SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

ENVIRONMENTAL IMPACT ASSESMENT OF CONSTRUCTION OF SECP HEAD OFFICE BUILDING, MAUVE AREA, SECTOR G-11, ISLAMABAD

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Executive Summary

Title of the Project

This report presents the findings of "Environmental Impact Assessment of SECP Head Office Building Project, Mauve Area, Sector G-11, Islamabad".

Location of the Project

The project site is located on Plot No. 25, Mauve Area, Sector G-11, Islamabad. The GPS coordinates of the project site are 33°39'38.50"N and 72°59'56.22"E.

The project site is accessible through Service Road South and Street No. 8.

Name of Proponent and Organization preparing the Report

Securities and Exchange Commission of Pakistan is the proponent of the project.

In order to comply with the regulatory requirement of federal environmental laws of the government of Pakistan, Securities and Exchange Commission of Pakistan, the proponent of the project, has acquired the services of Project Procurement International, an Environmental and Management Consultancy Firm, to conduct an Environmental Impact Assessment (EIA) of the project.

Outline of the Project

The objective of the project is to develop a state of the art office building named "SECP Office Building Project" to provide office space for SECP at a singular and centralized location in Islamabad.

The proposed project will house staff offices, amenities, services floor and meeting halls in 28 floor building (4B + GF + 23F). Total plot area of the project is 45,000 SFT and total covered area is 432,183 SFT (including basements).

The SECP Head Office Building Project is anticipated to accommodate a total population of 510 individuals. The building will consist of 19 floors dedicated to office spaces, while 2 floors will be allocated for MEP (Mechanical, Electrical, and Plumbing) and Plant facilities. Other floors will accommodate Prayer Hall, Cafeteria and Amenities etc. This project will include Main office building, Underground and Overhead water tank and Rainwater harvesting tank.

The car parking spaces in the four basements is 342 car parking spaces.

The cost of the project is Rs. 7.89 Billion will be completed in 4 years.

Environmental Baseline Conditions

In order to assess and evaluate the impacts and related mitigation measures, in the project area, existing conditions of the physical, biological, and socio-economic environment were studied as under:

Physical Environment

Topography: Islamabad is located at 33.43°N 73.04°E at the northern edge of the Potohar Plateau and at the foot of the Margalla Hills in Islamabad Capital Territory. The project site is located within Muave Area which is bounded by Service Road South (further connected to Srinagar Highway).

Geology and Soil: The soil in Potohar region is shallow clayey of low productivity. Mostly, on the Southern and Western aspects of the Potohar plateau, the soil is thin and infertile. Streams and ravines cut the loose plain, affected by gully erosion and steep slopes. Such land is unsuitable for cultivation. However, large patches of deep, fertile soil are found in the depressions and sheltered localities supporting quality small forests (Rakh), and rain-fed agriculture.

The soil of the project area is composed of clay/silt formed of alluvial deposits laid by the past and present river system in varying thickness. A large part of the area is undulating, and at various places, it is dissected by gullies and ravines.

Surface Water: Rawal Lake is a man-made water reservoir, located across Korang River at a distance of about 10 km from Rawalpindi. The Soan and Korang Rivers are the main streams draining in Islamabad area.

There is no surface water body in the immediate vicinity of the project site.

Land Use: Natural vegetation includes scrub, forest, and plantation which are about 38.15% in Islamabad in the year 2016. Bare soil covers more than 46%. The built-up area covers 15.14% of the total while water is only 0.44%.

Seismic Risk: Islamabad region can be divided into five major zones: Zone I, Zone II, Zone III, Zone IV, & Zone V. Islamabad lies just at the edge of Hazara Fault Zone that consists of an arc of thrusted and folded rocks about 25km wide and 150 km long that is convex to the south and extends west-southward away from the Himalayan syntaxes.

Climate: Islamabad has distinct seasons marked by the wide variation in temperature. The climate remains very salubrious from April to October, but the winters get very cold due to snowfall. The coldest months are December, January and February. The hottest months are June and July. Rainfall in April and May is occasional, but the heaviest rain is in July and August.

The temperature of capital territory Islamabad ranges between -1 ^{0}C to 46 ^{0}C. The coldest month is January when the mean maximum temperature is 18.3 ^{0}C and mean minimum is 3.8 ^{0}C.

From February to May the temperature rises at the rate of 5.0 ^{0}C per month. The highest temperature reached in May when the mean maximum temperature remains 39.1 ^{0}C.

Air Quality: A major anthropogenic source of air pollution in the project area is moderate traffic at Service Road South and Street No. 8.

The ambient air and noise level monitoring was conducted on 17th May 2024 for 24 hours at the project site.

The average 24-hour CO, SO2, O3, NO, NO2, PM2.5, PM10, and SPM were recorded as 2.1 mg/m3, 1.6 ug/m3, 20.1 ug/m3, 0.7 ug/m3, 3.1 ug/m3, 31.6 ug/m3, 131 ug/m3, and 388 ug/m3 respectively at project site. All the obtained values for the air quality parametes are within the permissible limit.

Noise and Vibration: There is moderate to high traffic at Service Road South and Street No. 8. The 24-hour monitoring for noise level was carried out at the project site. The average noise level at the project site was found to be 63 dB at day time and 59 dB at night time, which are within the compliance limit of NEQS for day (65 dB) but not for night (55 dB). The reason could be the traffic at Service Road South and Srinagar Highway.

Ground Water: CDA Supply is the main source used in project area for domestic purposes.

A chemical analysis test of the ground water in the project site was conducted. The samples of ground water were collected on 17th May 2024 and were received by the Environmental Services Pakistan on 18th May 2024 for analysis.

The parameters that were analyzed include pH, Total Dissolved Solids, Chloride, Cadmium, Chromium, Copper, Lead, Manganese, Nickel, Zinc, Antimony, Aluminum, Arsenic, Boron, Barium, Mercury, Selenium, Total Coliforms, Fecal Coliforms Bacteria, E.Coli, Color, Taste, Odour, Turbidity, Total Hardness as $CaCO_3$, Cyanide, Fluoride, Nitrate, Nitrite, Residual Chlorine and Phenolic Compounds (as Phenols) whose concentrations at the project site were 7.0, 619 mg/L, 29 mg/L, ND, ND, ND, ND, ND, ND, 0.3 mg/L, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, ND, Acceptable, Acceptable, 73 NTU, 400 mg/L, ND, 0.3 mg/L, 41 mg/L, ND, ND, and ND respectively.

It was found that all these parameters were within limits except Turbidity.

Ecological Environment

Flora

The vegetation of Islamabad is a representative of Dry Subtropical Scrub Forest which is dominated by *Acacia modesta* (Phulai), *Ziziphus mauritiana* (Ber); *Ziziphus nummularia* (Mullah), etc. Other associates existing in varying proportions include *Prosopis cineraria* (Jand), *Melia azadirachta* (Dharek); *Morus alba* (Mulberry-Shahtoot); *Dalbergia sissoo* (Tahli-Shisham); *Acacia nilotica* (Kiker). In the undergrowth *Cannabis sativa* (Bhang), *Calotropis procera* (Desi Ak), *Parthenium hysterophorous* (Gandi Booti) and *Ocimum bacilicum* (Niazbo) are predominant.

The project site has no trees but some scarce natural vegetation. No trees will be cut down as as no trees are within the premises of the construction area. However, a few shrubs and tree species, including ber, bhang, shisham, ack, kikar, and behkarh, were also found within the project area.

Fauna

In its original form, the Dry Subtropical Scrub Forest constituted the habitat of wild fauna consisting of a host of animals and birds. As the disturbance increased to a maximum level with complete inhabitation, wildlife abundance and diversity decreased to a minimum degree. Mammals commonly found in the project area are Rat, Wild boar and Pocupine, birds include Quail, House Sparrow and House Crow and reptiles common in the area are Monitor Lizard, and Spin tailed lizard.

Protected Areas/National Sanctuaries

The project is located in Zone I of Islamabad Capital Territory and there is no protected area and national sanctuaries in the immediate vicinity of the project.

Socio-Economic and Cultural Environment

The socio-cultural and socio-economic conditions of the local community in the project area are described in the report. This area may get direct positive or negative impacts from the construction of SECP Head Office Building Project.

Public Consultation

During the public consultation, meetings were held with local business owners, local vendors and community living around the project site. The project activities impact the physical, biological, and socio-economic environment of the project area were highlighted to them. Stakeholders concerns regarding various aspect, existing environment, and impacts of the project were noted, and mitigation measures are proposed in the EIA report.

Much of the public consultation process has revolved around concerns for the mitigation of construction stage and operational stage impacts. The information obtained from the community was used to identify concerns and issues that have been subsequently mentioned and addressed in the EIA report.

Major Impacts and Recommended Mitigation Measures

Phases/Activities	Impacts	Mitigation Measures
Construction Phase activities including: • Marterials storage,	Air Quality Deterioration: Construction machinery and project vehicles will release exhaust emissions, containing Carbon Monoxide (CO), Oxides of Sulfur (SOx),	The project site should be monitored throughout to keep a record of air quality and any change in it. Vehicular traffic on unpaved track will be avoided as far as possible, and the track will be sprinkled with water to control dust.

Phases/Activities	Impacts	Mitigation Measures
• Movement of vehicles in a construction site and along haulage routes, • Movement, maintenance, and fueling of construction vehicles, • Excavation for the foundation of the building • Disposal of Surplus material, • Storage, handling, and transport of hazardous construction materials • Use of water for construction and consumption for human use, • Spillage of liquid waste, • Earthwork, stonework, and, other construction activities, • Construction activities that create dust and emissions, • Operation of construction machinery, • Encountering archaeological sites during earthworks and construction.	Oxides of Nitrogen (NOx), and Particulate Matter (PM). In addition, various burning activities involved in roads construction will also cause air pollution.	Operation of vehicles and machinery will be monitored and proper maintenance of vehicles will take place.
	Soil Erosion and Contamination: The quality of soil would be affected, as soil contamination would occur because of disposal of untreated wastewater or direct disposal of chemical and onsite preparation of materials. Soil Erosion can occur due to excavation work. Oils, chemical spills and waste from campsites may also deteriorate the quality of the soil.	Soil erosion can be minimized by appropriate land clearing, levelling and grading. Excavated slopes will not be left untreated/unattended for long durations, and appropriate slope stabilization measures will be taken as per the design. For the domestic sewage from the contractor's camp, a septic tank with soaking pit will be constructed having adequate capacity. Waste oils will be collected in drums and sold to the recycling contractor.
	Surface Water and Groundwater Contamination: The quality of water may deteriorate in the area due to preparation of construction material on site, leachate may be produced and percolated through the soil. It may then reach the water table and contaminate the water that may be consumed by the local people.	Protection of the groundwater reserves from any contamination. Excavation should be done in the supervision of the site engineer so he can decide up to which limit excavation should be done. Prohibit the washing of vehicles and machinery in the project area. Groundwater should not be used for any purpose.
	Damage to Faunal Resources	Provision of such vegetation native species of trees which help in making similar old habitat. The measures to restore natural vegetation loss in the area will benefit the area's fauna as well.
	Noise and Vibration due to heavy machinery and vehicles	To mitigate these impacts noise barriers should be constructed in sensitive areas. Construction equipment and vehicles will have exhaust mufflers (silencers) to minimize noise generation.
	Safety Hazards, Public Health and Nuisance	There should be proper check and balance on construction activities. There should be proper control on oil spillage and leakage of vehicles. Firefighting equipment will be made available at the camps.

Phases/Activities	Impacts	Mitigation Measures
		The camp staff will be provided for firefighting training.
	Sites of Archaeological or Historical Significance may get disturbed.	There are no reported sites of archaeological or historical significance at the land acquired for the project. However, in case an artifact of such significance is found during the construction activities, the Archaeology Department, Government of Pakistan will be informed.
	Carbon Footprints	In sustainable construction, low-carbon materials like recycled steel will be prioritized. The implementation of recycled content and the use of energy-efficient machinery will minimize environmental impact. On-site renewable energy sources and a comprehensive waste management plan will further contribute to a cleaner construction phase.
	Damage to Flora and Fauna due to site clearing and wastewater and solid waste disposal	Endeavours will be made to compensate for the loss by enhancing the environment, through a plantation of trees and ornamental plants. A plantation plan for SECP Head Office Building Project has been prepared. As the project site has not as much space for the plantation of large number of trees so the plan has a mix of appropriate trees/bushes which will be raised on the site recommended by the CDA. All preventive measures will be adopted to control the spill-over of chemicals and other effluents on the ground to protect soil fauna and ensure microbial activity according to the NEQS. A record will be maintained for any tree cutting. The construction crew will be provided with LPG as cooking (and heating, if required) fuel. Use of fuelwood will not be allowed at the contractor camp.
Operational Phase Activities: Drainage of runoff from roads into water bodies, Induced vehicular traffic movement, Disposal of Wastewater Solid waste discharge from	Damage to Flora and Fauna	Most of the mitigation measures for protecting the biological resources during the construction phase would be applicable during the operation as well. Proper maintenance of the plants grown will reduce the impact due to project operation.
	Soil Contamination	The solid waste generated by the residents of SECP Head Office Building Project shall be collected through garbage chutes. The collected solid waste will be transported to the CDA designated disposal site.

