • Trespassing on private / commercial 	<p>During staff induction and ongoing</p>	<p>Proponent/ Contractor</p>

	<p>properties adjoining the site is forbidden.</p> <ul style="list-style-type: none"> • Other than the pre-approved security staff, no workers should be permitted to live on site. 		
<p>Social Impacts – Visual & Noise</p> <p>It is important to take notice of the needs and wishes of those living or working adjacent to the site. Failure to do so can cause disruption to work and increase costs in the form of delays</p>	<ul style="list-style-type: none"> • During the set up phase of the project, the Proponent and Consultant need to make contact with those people that are interested or affected by the development. • Construction vehicles are to be fitted with standard silencers prior to the beginning of construction. • Equipment that is fitted with noise reduction facilities should be used as per operating instructions and maintained properly during site operations. • Storage facilities and other temporary structures on site should be located such that they have as little visual impact on local residents as possible. 	<p>Prior to moving onto site/ Onsite Feedback</p> <p>During surveys and preliminary investigations and site set up</p>	<p>Proponent/ Contractor/ Environmental Specialist</p>
<p>Cultural Environment</p>	<ul style="list-style-type: none"> • Prior to the commencement of construction, contractor needs to know if any possible archaeological 		

	<p>or historical objects of value are present near the project site.</p> <ul style="list-style-type: none"> • Inform the relevant department in case of any disturbance to cultural environment. 	During surveys and preliminary investigations and site set up	Proponent/ Contractor
<u>CONSTRUCTION STAGE</u>			
<p>Air Pollution/ Dust</p> <p>Exhaust gases from vehicles and machinery and dust during excavation, backfilling, compaction activity and movement of vehicles on un-paved roads Establishment of the camp site, and related temporary works can reduce air quality.</p>	<ul style="list-style-type: none"> • Monitoring of gaseous emission should be conducted by 3rd party. • Well maintained machinery should be used at site and its regular monitoring should be ensured. • Use of water sprays to decrease dust generation. • Workers will be provided with Personal Protective Equipment's (PPEs) such as face masks and goggles. 	Throughout Construction Phase	Proponent/ Contractor
<p>Water Resources</p>	<ul style="list-style-type: none"> • Availability of water will be assessed to evaluate the impact on community resources. • Water should be obtained without depleting local water supplies. • Guidelines should be established to minimize the wastage of water during construction. 		

	<ul style="list-style-type: none"> • Protection of groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality. 	Throughout Construction Phase	Proponent/ Contractor
Wastewater	<ul style="list-style-type: none"> • Sanitary wastewater should be treated as per wastewater management plan. • No untreated effluents should be released to the environment. • Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric during rainy season; • Prevent the washing away of construction materials, soil, silt or debris into any drainage system; • All machinery and equipment should be regularly maintained and serviced to avoid leak oils; • Wastewater monitoring should be conducted quarterly by 3rd party. 	During Construction Phase	Proponent/ Contractor
Soil Erosion	<ul style="list-style-type: none"> • Avoid creating excessive slopes. • Save topsoil removed during construction and use to reclaim disturbed areas, as soon as it is possible to do so. 		
		During Construction Phase	Proponent/ Contractor

<p>Solid Waste</p> <p>Debris and surplus construction material</p>	<ul style="list-style-type: none"> • Confirm amounts of surplus rock- based materials can be reused in the project or by other interested parties for public projects. 	<p>During Construction Phase</p>	<p>Proponent/ Contractor</p>
<p>Noise</p> <p>Construction activities are expected to increase the noise levels mainly due to plying of construction vehicles, mechanical machinery such as cranes, hammering etc.</p>	<ul style="list-style-type: none"> • All machinery should be fitted with acoustic insulation. • Providing the construction workers with suitable hearing protection like earmuffs and training them in their use. 	<p>During Construction Phase</p>	<p>Proponent/ Contractor</p>
<p>Equipment Maintenance</p>	<ul style="list-style-type: none"> • Prepare and keep the record of equipment maintenance log. • Prepare proper maintenance sheets for vehicles. • Use fully tuned vehicles. 	<p>During construction</p>	<p>Proponent/ Contractor</p>
<p>Workers and Public Safety</p>	<ul style="list-style-type: none"> • Safety conditions during construction phase should be ensured. • Safe access and thoroughfare must be provided on site at all times. Dangerous areas should be clearly identified with appropriate signs. • Providing every worker with skill 	<p>During construction</p>	<p>Proponent/</p>