Phases/Activities	Impacts	Mitigation Measures
SECP Head Office Building. Traffic congestion due to arrival of workers and visitors	Contamination of Surface and Ground Water	The mitigation measures against soil contamination discussed above for the operation activities will forestall any possible water contamination as well. Wastewater shall be properly treated in a Septic Tank proposed in plan. Groundwater will not be used for any domestic purposes. CDA water connection will be used. Moreover, Rainwater Harvesting will be incorporated in the project.
	Solid Waste Management	Solid Waste Management will also be an important issue during the operational phase of SECP Head Office Building Project. Hence, solid waste management plan will be followed by proponent.
	Carbon footprints	It will prioritize to use energy efficiency by incorporating LED lighting, energy-efficient HVAC systems, and smart controls in building to reduce overall energy demands. Additionally, there will be a focus on renewable energy integration through the installation of on-site sources like rooftop solar panels to generate clean energy. The project will implement on-site commercial spaces and mixed-use development, fostering a self-contained and sustainable community.
	Traffic Congestion and Parking issues	Carpooling and Public Transport will be encouraged among workers of SECP Head Office. This measure will help in improving traffic conditions on service road south and street no. 8. Ample parking spaces will be available across four basements of the SECP Head Office Building. If additional parking is needed, visitors and staff can utilize the nearby parking facility adjacent to the Islamabad Bar Council. This alternative will ensure sufficient parking capacity, although the primary provision is expected to meet all needs.

Environmental Management Plan and Proposed Monitoring

The purpose of the Environmental Management Plan (EMP) is to minimize the potential environmental impacts due to the project. The EMP reflects the commitment of SECP Head Office Building Project to safeguard the environment as well as the surrounding population.

The EMP provides a delivery mechanism to address the adverse environmental impacts, to enhance the project's benefits and to introduce standards of best practices to be adopted for all phases of the project.

Securities and Exchange Commission of Pakistan will prepare a Quarterly Environmental Monitoring Report of project activities that will be carried out during the construction phase of the project. These reports will be submitted to the Pakistan Environmental Protection Agency, Government of Pakistan for their review and consideration. The total estimated Environmental Mitigation and Monitoring Cost is **PKR 32 Million.**

Conclusion and Recommendations

On the basis of the overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during the present EIA, it is concluded that SECP Head Office Building Project can mitigate potential negative issues provided that the project activities are carried out as mentioned in the report, and the mitigation measures included in this report are completely and effectively implemented.

There are no remaining issues that warrant further investigation. This EIA is considered adequate for the environmental and social justification of the project.

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List of Abbreviations

CO	Carbon Monoxide
E	East
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
Govt.	Government
GPD	Gallons per Day
HSE	Health, Safety and Environment
EIA	Environmental Impact Assessment
N	North
NaCl	Sodium Chloride
NCS	National Conservation Strategy
NE	North-East
NEQS	National Environment Quality Standards
NOC	No Objection Certificate
NO_x	Nitrogen Oxides
Pak-EPA	Pakistan Environmental Protection Agency
PEPA	Pakistan Environmental Protection Act 1997
PEPC	Pakistan Environmental Protection Council
PM	Particulate Matter
PPI	Project Procurement International
Pvt.	Private
STP	Sewage Treatment Plant
SO_x	Sulphur Oxides
Sr. No.	Serial Number
SW	South-West
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNEP	United Nations Environment Program
W	West
WAPDA	Water and Power Development Authority
WB	World Bank
WHO	World Health Organization

List of Units

%	Percent (age)
^{o}C	Degree centigrade
cm	Centimeter
dB (A)	Decibel
ft^2	Square foot
ft^3	Cubic foot
km	Kilometre
km/h	Kilometer/hour
m	Meter
m^2	Square meter
m^3	Cubic meter
MT	Metric Ton
Rft	Running Feet
Rpm	Revolutions per Minute

1 Introduction

1.1 Project Background and Overview

With the advent of urbanization and population growth, cities in Pakistan are expanding. Most people in Pakistan live in the countryside, with only one-third of the country's estimated 200 million inhabitants currently are in cities. However, Pakistan is urbanizing at an annual rate of three percent – the fastest pace in South Asia. By 2030, more than half of Pakistan's projected 250 million citizens are expected to live in cities. [1]

Urbanization has inflated Pakistan's biggest cities so rapidly that they struggle to deliver public services and create productive jobs. The main factor is migration from rural areas. Another is to seek livelihoods and access to better services such as education and healthcare. Those migrating for these reasons tend to be poor and to work in professions hit hard by climate change - such as farmers and fishermen facing droughts and other water-loss problems. [2]

With the cost of land increasing rapidly in cities in Pakistan, high rise buildings are becoming more feasible. The **vertical expansion** means cities can **accommodate more** residential/commercial **space per square meter** of the ground floor than single-story buildings that take up more ground floor or land. They are suitable for highly populated or overpopulated cities where there is a shortage of land. The overall cost of land, preliminaries, foundations, and roofing is much lower for high-rise buildings than single-story horizontal developments of the same magnitude. High rise buildings offer much better security to tenants than a ground-level development that provides multiple access points for intruders. More security is often required for a single-story complex.

In essence, vertical expansion plays a crucial role in addressing the challenges of urbanization by maximizing land use efficiency, promoting sustainable development, and creating dynamic, vibrant, and functional urban spaces.

Building vertically reduces the need for extensive road networks and utilities over large horizontal areas. This can lead to cost savings in infrastructure development and maintenance, as services can be more efficiently delivered to a concentrated area. High-rise buildings located in central areas can reduce the distance between homes, workplaces, and commercial centers. This can promote walking, cycling, and the use of public transportation, reducing traffic congestion and air pollution. Moreover, vertical expansion allows for the preservation of parks, green spaces, and natural areas, contributing to improved air quality, recreational opportunities, and overall urban aesthetics.

In this regard, Securities and Exchange Commission Pakistan (SECP) initiated a project, involving constructing a high-rise building that will accommodate a number of SECP departments in one place. Developing a new building to house a number of departments under one roof can bring several benefits. First, it can improve operational efficiency by facilitating communication, coordination, and collaboration among different departments. Second, it can help save costs on rent and maintenance of multiple buildings. Third, having all services available in one location can provide a more streamlined and convenient experience for citizens who interact with these departments.

Additionally, a new building can help create a sense of unity and pride among employees and can contribute to a positive image in the eyes of the public. A new building can lead to greater efficiency, cost savings, convenience, and improved public perception of services. Moreover, the project will reduce the operational costs by minimizing rent expenses.

The project will incorporate sustainable design features that minimize energy consumption, water usage, and carbon footprint. The new building will comply with all local laws and regulations, including zoning, building codes, and accessibility requirements. The building will

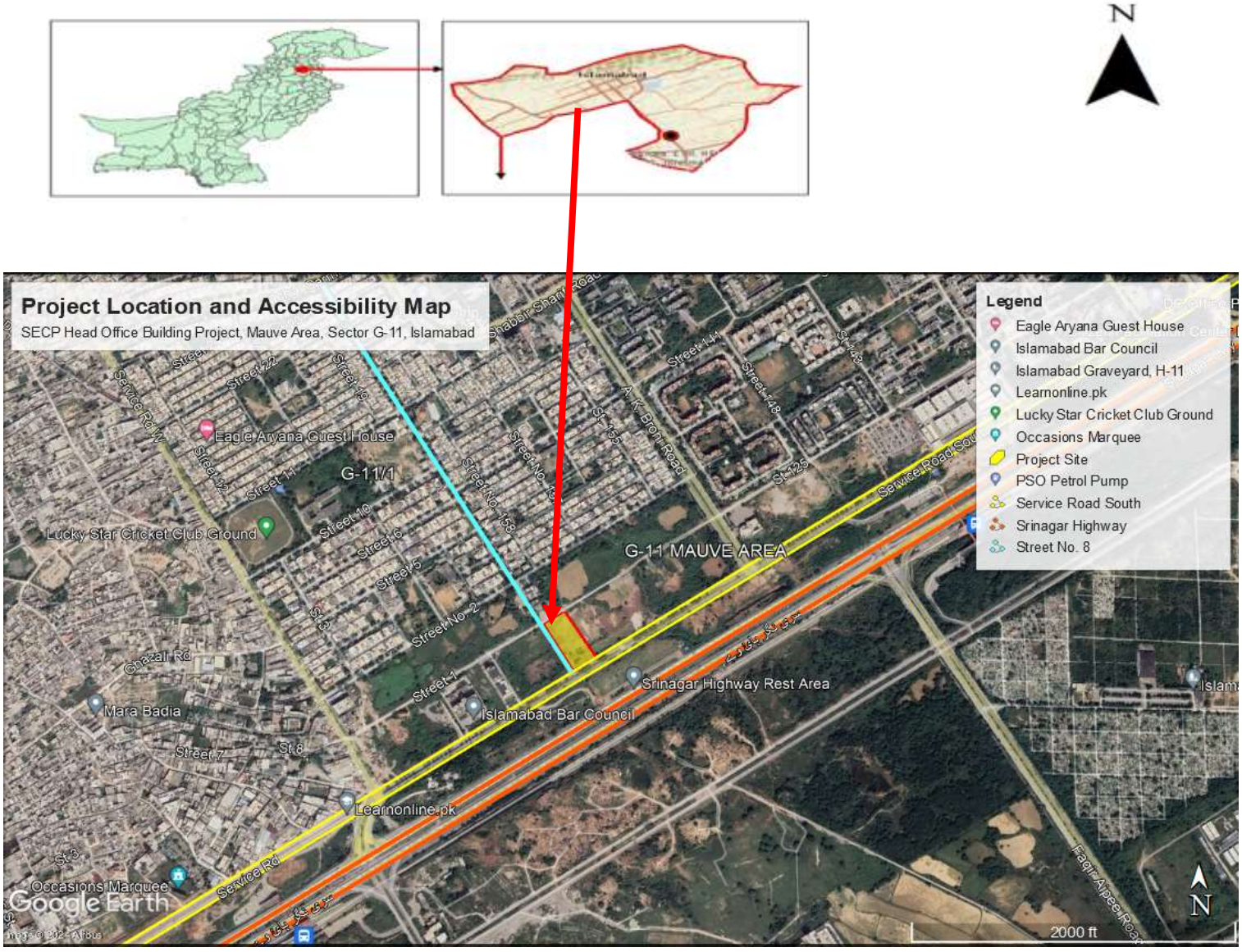
[1] Background paper for World Bank (2014) Pakistan Urban Sector Assessment: Leveraging the Growth Dividend.
[2] Qadeer, Mohammad A. 2000. "Ruralopolis: The Spatial Organization and Residential Land Economy of High-Density Rural Regions in South Asia" Urban Studies 37(9): 1583–1603

provide a safe and secure environment for occupants and visitors, with features such as fire exits, emergency alarms, and CCTV cameras. The proposed project will be completed within the defined timeline to ensure that departments can move into the new building without disrupting their operations.

1.2 The Project

Securities and Exchange Commission of Pakistan intends to develop a state of the art office building named “SECP Head Office Building Project” on Plot No. 25, Mauve Area, Sector G-11, Islamabad. The GPS coordinates of the project site are 33°39'38.50"N and 72°59'56.22"E. The keymap of the project location has been shown in **Figure 1.1.**

Figure 1.1: Key Location Map of the SECP Head Office Building Project



1.3 The Proponent

Securities and Exchange Commission of Pakistan is the proponent of the Project.

The Securities and Exchange Commission of Pakistan (SECP) was set up in pursuance of the Securities and Exchange Commission of Pakistan Act, 1997 and became operational on January 1, 1999. It has investigative and enforcement powers.

1.4 Name of the Organization Preparing the Report

M/s Project Procurement International, an Environmental and Management Consultancy Firm, Islamabad has prepared the Environmental Impact Assessment of SECP Head Office Building Project. The list of names, qualification and roles of team members carrying out the EIA has been attached in **Annexure-1**.

1.5 Contact Persons

The authorized representative of Proponent and PPI is the following:

Proponent	Environmental Consultant
Mr. Anwar Ghani, Head Project Management Unit, SECP Head Office Building Project Securities and Exchange Commission of Pakistan NICL Building, 63 Jinnah Avenue, Blue Area, Islamabad, Pakistan Tel: +92-51-9195551	**Mr. Saadat Ali,** Environmental Engineer Project Procurement International 26, Second Floor, Silver City Plaza, G 11 Markaz, Islamabad Tel: +051 2363624 Cel: 0300 8540195 Email: projectpi@gmail.com Website: www.projectpi.pk

1.6 Environmental Impact Assessment

According to the Pakistan Environmental Protection Agency (Review of IEE/EIA), Regulations 2000.

"No proponent of a project shall commence construction or operation unless he has filed with the Federal Agency an Environmental Impact Assessment or where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Federal Agency approval in respect thereof".

1.7 Purpose of Environmental Impact Assessment Report

The Environmental Impact Assessment (EIA) is the assessment of the environmental consequences (positive and negative) of a plan, policy, program, or actual projects prior to the decision to move forward with the proposed action.

The EIA is the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development project prior to major decisions being taken and commitments made. Furthermore, the report will enable Securities and Exchange Commission of Pakistan to obtain environmental approval of the construction of SECP Head Office Building Project from Pakistan Environmental Protection Agency (Pak-EPA) Islamabad.