	<p>guard or hard hat and safety shoes.</p> <ul style="list-style-type: none"> • Conduct proper worker health and safety training and orientation prior to initiation of tasks. 		Contractor
Social Impacts	<ul style="list-style-type: none"> • Use local labor as far as possible for manual work. • Use local educated people for clerical and office work where possible. • Contractor's activities and movement of staff to be restricted to designated construction areas. • The site must be kept clean to minimize the visual impact of the site. • Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbors. • Noisy activities must be restricted to the designated time. 	During Construction Phase	Proponent/ Contractor
Site Restoration	<ul style="list-style-type: none"> • Carry out complete restoration of the construction sites. • Remove all waste, debris, unused construction material, and spoil from the worksites. • Measures taken to control erosion 	After completion of project	Proponent/ Contractor

	<p>will include clearing and grading the ground surface within approved work limits, stripping the topsoil layer from the subsoil, stockpiling the removed soil in approved areas to be retrieved during landscaping and site restoration.</p> <ul style="list-style-type: none"> • Replanting the original vegetation after construction. 		
<u>OPERATIONAL STAGE</u>			
Air Quality	<ul style="list-style-type: none"> • Gaseous emissions from generator will be managed according to the standard procedures. • Low Sulphur fuel will be used in generators. • Regular monitoring will be carried out by 3rd party to assess the nuisance of emissions from the project site. • Monitoring data should be kept in record for further correspondence. 	Operational phase	Proponent
Wastewater	<ul style="list-style-type: none"> • Domestic wastewater generated will be treated in septic tank. • After treatment wastewater will be discharged in the WASA drain. 		

	<ul style="list-style-type: none"> Monitoring of wastewater should be carried out regularly by 3rd party to ensure compliance with the PEQS. 	Operational phase	Proponent
Solid waste	<ul style="list-style-type: none"> Solid waste should be disposed of through approved vendors. For the collection of such waste, receptacles will be provided. Waste from such containers shall be collected separately on a daily basis. All the collection bins shall be properly maintained on regular bases. 	Operational phase	Proponent
Fire Hazard	<ul style="list-style-type: none"> Install fire-fighting equipments in the entire building. Fire exit should be made which should be considered at the design phase. Train employees to use firefighting equipment's at the time of emergency. 	Operational Phase	Proponent

7.5 Proposed Monitoring Program to assess output of EMP

An environmental monitoring plan provides a delivery mechanism to address the adverse environmental impacts of a project during its execution, to enhance project benefits, and to introduce standards of good practice to be adopted for all project works. An environmental monitoring program is important as it provides useful information and helps to:

- Assist in detecting the development of any unwanted environmental situation, and thus, provides opportunities for adopting appropriate control measures, and
- Define the responsibilities of the project proponents, contractors and environmental monitors and provides means of effectively communicating environmental issues among them.
- Define monitoring mechanism and identify monitoring parameters.
- Evaluate the performance and effectiveness of mitigation measures proposed in the Environment Management Plan (EMP) and suggest improvements in management plan, if required,
- Identify training requirement at various levels.

An environmental monitoring plan is suggested to monitor environmental parameters during survey, construction and post construction phase of the project.

Following environmental record should be maintained:

- Incident record of all moderate and major spills and other incidents and accidents. The record will include:
 - ✓ Location of spill or Spilled material
 - ✓ Estimated quantity or the amount of injury
 - ✓ Nature of injury or loss (temporary or permanent)
 - ✓ Restoration measures
 - ✓ Photographs
- Description of any damage to vegetation, water resource, or community asset.
- Corrective measures taken, if any
- Waste Tracking Register that will hold records of waste generated during the construction period. This will include quantities of waste disposed, recycled, or reused.
- Records of water consumption with usage breakdown
- Survey reports, in particular, the following:
 - ✓ Vehicle and equipment noise.
 - ✓ Ambient noise survey reports.
 - ✓ Ambient level of PM

- ✓ Vendor data—all vendors disturbed by the project and compensation paid Public infrastructure: Record of all damages and repair work undertaken.
- ✓ Employment
- ✓ Total number of unskilled, semi-skilled, and skilled jobs offered during Construction.
- ✓ Name and domicile of the employed staff.
- ✓ Project and Community Interface
- ✓ Record of community complains and the measures taken to address them.
- ✓ Number of meetings held in various communities and data of persons who attended.
- ✓ Environmental and social training records.

Table 15: Environmental Monitoring Plan

Environmental Quality	Parameters	Details of Location	Standards/Guidelines	Frequency	Responsibility
CONSTRUCTION PHASE					
Waste Collection, Storage and Disposal	Inspection of Waste Generation, collection, Storage and Disposal at site	Construction Site	Statutory Requirements	Once a week	Environmental officer/manager
Worker's safety	Injuries and accidents	Recording injuries	-	Onsite	HSE/contractor
Air Quality	Air Quality (PM ₁₀) All relevant stack emissions (CO,NO _x ,SO _x Smoke)	Active Construction Area	PEQS	Once a month	Environment Officer /manager
Water Quality	Groundwater Quality (Total Coliform, Fecal E.Coli, Total Colonial	Groundwater sources near the project site	PEQS	Once a month	Environment Officer /manager

	Count, pH, TDS, Total hardness, Alkalinity Nitrates, Chloride, Sodium, iron)				
Noise Level	Noise level on dB (A) Scale	At least three locations near boundary	PEQS	At least 3 working days	Environment Officer /manager
OPERATIONAL PHASE					
Ambient Air Quality	NO _x , SO _x ,	Stack of generator	PEQS	Quarterly	Environment Officer /manager
Noise Level	Noise level on dB (A) Scale	Noise level near the receptor	PEQS	Quarterly	Environment Officer /manager
Waste disposal, procedure for waste collection, storage, and disposal	Inspection of waste generation, collection, storage, and disposal will be undertaken at each site of the project activity	Visual inspection	Statutory Requirements	Once daily	Administration Officer
Safety	Injuries	Injuries will be recorded		Daily	Administrator

7.6 Training and Capacity Building

Training and capacity building trainings are conducted on the regular basis to enhance the capacity of the workers hired for the working. Following is the detailed plan along with the schedules of the training:

Table 16: Training and Capacity Building Plan

Training and Capacity Building Plan			
Potential Impacts	Operation Phase		
	<p>During operational phase, nearby society will face problems like:</p> <ul style="list-style-type: none"> ○ Noise Pollution due to movement of vehicles ○ Disease vector production due to improper management of solid waste ○ Contamination of ground water if the wastewater is not disposed of properly ○ HSE issues may arise 		
Mitigation	Training and Capacity Building Plan		
Management Plan	<p>Training and Capacity Building Plan</p> <p>Project will ensure in-house training for the project staff and the supervisory staff of the Proponent/EA through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the projects in general, and implementation requirements will emphasis on the development projects in general, and implementation requirements with emphasis on the roles and responsibilities of the staff and the labour while executing the environmental monitoring plan in particular. The training protocols will include the following aspects:</p> <ul style="list-style-type: none"> ⇒ Procedures for monitoring water quality parameters and measures to be adopted for avoiding or minimizing water pollution, particularly from the wastewater effluent generated from municipal uses and in the process activity ⇒ Safe solid and process waste disposal practices ⇒ Safety measures against hazards for workforce and the local communities arising from the construction activities ⇒ Use of safety gadgets by the workforce ⇒ Training for the use of PPEs 		
Monitoring	Responsibility	Responsible	Monitoring Duration
	Training of staff, vehicle operators and labour	Project Manager / HSE Manager	1 day training once a year