The purpose of the EIA is to ensure that decision-maker consider the environmental impacts when deciding whether or not to proceed with a project.

1.8 Screening of the Project

SECP Head Office Building Project will house staff offices, amenities, services floor and meeting halls in 28 floor building (4B + GF + 23F). Total plot area of the project is 45,000 SFT and total covered area is 432,183 SFT (including basements).

EIA is mandatory under section 12 clause (1) of the Pakistan Environmental Protection Act 1997 for all development interventions.

According to Pakistan EPA (Review of IEE and EIA Regulations, 2000), the proposed project falls under **Category H (Urban Development)** of **Schedule II** and, therefore, requires the EIA study.

1.9 Scoping of the Project

A scoping exercise was undertaken with Pakistan Environmental Protection Agency on 14-06-2024 to identify the potential issues that are to be considered in the environmental impact assessment. The scoping exercise included the following indispensable tasks:

Spatial and Temporal Boundaries of the Project: The Project is located on Plot No. 25, Mauve Area, Sector G-11, Islamabad. The Project site is located in an urban area. Similarly, the magnitude of impacts will be localized.

The spatial and temporal boundary of the Project during the operational phase will be localized and long-term.

Stakeholder Consultation: Stakeholder consultation sessions were undertaken to document the concerns of the local community and other stakeholders and to identify issues that may require additional assessment in order to address these concerns. Stakeholder consultation was conducted during the initial survey with the following objectives:

- To inform the Stakeholders, Communities and Project Affected Persons about the Project.
- To gather feedback from the primary and secondary stakeholders of the Project
- To identify relevant potential issues, including the socio-economic impacts of the Project and corresponding mitigation measures.

During the stakeholder consultation process for the Project, the following key aspects were highlighted by stakeholders:

- Parking Facility
- Traffic Impacts
- Water Issues of the Area
- Shadow Analysis and Carbon Footprint
- Effectiveness of Construction Material and Transportation Management Plan
- Solid Waste Management, Treatment and Disposal Plan
- Concerns of the residents to be affected by the project (Project Affected Persons, if any)

Magnitude of impact: The magnitude of the impact will be localized as Major Issue.

1.10 Screening of Potential Environmental Impacts

The environmental, and socioeconomic baseline data collected during the Project was used to assess the potential impacts of the proposed activities. The potential sources of environmental impacts identified and analyzed during the impact assessment study include:

- Air Emissions
- Wastewater
- Solid Waste
- Noise Levels

The impact assessment was carried out by siting the Project area and creating an understanding of all the activities during Project siting, construction and operation of SECP Head Office Building Project.

Checklist of Screening of Potential Environmental Impacts			
Screening Questions	**Yes**	**No**	**Remarks**
Project Siting Impacts			
Densely populated?		✓	The plot is designated for construction of highrise buildings
Heavy with development activities?	✓		The project area has development projects under construction phase
Adjacent to or within any Environmentally sensitive areas?		✓	Not environmentally sensitive areas are located in the microenvironment.
Cultural heritage site		✓	There are no cultural heritage sites nearby.
Protected area		✓	There is no protected area in the microenvironment.
Wetland		✓	No wetland in the microenvironment.
Mangroves		✓	No mangroves are present in the microenvironment.
Estuarine		✓	Not Applicable
Buffer zone of protected area		✓	No such buffer zones exist in the microenvironment
Bay		✓	Not Applicable
Potential environmental impacts will the Project cause			
Dislocation or involuntary resettlement of people?		✓	No dislocation or involuntary resettlement of people.
Traffic congestion		✓	The project site has access from Service Road South and Street No. 8
Surface and Groundwater Contamination		✓	CDA drainage and sewerage line pass through the project area
Checklist provides the screening for potential environmental impacts			
Screening Questions	Yes	No	Remarks
Deterioration of environmental conditions surrounding the Project site.		✓	During the construction phase, related environmental impacts may be envisaged; however, they will be curtailed by mitigation measures. During the operation phase, mitigation measures will be implemented to minimize the environmental footprint.
Degradation of land and ecosystems (e.g. loss of wetlands and wildlands, coastal zones, watersheds and forests)?		✓	Not envisaged.
Degradation of cultural property and loss of cultural heritage?		✓	Not envisaged. No such sites are found in the microenvironment.
Disproportionate impacts on the poor, women and children, Indigenous peoples, or other vulnerable groups?		✓	No such impacts are expected as the land is deprived of any such group.
Pollution of receiving drainage waters resulting in residential land, agricultural grounds and land resources?		✓	Loss of land comprising residential, agricultural and grazing land is not envisaged.

Checklist of Screening of Potential Environmental Impacts			
Water resources problems (e.g. depletion/ degradation of available water supply, deterioration of surface and groundwater quality and pollution of receiving waters?		✓	A number of water-conserving fixtures will be installed in the Project to reduce water consumption.
Social conflicts between construction workers from other areas and local workers?		✓	Not expected. Reputable and experienced contractors will be hired.
Road blocking due to soil excavation?		✓	All construction activities will happen inside the project site.
Noise and dust from construction activities?	✓		Likely but will be minimized through better management practices.
Traffic disturbances due to construction material transport?	✓		A proper traffic route will be finalized and shared with ITP for construction material haulage.
Temporary silt runoff due to construction?	✓		If such a situation emerges, it will be mitigated through better management practices and the installation of silt traps.
Contamination of surface and ground waters due to improper waste disposal	✓		Proper solid waste collection and disposal.
Are there any demographic or socio-economic aspects of the Project area that are already vulnerable (e.g. high incidence of marginalized populations, rural-urban migrants, illegal settlements, ethnic minorities, women or children)?		✓	The Project area is not vulnerable with respect to any demographic or socioeconomic aspects.

1.11 Scope of EIA

The project requires the Environmental Impact Assessment to identify environmental impacts of construction and operational phases of the proposed SECP Head Office Building Project.

The scope of EIA of SECP Head Office Building Project is as follows:

- The identification and assessment of all major and minor impacts during pre-construction, construction and operational phases;
- Identification of all significant impacts that may require detailed assessment;
- Propose mitigation measures to minimize, eliminate or to compensate for the potential adverse impacts that may arise during pre-construction, construction and operational phases of the project;
- Public consultation with all the stakeholders of the proposed project;
- Preparation of Environmental Management Plan;
- Conclusions and recommendations; and
- Preparation of an Environmental Report for submission to Environmental Protection Agency, Pakistan.

The Terms of Reference for the EIA report has been attached in **Annexure-2**.

1.12 Approach and Methodology

1.12.1 Approach for EIA

The approach for conducting EIA of SECP Head Office Building Project is to follow the requirement of Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations, 2000.

1.12.2 Kick-off Meeting with the Proponent

The kick-off meeting was held between the PPI team and Head, Project Management Unit of SECP Head Office Building Project.

During this meeting, the list of activities for the study relevant to the environmental impact assessment of the project was discussed.

1.12.3 Collection of Secondary Data

All available published and unpublished information pertaining to the background environment was obtained and reviewed. All data sources were carefully reviewed to collect the following information:

Physical Environment: topography, geology, soils, surface and groundwater resources and climate;

Biological Environment: habitat types, flora and fauna (particularly rare or endangered species), critical habitats, and vegetation communities within the area;

Socio-Economic Environment: settlements, socio-economic conditions, infrastructure and land use; and

Heritage Aspects: sites of cultural, archaeological or historical significance.

The list of the references of secondary data consulted during the EIA study is provided in **Annexure-3**. The glossary of terms used in the EIA report has been provided in **Annexure-4.**

1.12.4 Collection of Primary Data and Field Visit

The PPI team visited the project site and adjoining areas for obtaining detailed knowledge of the environmental conditions of the area. During the field visits, the existing environmental conditions were studied.

The Rapid Social Appraisal method was applied to discover the facts, empirically verifiable observations or verifying the old facts, on the prevailing socio-economic and cultural conditions of the project area. Communities that were in the surrounding 1 km radius investigated during the field survey.

The ambient air quality and noise monitoring at the project site was carried out. The survey team ensured that the mammals, birds, and other species were observed without causing any potential disturbance. The sampling locations were randomly selected, ensuring that sufficient locations are represented from each habitat type, and the maximum number of species was recorded.

1.12.5 Analysis of Alternatives

The EIA report gives the details of alternatives considered during the planning and design phases of the project**.**

1.12.6 Public Consultation

Public consultations were held with community living in the vicinity of SECP Head Office Building Project site. Different aspects of the proposed project were highlighted to the community regarding their impacts on the physical, biological, and socio-economic environment of the project area and their concerns and suggestions were solicited.

The meetings were held with the Proponent, Project Manager, University Professors, Real Estate Dealer, Deputy Manager (Environmental and Social Safeguard Section), IESCO,

Emergency and Disaster Management Directorate and community working and living in the project area.

The information obtained from the community was used to identify concerns and issues that have been subsequently mentioned and addressed in the EIA report. The list of the people met during the public consultation is provided in **Annexure-5**.

1.12.7 Review of Legislative Requirements

The information on environmental policies, national and international laws as well as guidelines relevant to the project was reviewed, and a synopsis of all relevant laws has been narrated in the report.

1.12.8 Identification and Evaluation of Impacts

The identification of impacts is a key activity in the environmental assessment process, which is based on the professional judgment of our experienced team supported by national and international guidelines.

The potential impacts were identified with methodical consideration of likely or possible significant impacts on the environment for the development of the residential complex. The aim of this task was to assess the associated risks with these impacts.

Each impact identified has been evaluated against its significance in terms of severity and likelihood of its occurrence. The impact evaluation process prioritized each potential impact and screened out insignificant or inconsequential impacts.

The significance of the impacts has been assessed in terms of the effects on the natural ecosystem, level of public concern and conformity with legislative or statutory requirements. The assessment of the severity was to consider the nature, magnitude, extent and location, timing and duration and reversibility of the potential impact. The evaluation of the significant impacts has formed the basis for the development of the Environmental Management Plan.

1.12.9 Identification of Mitigation Measures

The objective of identification of mitigation measures is to identify practices, technologies or activities that would prevent or minimize all significant environmental impacts and propose physical and procedural controls to ensure that mitigation is effective.

Based on the impact evaluation performed, changes or improved practices have been suggested, where practical, in the planned activities, to prevent and control unacceptable adverse impacts resulting from normal or extreme events. Monitoring requirements and institutional arrangements for monitoring have been defined and suggested.

1.12.10 Development of Environmental Management Plan (EMP)

An Environmental Management Plan has been developed for effective implementation of the recommended mitigation measures of negative impacts during pre-construction, construction, and operation phase. The Environmental Monitoring Plan has been developed to monitor the achievement of the Environmental Management Plan during construction, and operational phases of the project.

The EMP also lays down procedures to be followed during the operation of the project and identifies the roles and responsibilities of all concerned personnel, including reporting in the operational phase.

1.12.11 Organization of the EIA Report

This report has been structured in the following manner:

Chapter 1 (*Introduction*) provides an overall introduction to the project and impact assessment methodology.

Chapter 2 (*Legal Framework)* describes the regulatory framework of Pakistan on the environment and its implications for the project.

Chapter 3 *(Project Description)* provides the description of the proposed project, its layout plan and associated activities, raw material details and utility requirement.

Chapter 4 *(Project Alternatives)* details the potential alternatives that were considered during the design phase.

Chapter 5 *(Existing Environment*) provides a description of the micro-environment and macro-environment of the proposed project site. This chapter describes the physical, ecological and socio-economic resources land of the project area and surroundings.

Chapter 6 *(Public Consultation)* describes details of discussions held with primary and secondary stakeholders.

Chapter 7 *(Impact Assessment and Mitigation Measures)* details the potential environmental and social impacts of the proposed project on the different features of the micro and macro-environment using the matrix method.

Chapter 8 *(Environmental Management Plan)* explains the mitigation measures proposed for the project in order to minimize the impacts to acceptable limits. It also describes the implementation of mitigation measures on ground and monitoring of environmental parameters against likely environmental impacts.

Chapter 9 *(Conclusion)* summarizes the report and presents its conclusions.

The last chapter is followed by **Annexures** that provides supporting information.

Table 1.1: Summary of Methodologies and Activities to Conduct EIA

Project screening
- Determine the Legal requirements of EIA is necessary

Scoping
- Decide the potential main issues to be addressed

Baseline Data Collecion
- Collecting relevant data on the state of environment

Impact Prediction
- Forecasting the likely changes in the environment as a result of the development

Impact Assessment
- Evaluation of the significance of the identified impacts

Mitigation
- Measures taken to reduce or remedy adverse impacts, or enhance positive impacts

Environmental Management and Monitoring Plan
- Environmental Management and Monitoring Plan (EMMP) develops for effective implementation of the recommended mitigation measures and to monitor the environmental parameters against likely environmental impacts

EIA Report Submission to EPA for approval
- EPA reviews all the nitty gritties of the report to make sure the compliance with environmental guidlines.

Correspondance with EIA for Final Approval
- EPA reviews the Draft report submitted and communicate comments to address discrepencies, if any.

Public Hearing
- For the purpose of dessimination of information of the Project with stakeholders, a public hearing is held with its 30 days prior advertisement in local/national news papers.

Project Approval/Rejection by EPA
- EPA issues approval for the Project development after client/consultant addresses the comments from EPA on Draft report and Public Hearing.