7.7 Impacts and their Mitigation Summary

Environmental and social impacts have been identified for the establishment of the building; their impacts had been mitigation by adopting required measures as recommended in EMMP of this IEE Report within the Project Area of Influence. The major impacts on physical, biological and social environment are described as under:

Table 17: Impacts Summary

Environmental Parameters	Impact Assessment during operational Phase
	Operational
A: Physical	
Land Resources	
Soil Erosion and Contamination	0
Transportation	-1t
Solid Waste and By-Products	-1p
Land Use	NA
Air Resources	
Noise Pollution	-1t
Air Pollution	-1t
Dust Emissions	-1t
Water Resources	
Ground Water	-1p
Surface Water	NA
Wastewater	-1p
B : Ecological	
Flora	
Tree Cutting	+1p
Fauna	
Terrestrial Fauna	+1p
C: Socio-Economic	
Employment Opportunities	+3p
Land Value Appreciation	+2t
Availability of Local Raw-Material	+2p
Economic Uplift	+3p
D: Hazards	

Physical Hazards	-1p
Chemical Hazards	NA
Health and Safety	-1p

Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible

7.8 Equipment Maintenance Details

The Client and Contractor will be responsible to maintain equipment with higher efficiency and in good working conditions. The equipment will be maintained twice a year as well as monthly inspection will be done on the regular basis to keep the process going without any interruption.

7.9 Environmental Budget

The environmental budget for the project is PKR 10 million which will be used for the control of the air pollution, tree plantation at various designated sites, EMMP for the operational phase and monitoring of environmental parameters (such as ambient air, noise and wastewater). The total cost of the project is PKR 8 billion. EMMP and the monitoring will be carried out on the regular basis. So, more than 1% of the total project cost will be allocated for the environmental protection.

Total Cost	8 billion
Land Cost	2 billion
Land development and infrastructure	6 billion
Environmental Budget:	10 million
Construction	
Ambient air monitoring	50,000/-
Noise monitoring	10,000/-
Water quality monitoring	40,000/-
Health & safety	1,20,000/-
Worker's training	1,00,000/-
Operation	
Solid waste management	1,00,000/-
Wastewater management	50,000/-
Plantation/green belt development	2,00,000/-

CHAPTER 8. CONCLUSION AND RECOMMENDATIONS

The findings of EIA Report showed that although The Winston Mall & Residencia expected to have significant negative impacts on the environment during the construction phases, but the severity of these adverse impacts can be reduced significantly by adopting the suggested mitigation measures in EMMP with true spirit. Moreover, their severity can be further reduced by adopting relative mitigation measures as proposed in the Chapter 5 of this EIA Report. The impacts were assessed by frequent site visits, studying related projects and by reviewing relevant documents. Generally, the project is planned to follow efficient environmental management systems. Specific environmental and social benefits have been mentioned below which depend on the proper application of mitigation measures suggested in EMMP and best engineering practices.

8.1 Merits and Demerits

The major positive impacts include; increased job opportunities, business opportunities, availability of the efficient commercial space, and environmental enhancement through tree plantation. The project will raise the income of the persons directly associated with project as well as it will also improve the socio-economic status of the area. In general, potential adverse environmental effects resulting from the proposed activities will be temporary in nature, short-term and of low magnitude. Through application of standards, recommended mitigation measures, adherence to applicable permit conditions and regulations, adverse impacts can be effectively minimized. The project is not likely to have significant adverse environmental impacts which cannot be mitigated. Negligible negative impacts that are likely occur during construction of building includes; air pollution due to movements of vehicles, removal of bushes and shrubs, potential impact to the local water resources and social impacts may affect the locals residing in the nearby community can be foreseen. Mitigation measures will be implemented to minimize environmental impacts though they are still negligible. There are certain mitigations suggested to cater for the aforesaid issues.

8.2 Recommendations

The intensity and severity of impacts occurred due to the establishment of Commercial Building varies with change in the nature and magnitude of the project as well as depends upon the baseline environmental conditions of the area. The mitigation measures will require

constant information flow and consultation with the stakeholders to ensure the least adverse social-economic impact to outweigh the “no project development” scenario.

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP with true spirit.
- Proper PPEs including aprons, rubber gloves and shoes should be provided to workers.
- No compromise on public health and environment should be allowed.
- Waste minimization practices should be introduced to workers by conducting lectures on spot to aware the workers about the long-term benefits of the same in lieu of surrounding environment.
- A proper tree plantation plan should also be developed in order to make the process environment friendly.
- Small domestic waste storage bins should be placed at different locations for proper collection and disposal of the solid waste.
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further.

TERMS OF REFERENCE (TORS)

ENVIRONMENTAL IMPACT ASSESSMENT OF MIX-USE BUILDING BY M/S WINSTON MALL & RESIDENCIA LOCATED “MULTI GARDENS SCHEME” PLOT NO. C-5 MOUZA BHADANA KHURD, TEHSIL TAXILA DISTRICT RAWALPINDI.

1.1 PROJECT PROPONENT:

Farhan Ahmed S/O Fateh Muhammad Qureshi

1.2 SCOPE OF WORK:

Farhan Ahmed tends to establish a Mix Use building.

1.3 SPECIFIC OBJECTIVES:

The EIA shall be carried out with an objective of identifying environmental impacts during change in Land use of the Master Plan. The specific objectives will be as follows:

- Identification of impacts on physical environment including land, water, and air and suggesting mitigation measures.
- Identification of impacts on biological environment including flora, fauna and natural habitat and suggesting mitigation measures.
- Identification of impacts on socio-economic environment in the vicinity of the proposed landfill site and suggesting mitigation measure.
- Mitigation measures for potential impacts (Physical, Biological and Socio-environmental)
- Environmental Management and Monitoring Plan/ Contingency Measures

1.4 THE EIA SHALL COVER FOLLOWING MAIN AREAS:

- Background of the project – Justification
- Objectives
- Site locations and mappings
- Complete description of the proposed sites
- Collection, analysis and presentation of baseline data
- Identification of significant environmental issues
- Assessment of direct, indirect and cumulative impacts on environment
- Mitigation measures to minimize predicted adverse impacts
- Assessment of public perception about proposed project

- Meeting with the stakeholders and their perception
- Review of the relevant Policies, Legislation and Regulations
- Monitoring plan
- Conclusions

1.5 MAJOR TASKS:

The consultant shall be responsible for undertaking the following tasks in EIA study.

1.5.1 Collection and collation of Secondary Information:

Prior to the start of field activities, available secondary data and reports will be reviewed in detail.

1.5.2 Analysis of Alternative:

Suitable site alternative will be suggested, if required, by the review of relevant maps, available secondary data and legal review.

1.5.3 Location Alternative:

Alternative site will be suggested, if required, by using relevant maps and GPS during area visits.

1.5.4 Management and Operational Alternatives:

Management and operational alternatives will be suggested, if required, by the review of institutional set-ups of departments relevant to the project.

1.5.5 Design Alternatives:

Design alternatives will be suggested, if required, by the review of current design layout.

1.5.6 Review of Relevant Environmental Laws:

The Consultants will carefully review the national/local authority laws, Pakistan Environmental Protection Act 1997, Forest Act 1930, Land Acquisition Act 1874 etc. and international regulations like World Bank Operational Policy, Cites Act etc. for conducting EIA study. This approach will eliminate any chances of the rejection of the project by the concerned EPA due to the consideration of all the concerned laws during the preparation of the EIA report.

1.5.7 Collection of existing Environmental setting/baseline Data:

Based on the desk study and reconnaissance survey, checklist and questionnaires / Performa's will be prepared for the baseline surveys. Consultants will proceed to the site and the collection of primary data /database on the environmental aspects will be done, which includes the following:

1.5.8 Physical resources:

Physiographic, topography and soils, atmosphere, climate, hydrology, surface water, ground water, geology, seismology etc including environmental monitoring and testing.