2 Legislative Institutional Framework

2.1 Introduction

Pakistan being a signatory of multilateral international treaties has a comprehensive set of environmental legislation covering multiple environmental issues facing Pakistan like pollution of freshwater bodies and coastal water, air pollution, deforestation, loss of biodiversity, lack of proper waste management and climate changes. The basic policy and legislative framework along with detailed rules, regulations and guidelines required for the implementation of the policies and enforcement of legislation for the protection of the environment and overall biodiversity are in place.

The compliance status of the SECP Head Office Building Project has been reviewed with reference to the legislation and existing legal framework on the environment in Pakistan and International level as described henceforth.

2.2 Laws and Regulations

Pakistan has a number of laws concerned with the regulation and protection of the environment. However, the enactment of comprehensive legislation on the environment, in the form of an act of parliament, is a relatively new phenomenon. Most of the existing laws on environmental issues were enforced over an extended period of time and are context-specific. The laws relevant to the developmental projects are briefly reviewed below.

2.2.1 Pakistan Environmental Protection Act, 1997

The Pakistan Environmental Protection Act, 1997 (the Act) is the basic legislative tool empowering the government to frame regulations for the protection of the environment. The Act is applicable to a broad range of issues and extends to air, water, soil, marine and noise pollution, as well as the handling of hazardous waste. The discharge or emission of any effluent, waste, air pollutant or noise in an amount, concentration or level in excess of the National Environmental Quality Standards (NEQS) specified by the Pakistan Environmental Protection Agency (Pak EPA) has been prohibited under the Act, and penalties have been prescribed for those contravening the provisions of the Act. The powers of the federal and provincial Environmental Protection Agencies (EPAs), established under the Pakistan Environmental Protection Ordinance 1983, have also been considerably enhanced under this legislation and they have been given the power to conduct inquiries into possible breaches of environmental law either of their own accord or upon the registration of a complaint.

The requirement for environmental assessment is laid out in Section12 (1) of the Act. Under this section, no project involving construction activities or any change in the physical environment can be undertaken unless an Environmental Impact Assessment (EIA) or an Environmental Impact Assessment (EIA) is conducted, and approval is received from the Federal or relevant Provincial EPA. Section 12(6) of the Act states that this provision is applicable only to such categories of projects as Pakistan Environmental Protection Agency (Review of IEE and EIA Regulations), 2000.

2.2.2 Pakistan Environmental Protection Agency (Review of *IEE and EIA* Regulations), 2000

Pakistan Environmental Protection Agency (Review of IEE and EIA Regulations), 2000 prepared by the Pakistan Environmental Protection Agency under the powers conferred upon it by the Act, provide the necessary details on preparation, submission and review of the IEE and the EIA. Categorization of projects for IEE and EIA is one of the main components of the Regulations.

Projects have been classified on the basis of the expected degree of adverse environmental impacts. Project types listed in Schedule-I are designated as potentially less damaging to the environment and those listed in Schedule-II as having potentially serious adverse effects. Schedule-I projects require an IEE to be conducted, provided they are not located in

environmentally sensitive areas. For the Schedule-II projects, conducting an EIA is necessary. Salient features of the regulation, relevant to the proposed project are listed below:

- Categories of projects requiring IEE and EIA are issued through two schedules attached to the regulations.
- A fee, depending on the cost of the project, has been imposed for review of IEE and EIA.
- commencing construction of the project, the proponent is required to submit an undertaking accepting the conditions.
- Before commencing operation of the project, the proponent is required to obtain from EPA a written confirmation of compliance with approval conditions and requirements of the EIA/ EIA.
- An EMP is required to be submitted with the request for obtaining confirmation of compliance.
- The EPAs are required to issue a confirmation of compliance within 15 days of receipt of the request and complete documentation.
- The EIA/ EIA approval will be valid for three years from the date of the accord.
- A monitoring report is required to be submitted to the EPA after completion of construction, followed by annual monitoring reports during operations.
- The construction of SECP Head Office Building Project falls in schedule-II of the regulations. Hence, this type of project needs an EIA to be conducted.

2.3 National Environmental Quality Standards (NEQS), 2000

The NEQS, promulgated under the PEPA 1997, specify the following standards:

- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources,
- For power plants operating on oil and coal:
- Maximum allowable emission of sulphur dioxide,
- Maximum allowable increment in the concentration of sulphur dioxide in the ambient air,
- Maximum allowable concentration of nitrogen oxides in ambient air, and
- Maximum allowable emission of nitrogen oxide for steam generators as a function of heat input.
- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment and sea (three separate sets of numbers).
- The NEQS for liquid effluents discharged to inland waters, gaseous emission from industrial sources and emissions from motor vehicles are provided as on the following website. http://www.environment.gov.pk/info.html

The National Environmental Quality Standards (NEQS), 2000, specify the following standards:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged into inland waters, sewage treatment facilities, and the sea (three separate sets of numbers)
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources
- Maximum allowable concentration of pollutants (02 parameters) in gaseous emissions from vehicle exhaust and noise emission from vehicles.

- Maximum allowable noise levels from vehicles.

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

2.3.1 NEQS for Liquid Effluent

The National Environmental Quality Standards (NEQS) for the discharge of effluent from industry are presented in **Table 2.1.**

Table 2.1: NEQS for Liquid Effluent Discharge

Parameters	Into Inland Waters	Into Sewage Treatment	Into Sea
Tempereture	=<3°C	=<3°C	=<3°C
pH Value	6-9	6-9	6-9
Biological Oxygen Demand $(BOD)_5$	80	250	80
Chemical Oxygen Demand (COC)	150	400	400
Total Suspended Solids (TSS)	200	400	200
Total Dissolved Solids (TDS)	3500	3500	3500
Grease & Oil	10	10	10
Phenolic Compounds (as phenol)	0.1	0.3	0.3
Chlorides (as Cl')	1000	1000	SC
Fluoride (as F')	10	10	10
Cyanide (CN') total	1.0	1.0	1.0
An-ionic Detergents (as MBAs)	2.0	20	20
Sulphate (SO'')	600	1000	SC
Sulphide (S')	1.0	1.0	1.0
Ammonia (NH^3)	40	40	40
Pesticides	0.15	0.15	0.15
Cadmium	0.1	0.1	0.1
Chromium (trivalent & hexavalent)	1.0	1.0	1.0
Copper	1.0	1.0	1.0
Lead	0.5	0.5	0.5
Mercury	0.01	0.01	0.01
Selenium	0.5	0.5	0.5
Nickel	1.0	1.0	1.0
Silver	1.0	1.0	1.0
Total Toxic Metals	2.0	2.0	2.0

Parameters	Into Inland Waters	Into Sewage Treatment	Into Sea
Zinc	5.0	5.0	5.0
Arsenic	1.0	1.0	1.0
Barium	1.5	1.5	1.5
Iron	8.0	8.0	8.0
Manganese	1.5	1.5	1.5
Boron	6.0	6.0	6.0
Chlorine	1.0	1.0	1.0

Source: *NEQS, Pakistan Environmental Protection Agency*

2.3.2 NEQS for Vehicular Emission

The National Environmental Quality Standards (NEQS) for permissible limits of exhaust emissions from vehicles are presented in **Table 2.2.**

Table 2.2: NEQS for Vehicular Emission

Parameters	Standards (Maximum permissible limits)	Measuring Method
Smoke	40% or 2 on the Ringleman Scale During engine acceleration mode	To be compared with Ringleman chart at a distance of 6 meters or more
Carbon Monoxide	Emission Standards: New Vehicle = 4.5% Used Vehicle = 6%	Under idling conditions: non-dispersive infrared detection through the gas analyzer.
Noise	85 dB (A)	A sound meter at 7.5 meters from the source

Source: *NEQS Pakistan Environmental Protection Agency*

2.3.3 NEQS for Drinking Water, 2010

The National Environmental Quality Standards (NEQS) for drinking water quality, 2010 are presented in **Table 2.3**.

Table 2.3: NEQS for drinking water quality

Parameter	Standard values	WHO guidelines
Biological		
All water intended for drinking (E. Coli or Thermo-tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample.	Must not be detectable in any 100 ml sample.
Treated water entering the distribution system (E. Coli or Thermo-tolerant Coliform and Total Coliform bacteria)	Must not be detectable in any 100 ml sample.	Must not be detectable in any 100 ml sample.

Parameter	Standard values	WHO guidelines
Treated water in the distribution system (E. Coli or Thermo-tolerant Coliform and Total Coliform bacteria)	Must not be detectable in any 100 ml sample. In the case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.	Must not be detectable in any 100 ml sample. In the case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.
Physical		
Color	≤ 15 TCU	≤ 15 TCU
Taste	Non-acceptable	Non-acceptable
Odour	Non-acceptable	Non-acceptable
Turbidity	< 5 NTU	< 5 NTU
Total hardness	< 500 mg/L	---
TDS	<1000	<1000
pH	6.5- 8.5	6.5- 8.5
Chemical		
Essential Organic	mg/Litre	mg/Litre
Alminium	≤ 0.2	0.2
Antimony	≤ 0.005	0.02
Arsenic	≤ 0.05	0.01
Barium	0.7	0.7
Boron	0.3	0.3
Cadmium	0.01	0.003
Chloride	≤ 250	250
Chromium	≤ 0.05	0.05
Copper	2	2
Toxic Inorganic		mg/Litre
Cyanide	≤ 0.05	0.07
Flouride	≤ 1.5	1.5
Lead	≤ 0.05	0.01
Mangnese	≤ 0.5	0.5
Mercury	≤ 0.001	0.001
Nickel	≤ 0.02	0.02
Nitrate	≤ 50	50
Nitrite	≤ 3	3
Zinc	5	3

Parameter	Standard values	WHO guidelines
Pesticides mg/L		PSQCA No.4639-2004.page No 4 Table No. 3serial No. 20-58
Phenolic Compounds		<0.002
Polynuclear aromatic hydrocarbons		0.01
Radioactive		
Alpha emitters bq/L	0.1	0.1
Beta emitters	1	1

Source: *NEQS Pakistan Environmental Protection Agency*

2.3.4 NEQS for Ambient Air and Noise

The National Environmental Quality Standards (NEQS) for Ambient Air and Noise, 2010 are presented in **Table 2.4 and 2.5.**

Table 2.4: NEQS for Ambient Air

Pollutants	Time Weighted Average	Concentration in Ambient Air (ug/m^3)
Sulfur Dioxide (SO_2)	Annual Average* 24 hrs**	80 120
Oxides of Nitrogen gas (NO)	Annual Average* 24 hrs**	40 40
Oxides of Nitrogen gas (NO_2)	Annual Average* 24 hrs**	40 80
Ozone (O_3)	1 hour	130
Suspended Particulate Matter (SPM)	Annual Average* 24 hrs**	360 500
Respirable Particulate Matter (PM_{10})	Annual Average* 24 hrs**	120 150
Respirable Particulate Matter ($PM_{2.5}$)	Annual Average* 24 hrs** 1 hr	15 35 15
Lead (Pb)	Annual Average* 24 hrs**	1 1.5
Carbon monoxide (CO)	8 hrs 1 hr	5 mg/m^3 10 mg/m^3

** Annual Arithmetic mean of minimum 1040 measurements in a year taken twice a week 24 hourly at a uniform interval
* 24 hourly /8 hourly values should be met 98 % of the year, 2 % of the time, it may exceed.
Source: NEQS, National Environmental Protection Agency

Table 2.5: NEQS for Noise

Area	Daytime	Nighttime
Residential area	55	45
Commercial area	65	55
Industrial area	75	65
Silence area	50	45

Source: NEQS, National Environmental Protection Agency

2.3.5 Environmental Protection Agency's Environmental Guidelines

The Pak EPA has prepared a set of guidelines for conducting environmental assessments. The package of regulations, of which the guidelines form a part, includes the PEPA 1997 and the NEQS. The guidelines themselves are listed below:

- Guidelines for the Preparation and Review of Environmental Reports,
- Guidelines for public consultation,
- Guidelines for Sensitive and Critical Areas, Sectorial Guidelines.

It is stated in the Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000 that the IEE or EIA must be prepared, to the extent practicable, in accordance with the Pakistan Environmental Protection Agency guidelines. The government of Pakistan has also framed guidelines for the preparation of IEE of Projects in various developmental sectors.

2.4 Implication of Legislations to the Project

The implication of the above-mentioned legislation to the pre-construction, construction and operational phase of the SECP Head Office Building Project would be as follows:

Securities and Exchange Commission of Pakistan, being the proponent of the project will ensure that construction and operational phases of the project be carried out in accordance with the EIA report and Environmental Management Plan is effectively implemented.

The project will be subjected to four basic provisions relating to pollution control under the Pakistan Environmental Protection Act, 1997, as contained in section 11, 13, 14 and 15 as follows:

- Section 11 prohibits discharge or emission of any effluent or waste or air pollutant or noise in excess of the NEQS, or the established ambient standards for air, water or land.
- Section 13 prohibits hazardous wastes.
- Section 14 prohibits the handling of hazardous substance except under a license or in accordance with the provision of any local law or international agreement.
- Section 15 prohibits the operation of motor vehicles for each air pollutant or noise is being emitted in excess of the NEQS of the established ambient standard.

3 Description of the Project

3.1 Introduction

This chapter provides a description of the project, its salient features, location, components, and various phases.

3.2 Type and Category of the Project

The proposed project is the construction of SECP Head Office Building Project, which falls under **Category H (Urban Development)** of **Schedule II** of Pakistan Environmental Protection Agency (Review of *IEE and EIA*) Regulation 2000. Therefore, requires the EIA study.

3.3 Objective of the Project

The objective of the "SECP Head Office Building Project" is to develop a state of the art Head office building for Securities and Exchange Commission Pakistan, providing comprehensive facilities within a singular, centralized location.

3.4 Project Location and Accessibility

The project site is located on Plot No. 25, Mauve Area, Sector G-11, Islamabad.

The project site is accessible through Service Road South and Street No. 8.

The GPS coordinates of the project site are **33°39'38.50"N and 72°59'56.22"E**.

The surrounding areas near the project are as follows:

North: G-11/1 + G-11 Markaz

South: Srinagar Highway + H-11 + Air University

East: Open Area

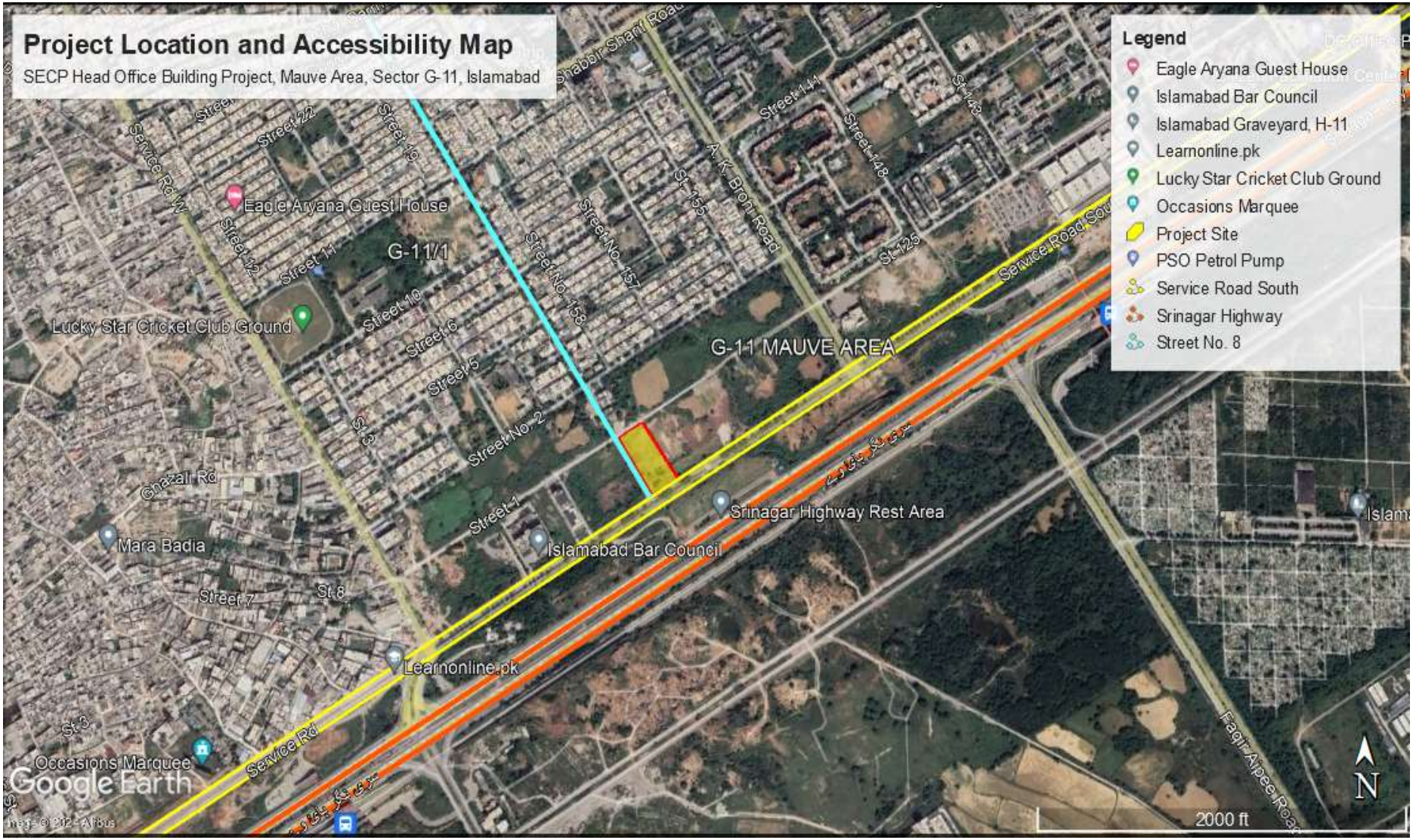
West: Street No. 8 + Open Area + Islamabad Bar Council + G-12

South East: H-11 Graveyard + International Islamic University + Fast University

South West: Niazi Law Chamber + NUST.

The project location and accessibility map of the project site is shown in **Figure 3.1.**

Figure 3.1: Location and Accessibility of SECP Head Office Building Project

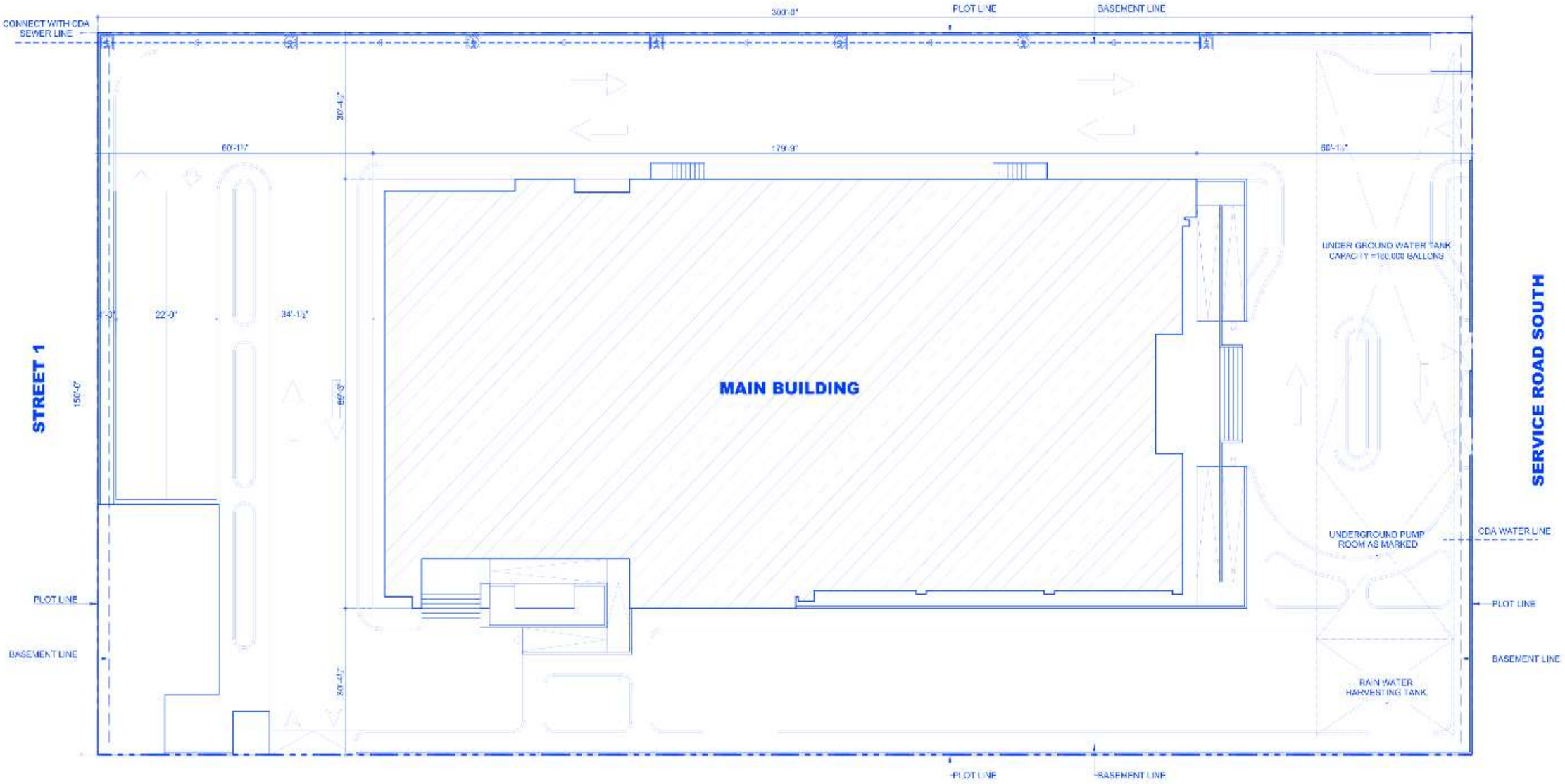


3.5 Description of the Project

The proposed project will house staff offices, amenities, services floor and meeting halls in 28 floor building (4B + GF + 23F). Total plot area of the project is 45,000 SFT and total covered area is 432,183 SFT (including basements). The area schedule and purpose of each floor is shown in **Table 3.1.** The Site Plan of the SECP Head Office Building Project is shown in **Figure 3.2.**

The building has been designed to cater seismic load as per Pakistan Building Code 2007.

Figure 3.2: CDA Approved Site Plan of SECP Head Office Building Project



This project will include Main office building, Underground water tank and Rainwater harvesting tank. The approved floor plans of the SECP Head Office Building Project are shown in **Figure 3.3** to **Figure 3.7.**

3.6 Schedule of Areas

The schedule of areas for the project is shown in **Table 3.1**:

Table 3.1: Area Schedule of SECP Head Office Building Project.

Sr #	Floor	Covered Area (SFT)	Usage
01	Basement Level 4	42,775 Sft	Parking
02	Basement Level 3	42,775 Sft	Parking
03	Basement Level 2	42,775 Sft	Parking
04	Basement Level 1	42,775 Sft	Parking
05	Ground Floor	15,891 Sft	Reception/Entrance Lobby/Offices
06	Ground Floor	1,230 Sft	IESCO and Generator Room
07	1st Floor	14,485 Sft	Offices
08	2nd Floor	14,485 Sft	Offices
09	3rd Floor	14,485 Sft	Offices
10	4th Floor	15,231 Sft	Offices/Multipurpose Hall
11	5th Floor	9,990 Sft	Prayer Hall
12	6th Floor	10,907 Sft	Cafeteria/Terrace
13	7th Floor	10,606 Sft	Amenities
14	8th Floor	10,614 Sft	Offices
15	9th Floor	10,614 Sft	Offices
16	10th Floor	10,614 Sft	MEP (Service Floor)
17	11th Floor	2,248 Sft	MEP (Service Floor)
18	12th Floor	10,638 Sft	Offices
19	13th Floor	10,638 Sft	Offices
20	14th Floor	10,638 Sft	Offices
21	15th Floor	10,638 Sft	Offices
22	16th Floor	10,638 Sft	Offices
23	17th Floor	10,638 Sft	Offices
24	18th Floor	10,638 Sft	Offices
25	19th Floor	10,638 Sft	Offices
26	20th Floor	8,098 Sft	Offices
27	21st Floor	8,098 Sft	Offices
28	22nd Floor	8,098 Sft	Offices
29	23rd Floor	8,098 Sft	Offices
30	Mumty	2,187 Sft	Stair Tower/MEP Space