1.5.9 Environmental Monitoring:

In case of the absence of updated data, one-time limited environmental monitoring will be conducted in order to assess and analyze the existing level of particulate and gaseous emissions, potable water and liquid from any existing sources lying within the Study Area.

The environmental monitoring and testing will be carried out through EPA approved Environmental Laboratory.

1.5.10 Ecological resources:

Identification of the number of tree species present in the project area, as well as, determination of tree density and area covered by them. Tree counting and their identification along with other vegetation and crops, if any, will be done by making field visits, and by the review of the available literature relevant to the study. Information about the flora and fauna of the area will be collected. Information of the type of the livestock in the area will be noted along with their density.

1.5.11 Socio-economic survey:

Data on social and cultural conditions of the study area will be collected. Determination of the population density in the study area will be done by the review of district census report. The social survey also includes Land acquisition survey (if required) and Identification of vulnerable people/groups i.e. Project Affected People, if any. Data about population density, Infrastructure (electricity, sanitation/ drainage facilities, mode of transportation), health and education status will be collected. Data collection about number of schools and hospitals in the area, if any; no. of graveyards in the area, if any; no. of recreational

and commercial areas, if any; availability of utilities; and strata of socio-economic group of people dominant in the area will be kept in focus during baseline study.

1.5.12 Evaluation / Identification of Potential Impacts:

Prediction and assessment of the proposed Project's likely negative impacts during the construction and operational stages will be carried out by conducting the field visits of project and study area. The impacts will be discussed in three sectors with reference to the following parameters:

1.5.13 Physical environment:

Under physical environment, impacts on following areas will be measured.

- **Land resources:** Evaluation of the environmental effects of the project on land use in the immediate vicinity of the project (i.e. within the identified boundaries of the project) will be done, e.g. Agriculture, Archaeological, Historical and Cultural monuments
- **Water resources:** Precipitation, surface water resources, ground water resources.
- **Air quality:** levels of air pollutants like particulate matter, CO and other parameters and their adverse impacts, if any, on the surrounding environment will be determined to evaluate its effects.
- **Noise levels** will be evaluated for the construction and operational phase of the project

1.5.14 Ecological environment:

Impacts on ecological environment may include

- Impacts on fauna of area, livestock and migratory birds (if any)
- Reserved forests, if any.
- Relocation/resettlement issues etc.
- Impacts on flora

1.5.15 Socio-economic Impacts:

- Impacts on livelihood of Project Affected Persons (PAPs) (if any): Questionnaires will be developed and prepared and filled during the field visits to know about the public perception of the study area.
- Impacts on social settings of the project area.
- Relocation/ resettlement issues

- Impacts of the project on local property values and insurance rates will be taken in to consideration.
- Disruption archaeological, historic, religious, and unique natural values in the project area if any

1.5.16 Suggested Mitigation/contingency Measures:

After the identification of the adverse environmental impacts, necessary mitigation measures would be proposed. Mitigation plans will be proposed based on the intensity of each impact. For instance, if the impact is low enough, it may be ignored; if the impact is high, specific mitigation measures will be recommended/suggested and if the impact is medium, it may need some mitigation measures or simply be monitored/managed properly in order to ensure that it remains within the acceptable limits.

1.5.17 Environmental Management Plan (EMP):

An Environmental Management Plan (EMP) will be developed. EMP will propose a plan of action that will indicate the responsibilities and required measures to minimize the negative environmental effects of the project at different stages.

Under the EMP, institutional set up will be studied and the required enhancement, which is deemed necessary for effective management and monitoring of the environmental activities, will be proposed. The EMP will address the following aspects:

- Organizational structure and responsibilities;
- Mitigation Plan;
- Environmental Monitoring Plan;
- Communication and documentation;
- Training of Staff;
- Environmental Cost;

1.5.18 Stakeholder participation and consultation:

Consultation is required at least during two stages of the EIA process as follows:

- During the process of the EIA Study and report preparation, the public is consulted through meetings, seminars, or workshops. Proponents will hold public meetings and/or open houses in local communities to describe the details of the project and to receive feedback on potential issues, interests or concerns related to the project.