Source: *Securities and Exchange Commission of Pakistan.*

Figure 3.3: Basement-2, 3 & 4 Plan of SECP Head Office Building Project

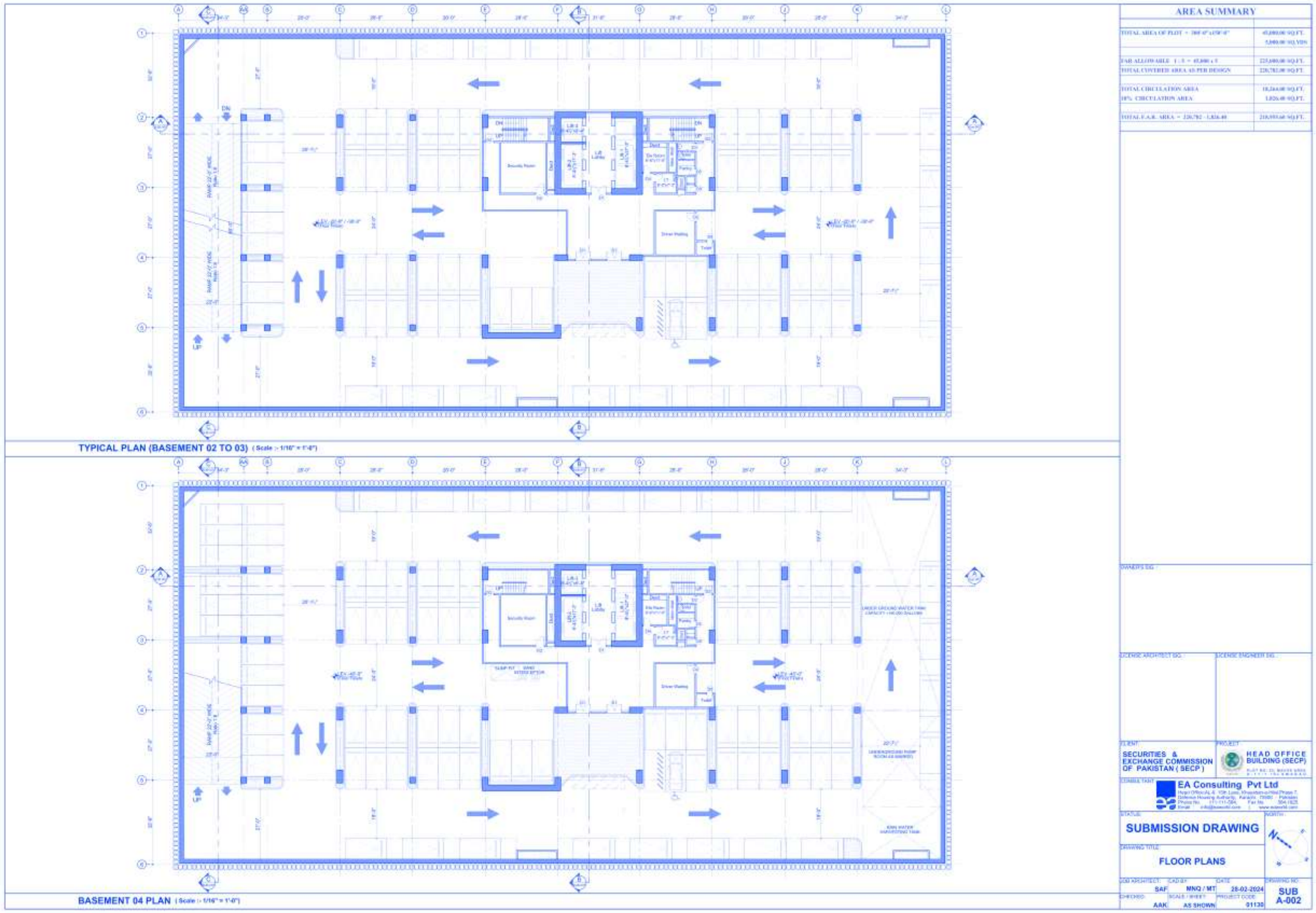


Figure 3.4: Basement-1 and Ground Floor Plan of SECP Head Office Building Project

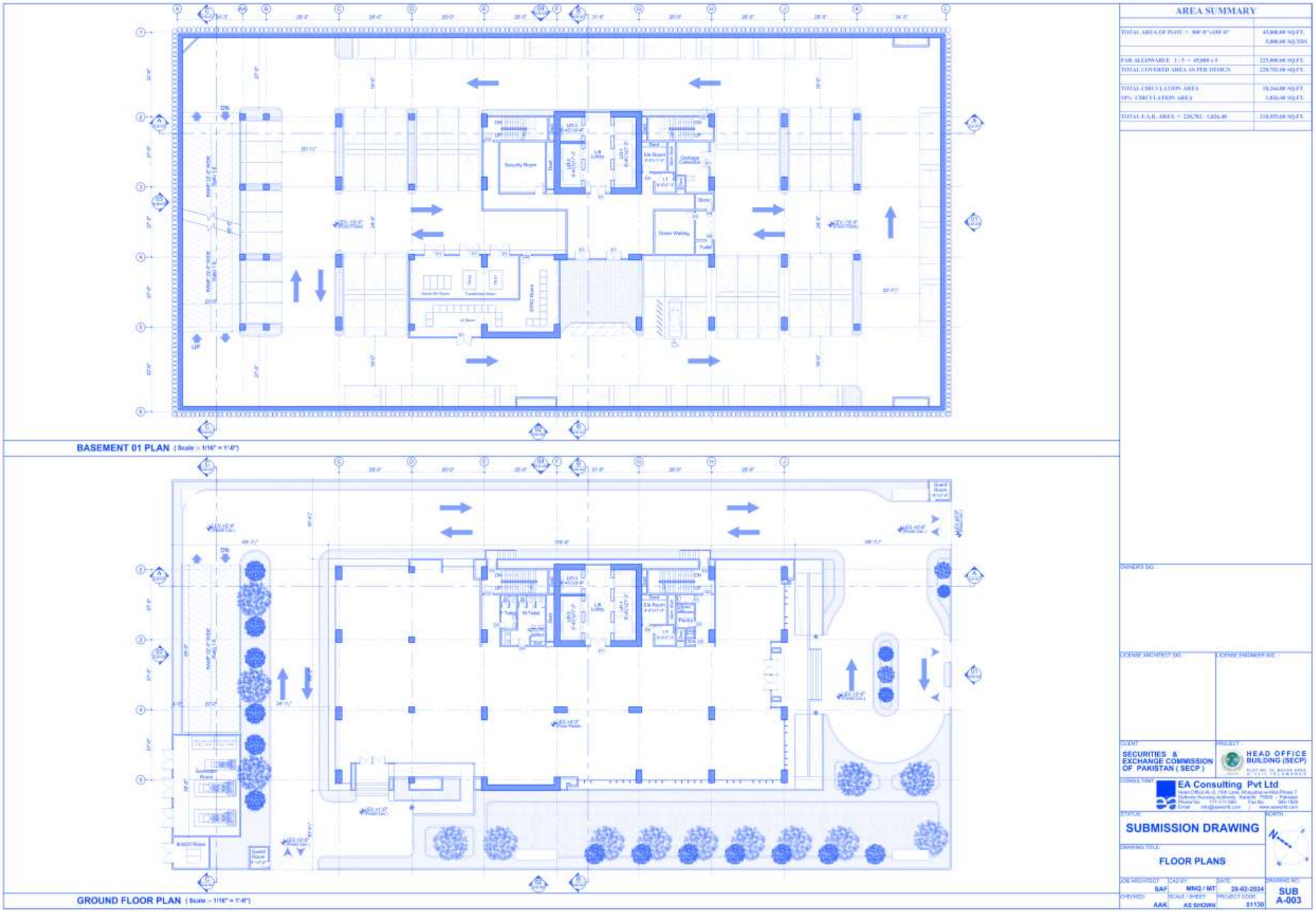


Figure 3.5: 1st to 6th Floor Plan of SECP Head Office Building Project

Figure 3.6: 7th to 19th Floor Plan of SECP Head Office Building Project

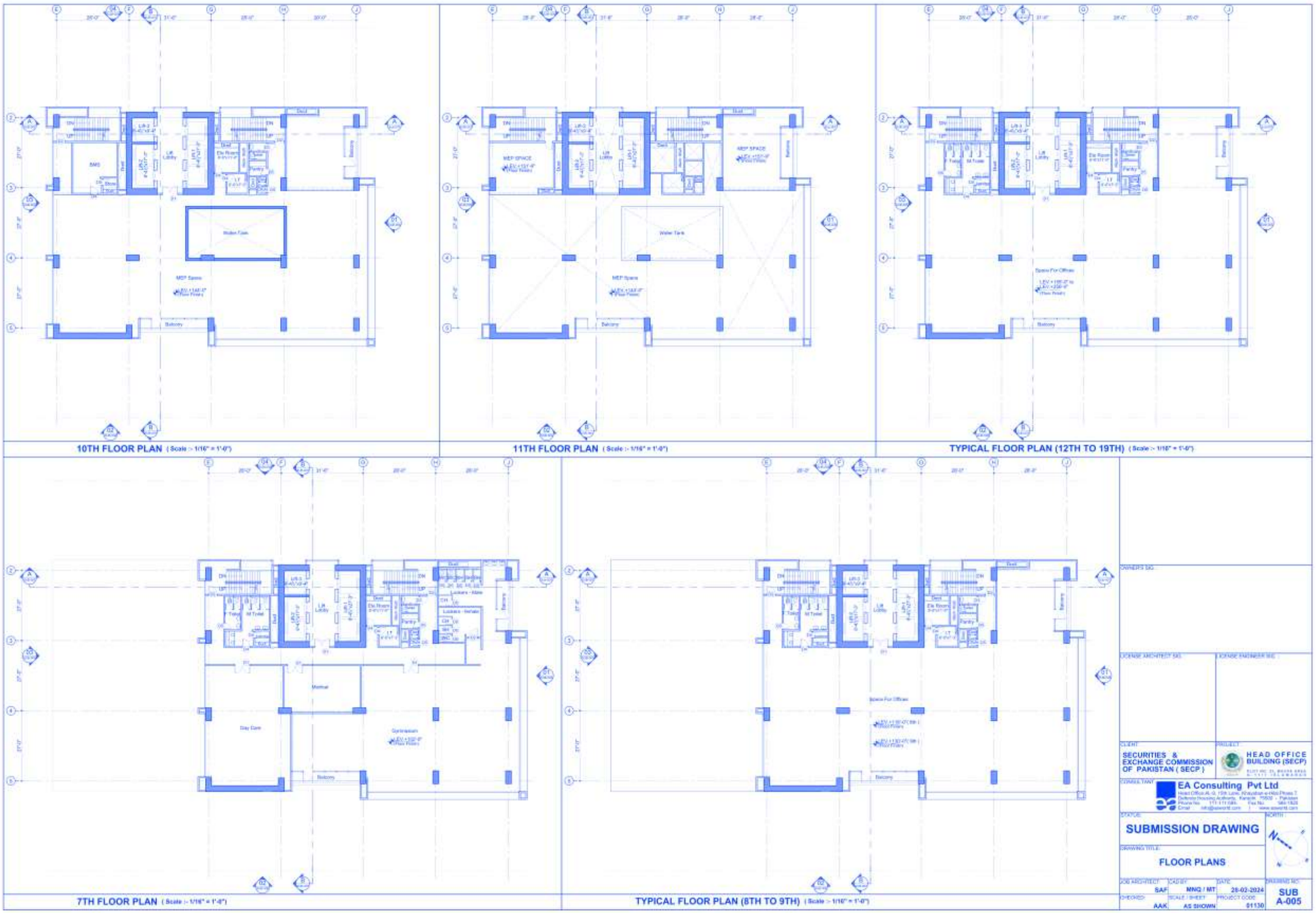
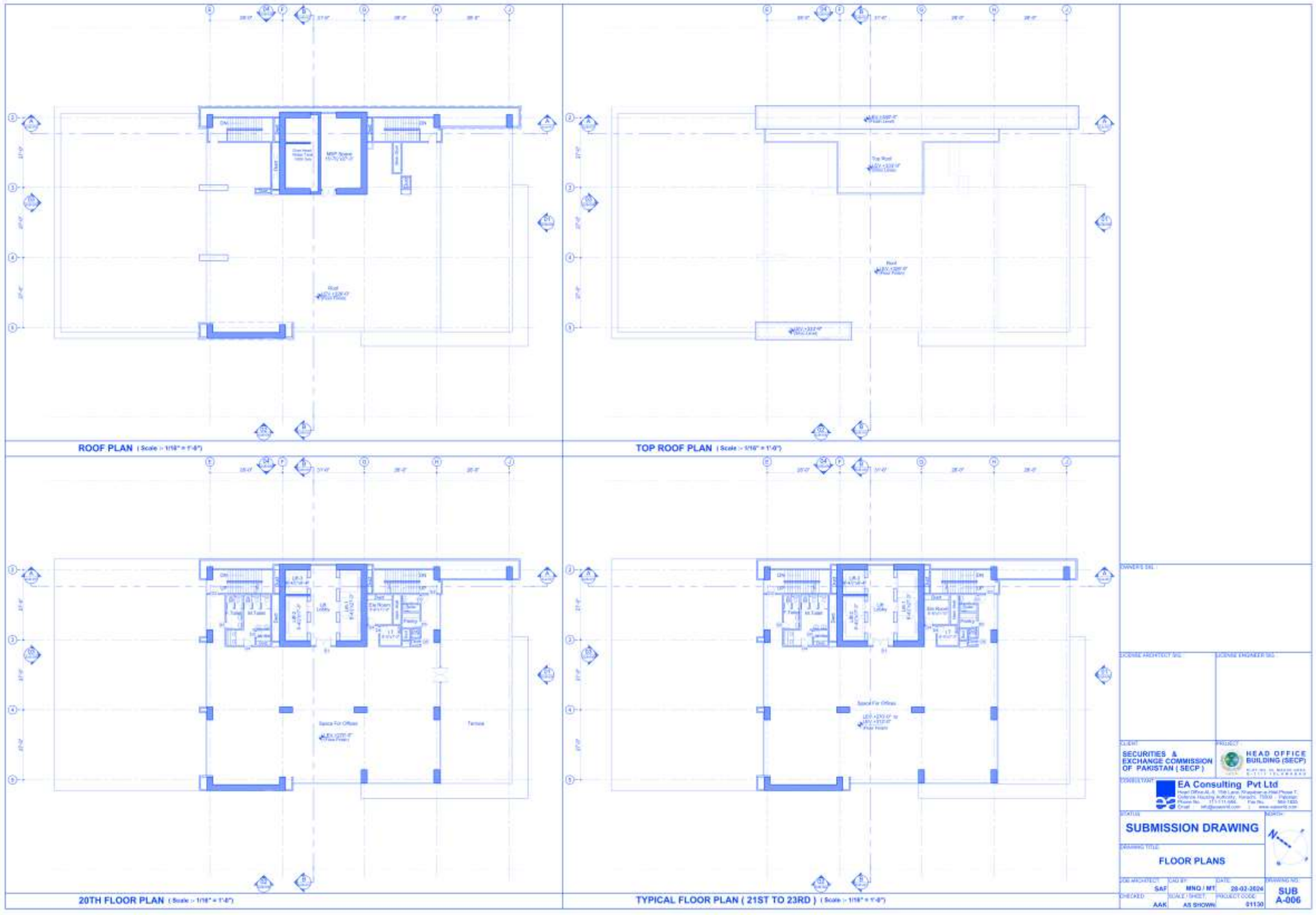


Figure 3.7: 20th to 23rd Floor Plan and Roof Plans of SECP Head Office Building Project



3.7 Occupancy of SECP Head Office Building Project

The SECP Head Office Building Project is anticipated to accommodate a total population of 510 individuals. The building will consist of 19 floors dedicated to office spaces, while 2 floors will be allocated for MEP (Mechanical, Electrical, and Plumbing) and Plant facilities. Other floors will accommodate Prayer Hall, Cafeteria and Amenities etc.

3.8 Facilities to be provided at SECP Head Office Building Project

SECP Head Office Building Project will have state of the art facilities as follows:

3.8.1 Water Demand and Storage

The average water demand for SECP Head Office Building Project is 62,000 gallons per day. Water will be stored in underground and overhead water storage tanks. The details of water tanks and corrosponding water capacities are mentioned in **Table 3.2.**

Table 3.2: Details of Water Storage Tanks and Water Capacities.

Water Tanks	Water Capacity (Gallons)
Underground Water Tank	180,000 US Gallons = 3 days of Domestic Reserve
Overhead Water Storage Tank	15,000 US Gallons

The main source of water for SECP Office Building will be CDA water connection. Additionally, water tankers will also be used to fulfill demand if needed. Rainwater Harvesting Tank is also proposed in building design and will reduce the stress over fresh water resources.

3.8.2 Sewerage System

The total wastewater generation is estimated to be 80 percent of the average water demand of SECP Head Office Building Project. The average water demand of the proposed project is 62,000 g/d so the wastewater generation will be 49,600 g/d. A Septic Tank will be constructed to treat the wastewater generated from SECP Head Office Building Project.

The wastewater will be treated in the Septic Tank and after treatment, it will be released in the CDA sewerage line.

3.8.3 Solid Waste Management

Securities and Exchange Commission of Pakistan will have a proper solid waste management plan for SECP Head Office Building Project. Approximately 0.51 tons of solid waste per day will be generated at SECP Head Office Building Project based on the assumption of waste generation rate of 1 kg/c/day.

The solid waste collection system would consist of staff using garbage chutes to dispose of solid waste. The solid waste from the garbage chute system would be collected in garbage rooms of the building. The building will be equipped with Garbage Chute System, which will basically, be the collection mechanism from individual units. All the floors will have 2 garbage chutes.

Disinfectant & sanitizing unit shall be fitted above the topmost entry section of the garbage chute and exhaust fan at the top of the garbage chute is recommended to use with every chute to overcome strong odours.

Garbage chute comes with an automatic cleaning system, which consists of a cylindrical housing with replaceable stiff nylon brushes which is automatically lowered and raised by the geared electric motor. The nylon brushes scrape and clean the internal surface as they move down and up the chute.

The collection will then be brought to a temporary transfer station and will be disposed at CDA designated dumping site.

3.8.4 Fire Suppression System

A proper and detailed fire suppression system in accordance with Building Code of Pakistan & NFPA Standards, including water storage reserve for firefighting, will be provided at the time of designing.

Securities and Exchange Commission of Pakistan will provide:

- Dedicated fire reserve for fire fighting
- Combine firefighting system that will comprise of wet pipe standpipe and sprinklers as provided by the NFPA Standards.
- Fire house cabinets
- Fire extinguishers
- Fire pump stations that will comprise of
  - ✓ Jockey Pump
  - ✓ Eletric Motor Driven Pump
  - ✓ Diesal Engine Driven Pump
- Bleaching Inlet as provided by NFPA

3.8.5 Electricity System

Electricity facility for the SECP Head Office Building Project will be provided by Islamabad Electric Supply Corporation (IESCO). CDA has given approval of their Master plan in which all power line departments like IESCO has bound to fulfill the power requirement. When the connection will be appiled the copy will be shared.

The lights proposed for the buildings will be Surface Mounted Device, LED, CFL, Spotlight, Decorative Lights, Mirror Lights, etc. and for daylight saving open lights have been provided for optimum lighting levels and energy saving.

The general principles that underpin the lighting scheme for SECP Head Office Building Project are listed below:

- Maximize the opportunities afforded by natural light as daylight harvesting.
- Provide adequate and appropriate levels of light for the functions and activities of different areas.
- Provide a balance between functionality, colour, texture and contrast.
- Provide an appropriate expression of the architecture within the building and outside of the building.
- Use low energy technologies wherever possible and appropriate without compromising visual comfort and utility.
- Integrate with other systems to provide for the requirements of emergency lighting, fire alarm, security and cleaning, etc.
- Integration with ceiling systems and mechanical designs.
- Use of long-life source to assist in the reduction of maintenance costs.
- Limit the number of lamp and equipment type to assist in the reduction of maintenance costs.
- Use automated lighting control, presence detection and similar facilities to manage energy.

There will be many processes and activities that will need to use electricity in the SECP Head Office Building Project. Securities and Exchange Commission of Pakistan will ensure to provide:

- Stand-by power generation
- High speed elevators/ vertical transportation
- Seperate passenger and cargo elevators
- Escalators for retail area
- NFPA compliant fire alarm system
- Telephone system
- CCTV system for surveillance
- Earthing and lighting protection system

3.8.6 Car Parking

The parking requirements will be accommodated within the plot line including basements.

As per parking requirements, 4 basements are provided which will be completely used for parking. A total of 342 car parking spaces are available in the SECP Head Office Building Project.

The parking management system shall be provided to facilitate the vehicle movement in the parking and to reduce traffic load.

No.	Floor	No. of Car parking spaces
1	Basement 1	75
2	Basement 2	86
3	Basement 3	86
4	Basement 4	95
Total		**342**

Ample parking spaces will be available across four basements of the SECP Head Office Building. If additional parking is needed, visitors and staff can utilize the nearby parking facility adjacent to the Islamabad Bar Council. This alternative will ensure sufficient parking capacity, although the primary provision is expected to meet all needs.

3.8.7 HVAC System

The proposed building cooling system integrates a centrally chilled water air-conditioning system with a robust cooling capacity estimated at 1,000 tons, ensuring efficient management of the building's cooling load. This system is designed to not only provide comfort cooling during warmer months but also offers winter heating capabilities, ensuring year-round climate control.

In addition to cooling and heating functions, the ventilation system is meticulously planned to cater to various areas within the building, including mechanical and electrical plant rooms, toilet areas, and kitchens. Special attention is given to ventilation in the car park located at basement levels, ensuring optimal air quality and circulation in these enclosed spaces.

To maximize energy efficiency and promote sustainability, the design incorporates heat recovery mechanisms, particularly from toilet exhaust, capturing and repurposing thermal energy to reduce overall energy consumption. This aligns with the recommendations of ASHRAE Standard 90.1 and 189.1, emphasizing energy conservation and environmental stewardship.

Moreover, safety measures are prioritized through features like stairwell pressurization and a comprehensive smoke management system. Stairwell pressurization helps to maintain a safe escape route during fire emergencies by preventing smoke ingress, while the smoke management system is strategically designed to control and evacuate smoke in the event of a fire, ensuring occupant safety.

Overall, the cooling system of the building is not only engineered to provide optimal comfort and air quality but also integrates energy-efficient technologies and safety measures in accordance with industry standards, ensuring a sustainable and secure built environment.

3.8.8 Building Management System (BMS)

The Building Management System will be a PC based system. It will combine the latest state of the art technology with simple operating techniques and will be used to manage and monitor the building services installation. The BMS will be located in the control room on service floor, which will monitor all the buildings through the BMS network.

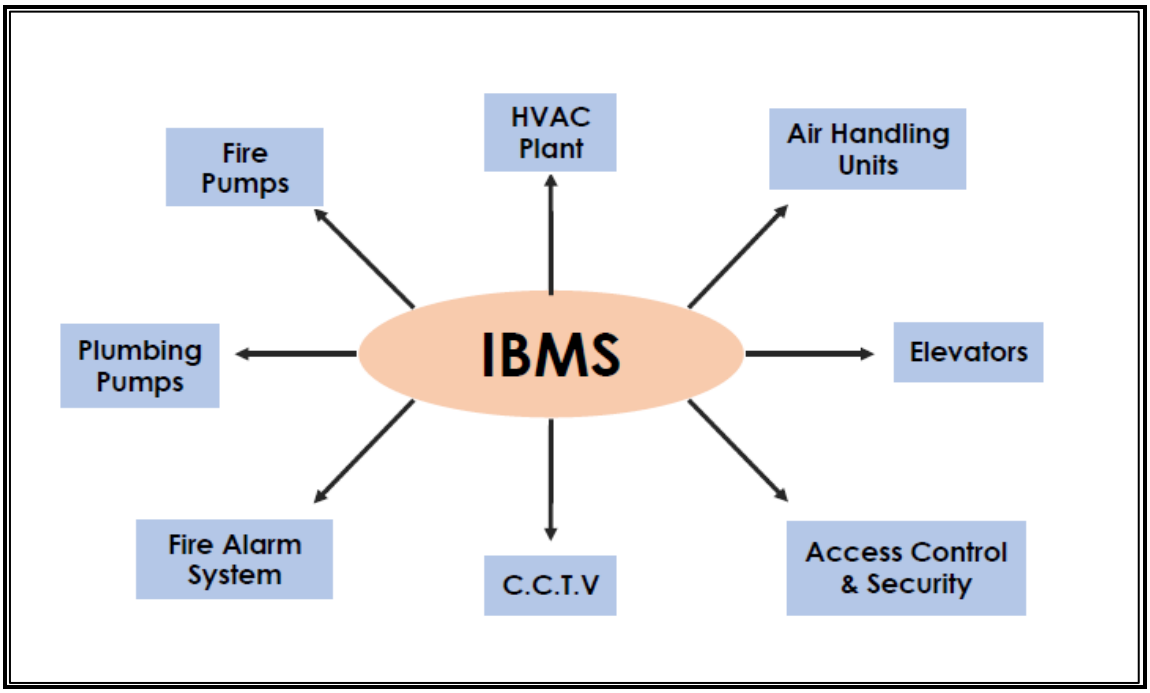
The essential functions of the system will be as follows:

- Centralized operation of the building (remote control)
- Dynamic graphic details of building
- Early recognition of faults
- Faults statistics for identification
- Trends register to identify discrepancies, energy consumption, etc
- Preventive maintenance and plant servicing
- Optimum support of personnel and facilities management
- Control optimization of all connected electrical and mechanical plant
- Prevention of unauthorized or unwanted access
- Own error diagnosis
- Integrated system.
- All mechanical equipment will be monitored and controlled on the BMS. All control valves of AHUs and FCUs will be two ways modulating type.

The following systems will also be interfaced with BMS:

- Lighting Control
- Fire Alarm system
- Central Battery Emergency Lighting System
- Main LV panels, Energy Monitoring Units
- Monitoring of domestic pumps / fire pumps / sump pumps, lifts, generators, etc.

Figure 3.8: Building Management System BMS



3.9 Sustainable Features of the Project

Securities and Exchange Commission of Pakistan is committed to develop its project in a sustainable way. The following sustainable features have been provided in this project:

- The planning & design of SECP Head Office Building Project will be carried out, keeping in mind the natural topography, sun and wind direction.
- Energy efficient LED Lights will be installed in the Tower.
- Trees such as Amaltas, Jaman and other fruit bearing plants will be planted in the project areas.
- Securities and Exchange Commission of Pakistan will encourage its residents to use textile bags instead of polythene bags.
- As per IPC standards downpipe of 4" diameter to drain roof area. All the rainwater from the roof will be collected through uPVC pipes into a dedicated underground tank of 20,000 US Gallons capacity. This water will be used for watering plants and for use in washrooms. In case of heavy rainfall, extra water will be diverted outside for free discharge through an automatic bypass system.
- There will be emergency exists in each floor of the building to reduce the negative impact of any emergency situation.
- Fire alarms will be installed at each floor at suitable locations. These fire alarms will be accompanied by showers that will spray water when the temperature exceeds a particular limit.
- Moreover, sustainable features such as double glazed windows, sunshade and insulation will be part of the building design.

3.10 Traffic Management Plan

The SECP Head Office Building Project, Islamabad is located in Sector G-11 which has various accessibility points. All the incoming traffic will be managed through Service Road South and Street No. 8.

3.11 Vegetation features of the site

There are some shrubs present on the project site. No trees will be cut during the construction phase of the project.

3.12 Land acquisition

The land for SECP Head Office Building Project has been acquired by Securities and Exchange Commission of Pakistan and its legal possession has been taken.