Engagement may also include informal discussions with landowners and nearby residents and meetings with community associations, businesses, municipal councils, regional planning agencies, public interest group's communities.

- Once the draft EIA report has been prepared & submitted then public hearing is required. The consultants shall fully assist the Client in the public hearing, including furnishing the replies/information to the questions/issues raised during the hearing.

1.5.19 Deliverables Consultant:

1. Complete Draft EIA report featuring all the development sites. The EIA report shall be completed in respect of baseline data, detail socio and environmental impact assessment, Environmental Management Plan and Alternatives considered.
2. Final EIA Report to be submitted after receiving comments from Clients.

1.6 Time Duration:

The time duration for completion of whole study is 2 months.

1.7 SCOPE OF WORK; Client:

The client has following scope of Work

1. Give all data related to the current and proposed Land use of the sites.
2. Give all the detail maps of the sites.
3. Give coordinates of all the sites
4. Give detail description of the area.
5. Land use Study for the sites.
6. Arrange Stakeholders consultation along with consultants
7. Submission of EIA report in EPA and its follow-up until award of NOC.

LIST OF ABBREVIATIONS

°C	Degree Celsius
CO ₂	Carbon dioxide
CPEC	China Pakistan Economic Corridor
EIA	Environmental Impact Assessment
IEE	Initial Environmental Examination
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
GDP	Gross Domestic Product
m ³	Cubic meter
m ³ /h	Cubic meter per hour
MW	Megawatt
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO _x	Oxides of Nitrogen
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPC	Pakistan Environmental Protection Council
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
QA	Quality Assurance
RO	Reverse Osmosis
SOPs	Standard Operation Procedures
TMA	Town Municipal Authority

GLOSSARY

Aesthetic	Concerned with beauty or appreciation of beauty.
Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Aquifer	An aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated materials (gravel, sand or silt) from which groundwater can be extracted using water well.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Convention	An agreement between states covering particular matters, especially one less formal than a treaty.
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Ecology	The branch of biology that deals with the relations of organisms to one another and to their physical surroundings.
Endangered species	A species of animal or plant that is seriously at risk of extinction.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specific is being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Framework	A framework is a real or conceptual structure intended to serve as a support or guide for the building of something that expands the structure into something useful.

Hazardous Waste	Hazardous Waste is waste that poses substantial or potential threats to public health or environment.
Impact	The action of one object coming forcibly into contact with another.
Livelihood	A set of activities involving Securing the basic necessities –food, water, shelter and clothing of life.
Municipal Waste	Municipal Solid Waste (MSW)—more commonly known as trash or garbage—consists of everyday items we use and then throw away, such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. This comes from our homes, schools, hospitals, and businesses.
Nature	The phenomena of the physical world collectively, including plants, animals, the landscape, and other features and products of the earth, as opposed to humans or human creations.
Ordinance	An ordinance is a law enacted by a municipal body, such as a city council or county commission (sometimes called county council or county board of supervisors).
Preservation	Preservation is the strict setting aside of natural resources to prevent the use or contact by humans or by human intervention. In terms of policy making this often means setting aside areas as nature reserves (otherwise known as wildlife reserves), parks, or other conservation areas.
Proponent	A person who advocates a theory, proposal, or course of action.
Policy	A policy is a deliberate system of principles to guide decision and achieve rational outcomes.
Rehabilitation	To restore to a condition of good health, ability to work, or the like.
Resettlement	The settlement of people in a different place.
Resource	A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.
Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.

Seismic Hazards	<p>A seismic hazard is the probability that an earthquake will occur in a given geographic area, within a given window of time, and with ground motion intensity exceeding a given threshold.</p>
Stakeholder	<p>A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees, and customers.</p>
Stage digging	<p>Stage digging is a process by which portions of the root ball are dug over a period of time in order to allow the tree to acclimate to the stresses gradually.</p>
Topography	<p>Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.</p>
Vegetation	<p>Plants considered collectively, especially those found in a particular area or habitat.</p>
Valued Environmental Components	<p>Valued environmental components (VECs) are defined as fundamental elements of the physical, biological or socio-economic environment, including the air, water, soil, terrain, vegetation, wildlife, fish, birds and land use that may be affected by a proposed project.</p>
Valued Social Components	<p>Sociocultural factors are customs, lifestyles and values that characterize a society or group. Cultural aspects include concepts of beauty, education, language, law and politics, religion, social organizations, technology and material culture, values and attitudes. Social factors include reference groups, family, role and status in society, time and available resources. An understanding of sociocultural factors is crucial in developing marketing strategies for businesses or organizations seeking action from particular groups.</p>

PROJECT TEAM AND RESPONSIBILITIES

Name of expert	Position held	Highest Qualification	TERM OF REFERENCES
Kamal Ahmed Cheema	Chief Environmentalist	M. Phil. Environmental Economics, PIDE, Islamabad	Mr. Kamal would be responsible for: <ul style="list-style-type: none"> ❖ Environmental Assessment & Management. ❖ Supervision of monitoring team for air water noise and soil analysis. ❖ Preparation of technical EMP
Mr. Shahzaib Ahmed	Social Scientist	M. Phil Development Studies, PIDE, Islamabad.	Mr. Shahzaib would be responsible for: <ul style="list-style-type: none"> ❖ Detailed social survey of project sites ❖ Social impact assessment
Arslan Iqbal	Environmentalist-2	MPhil Environmental Sciences, UOL	Mr. Arslan would be responsible for: <ul style="list-style-type: none"> ❖ Biodiversity assessment ❖ Detailed flora fauna survey of project sites ❖ Identification of threaten and endangered species ❖ Project impacts on flora and fauna ❖ Detailed social survey of project sites ❖ Social impact assessment ❖ Consultation with stakeholders
Amna Hafeez	Environmentalist-3	M.Sc. Mountain Conservation and Watershed Management, University of the Punjab	Ms. Amna would be responsible for: <ul style="list-style-type: none"> ❖ Report writing ❖ Field surveys and consultation with stakeholders ❖ Preparation of Environment monitoring plan ❖ Preparation of technical EMP ❖ Identification of sensitive receptors ❖ Capacity building & training ❖ Conducting and monitoring of health assessment surveys

			<ul style="list-style-type: none"> ❖ Environment health risk assessment and management ❖ Detailed survey of project sites ❖ Environmental Assessment ❖ Social Assessment
Rahma Butt	Environmentalist-4	BS (Hons) Environmental Science, Lahore College for Women University.	<p>Ms. Rahma would be responsible for:</p> <ul style="list-style-type: none"> ❖ Detailed flora and fauna survey of project sites ❖ Site Monitoring ❖ Socio-Economic survey & analysis ❖ Report Writing
Saba Nazir	Environmentalist-5	M.phil Environmental Sciences, UOL	<p>Ms. Saba would be responsible for:</p> <ul style="list-style-type: none"> ❖ Site Monitoring ❖ Socio-Economic survey & analysis ❖ Risk Assessment (OHS & EMP) ❖ Report writing
Aishah Mushtaq	Environmentalist-6	M S Environmental Sciences, LCWU	<p>Ms. Saba would be responsible for:</p> <ul style="list-style-type: none"> ❖ Risk Assessment (OHS & EMP) ❖ Report writing

Sources of Data

<https://www.pmd.gov.pk/en/>

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- Badrashi, Y. I., Ali, Q., & Ashraf, M. (2010). Reinforced concrete buildings in Pakistan. *EERI Housing Report, World Housing Encyclopedia, Oakland*.
- Azad, S., & Akbar, Z. (2015). The impediments in construction of sustainable buildings in Pakistan. *European Scientific Journal, 11(29)*.
- Azhar, N., Farooqui, R. U., & Ahmed, S. M. (2008, August). Cost overrun factors in construction industry of Pakistan. In *First International Conference on Construction in Developing Countries (ICCIDC-I), Advancing and Integrating Construction Education, Research & Practice* (pp. 499-508).