3.13 Carbon Footprint

It is important to estimate the carbon footprint that will result due to the construction of the building. According to a detail study carried out in Islamabad, 26.09 kg of CO_{2E}/sq.ft[3] is contributed. The carbon footprint of SECP Head Office Building Project is estimated to be 11.27565kTons $CO_{2E.}$

3.14 Cost of the Project

The estimated cost of infrastructure development of SECP Head Office Building Project is Rs 7.89 Billion, as shown in **Table 3.3.**

Table 3.3: Estimated Cost of SECP Head Office Building Project

No.	Description	Total Estimated Cost (Rs.)
1	Office Building	**7.89 Billion**
2	Water Tanks	
3	Walkways	
4	Drainage System	
5	Water Supply System	
6	Sewerage	
7	Electrification	
8	Landscaping	
	Total	**7.89 Billion**

[3] *Syed Mohsin Hussain Shah, Ali Junaid, Roshan hilal Khan, and Syed Shujaa Safdar Gardezi, 2019, Assessment of Embodied Carbon Footprint of an Educational Building in Pakistan using Building Information Modelling (BIM), 11th International Conference (CITC-11) September 9-11, 2019, London, UK*

3.15 Time Schedule

The development works for SECP Head Office Building Project will be completed in a period of 4 years.

Table 3.4: Time Schedule of Construction of SECP Head Office Building Project

Description/Year	Year	1st Year				2nd Year				3rd Year				4th Year			
	Months	01-03	04-06	07-09	10-12	13-16	14-16	17-20	21-24	25-27	28-30	31-33	34-36	37-40	41-43	43-45	45-48
Foundation works																	
Construction of 4 Basement																	
Construction of ground floor																	
Construction of floors 1st to 10th floor																	
Construction of floors 10th to 23rd floor																	
Handover of SECP Building																	

3.16 Project Phases

The construction of SECP Head Office Building Project will be implemented in three phases, i.e., Pre-construction/ Design, Construction, and Operation.

3.16.1 Pre-construction/Design Phase

Site Investigation: The geotechnical and soil investigation of the project site has been carried out for determining the suitability of a site to support the structures, and other development works.

Geotechnical/Soil Investigation: An extensive soil investigation of the project site has been carried out. The topographical survey has been undertaken by the surveying consultant to demarcate the area and measure the ground elevation.

Subsequently, engineering details has been worked out, and working drawings, specifications for equipment and material has been prepared.

3.16.2 Construction Phase

Contractor Mobilization: This component involves the transportation of construction machinery and equipment to the project site and the establishment of the contractor's camp and office. The contractor will be responsible for the activities being carried out at the project site.

Site Preparation: Usually, this activity involves the operation of heavy earth-moving machinery and substantial land clearing, levelling and grading, as well as cutting and filling activities.

The first task of this activity is to demarcate the site and other benchmarks, with the help of drawings prepared during the pre-construction and design phase of the project. Once marking is complete; the land is cleared and prepared for subsequent construction activities. The whole purpose is to maintain the harmony of the area during construction.

Construction Activities: The construction activities are carried out using the conventional methodology and sequence of work. The activities include excavation, masonry work, carpentry, wiring, piping, and plumbing, flooring, painting and installation of fixtures. Other activities include the laying of cables, water supply, sewerage and storm drainage systems, junction boxes and providing connections to the building. Supervision of this whole activity will be carried out by the SECP Head Office Building Project management and the consultant.

Staffing: Construction crews will be the responsibility of the civil contractor and its petty contractor. It is estimated that a maximum of 80 personnel will be working at the site at a given time during the peak construction period.

These will essentially include masons, carpenter, electricians, painters, plumbers and general labourers. For unskilled employment, preference will be given to residents of the project area. **Table 3.5** details the staffing requirement during the construction phase of the project.

Table 3.5: Staff for the Construction Phase of the Project

No.	Description	For construction
1	Technical staff	15
2	Skilled workers (technicians, plumbers, labour)	20
3	Unskilled labour/ helper	45
	Total	**80**

Source: *PPI Estimates, 2024*

Following steps will be taken for effective management of construction crew:

- A complaint cell for workforce will be established, where they can register their reservations related to work.

- Securities and Exchange Commission of Pakistan will develop an effective system of communication/consultation and will ensure that the staff concerns are addressed.
- Employees will be discouraged from working excessive hours and/or missing break periods (this may involve a detailed job evaluation).
- Child labour will be avoided.
- Incidents of bullying, sexual and racial harassment will be monitored and, where necessary disciplinary actions will be taken.
- Clear job descriptions will be developed for the workforce, and it will be ensured that the individual is matched to them.

Construction Machinery:

The following construction machinery is expected to be present at the project site:

- Front Loader
- Excavators/Jack Hammer
- Tractor Trolley
- Water tanker
- Water and concrete pumps
- Tower Crane

The exact number of the above equipment and vehicles will vary depending upon the work schedule.

Construction Material: The construction material will include cement, sand, crush, bricks, steel bars, paint, piping material, electrical material and finishing material. Most materials will be procured from Rawalpindi. The Bills of Quantities of the material will depend upon the construction activities.

Disposal of Excavated/ Construction Waste**:** Construction waste will be recycled by the contractor if possible. Otherwise, it will be disposed-off at CDA's designated site for excavated material/construction waste.

Electricity**:** The project will get proper electricity connection from IESCO for the construction activities and camp.

Camp Supplies**:** Camp supplies will be procured from Rawalpindi and transported to the project site.

Camp Site Sanitation Facilities**:** Septic tank with a soakage pit at the construction will be constructed to treat sewerage generated by the campsite.

Traffic Load during Mobilization (and Demobilization): All the constructions equipment and vehicles will be transported to the site via Angoori Road.

Traffic Load for Construction Materials Supplies: It is estimated that on average 6-7 truckloads per day during the peak construction period will be supplying different types of construction materials to the project site during the peak construction period.

Other Supplies Water: During the construction phase, a maximum of about 4,000 gallons per day of water will be required for construction activities and human consumption. The water supply will be arranged through water tankers.

Fuels: For the construction equipment and vehicle, diesel will be required. The peak consumption of diesel would be 1000 litres per day during the peak construction period.

3.16.3 Operational Phase

The Project Manager, SECP Head Office Building Project will be responsible for the operation and maintenance of the SECP Head Office Building Project during the operational phase of the project.

Figure 3.9: Pictorial Presentation of Project Area of SECP Head Office Building

Exhibit 1: View of site visit of SECP Head Office Building Project

Exhibit 2: View of Project Site

Exhibit 3: View of Street No. 8 (Access to Project Site)

Exhibit 4: View of Service Road South (Access to project site)

Exhibit 5: View of Street No. 1, Sector G-11/1

Exhibit 6: View of Trees in project area

4 Project Alternatives

4.1 Background

An analysis of available alternatives is necessary to establish the most suitable management and technology option for a project.

The three significant alternative management options used therein are the 'no project option', 'site alternative option' and the 'build as proposed option'.

4.2 No Project Option

If the "No Project" option is triggered; then Project will lose all positive impacts. SECP would lose the possibility of having state-of-the-art centralized Head office building facility. The shortage of such state-of-the-art offices in Islamabad and Rawalpindi would further exacerbate. The employment generated during design, construction and operation of the project would be lost, leading to unemployment.

The "No Project Option" does not appear reasonable given the above facts. However, the expected negative impacts can be minimized by adopting appropriate mitigation measures.

4.3 Build-As-Proposed-Option

Due to urbanization, the land prices are increasing day by day. It not only often requires converting agricultural land into residential, commercial, or industrial zones as urban areas expand, the demand for resources such as water, energy, and raw materials increases. This can lead to overexploitation of resources, environmental degradation, and conflicts over resource allocation. So, this 340' building resolve the issue of horizontal expansion and create numerous employment opportunities. The problems pertaining office space required for SECP is being catered in the said project. Vertical expansion enables cities to accommodate a larger population within a limited geographical area.

A detailed impact assessment has also been carried out, and the underlying issues have also been catered for. For instance, proper mitigation measures have been taken up for the constructional and operational phases.

4.4 Site Alternative

Mauve Area is a long strip of land running along the northern side of Kashmir Highway. According to the master plan of Islamabad, it is meant for the public sector office buildings i.e. offices of the government, semi government and corporations. Therefore, the selected project site was the most favourably strong location for the construction of SECP Head Office Building Project, Islamabad. Hence, no other alternative site was considered.

4.5 Conclusion

No alternative site has been identified. If the project is not implemented, then all positive impacts related to the Head office building project will be lost. So, the best option is to 'build as proposed' by mitigating its potential negative impacts.

5 Description of the Environment

5.1 Introduction

This chapter describes the existing environment of the project area. In order to assess the impacts and related mitigation measures, existing environmental conditions of physical, biological and the socio-economic environment of the project area were studied.

5.2 Islamabad

Islamabad Capital Territory is the capital and the ninth-largest city in the country which is spread over an area of 906 sq. km., and is divided into three segments; namely, (i) Islamabad Urban Area, including institutional and industrial area, covering 220 sq. km. (ii) Islamabad Park is occupying 220 sq. km., and (iii) Islamabad rural area is measuring 446 sq. km.

Islamabad Capital Territory is divided into eight zones: Administrative Zone, Commercial District, Educational Sector, Industrial Sector, Diplomatic Enclave, Residential Areas, Rural Areas and Green Area. Islamabad city is divided into five major zones: Zone I, Zone II, Zone III, Zone IV, and Zone V. The rural area of Islamabad encompasses 132 villages and administratively consists of 12 Union Councils. Islamabad has been planned in parallel belts with Administrative Sector, Diplomatic Enclave, Public Building Area, Residential Sectors, a Commercial area called the Blue Area and Industrial areas.

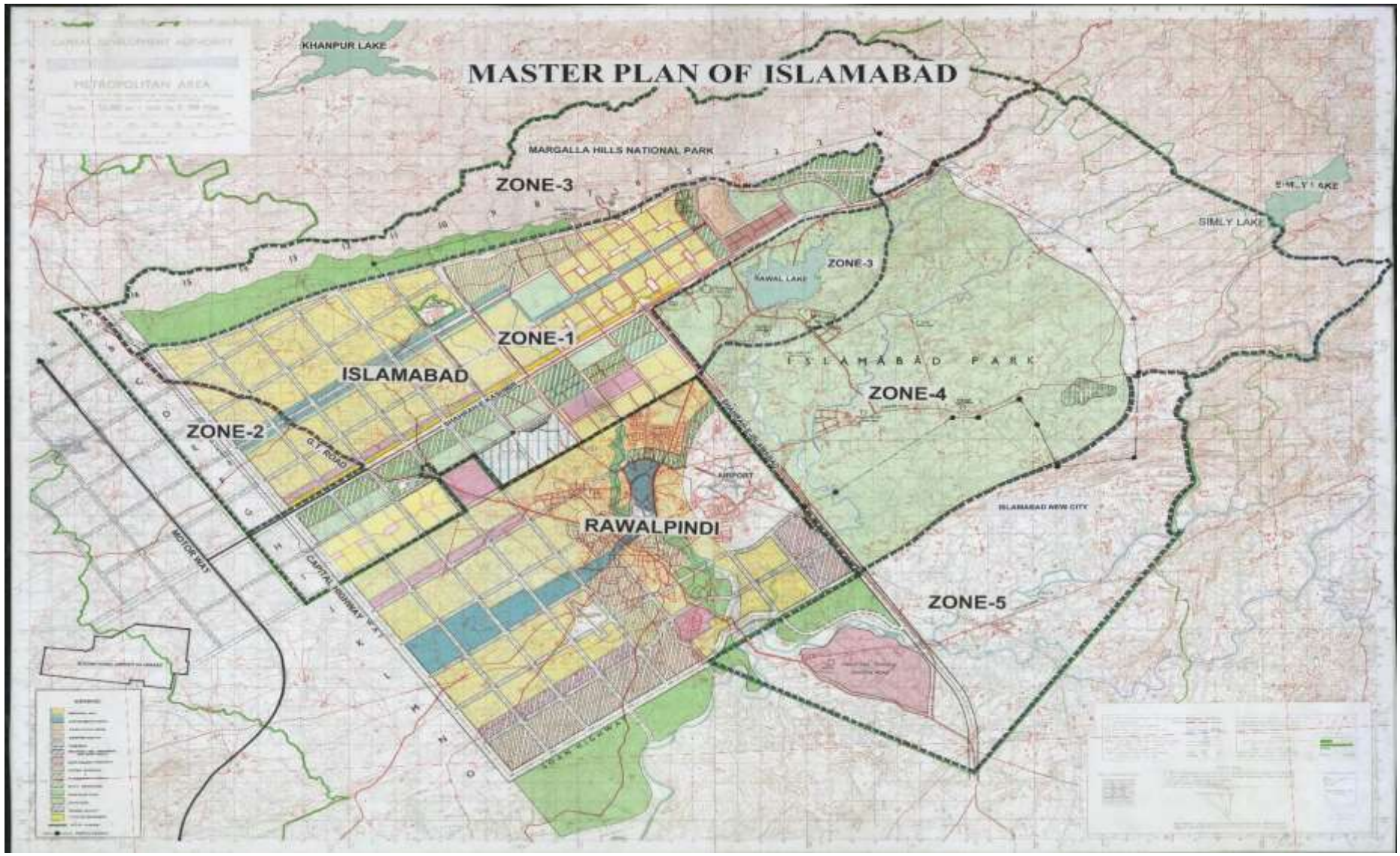
Islamabad is located at 33.43°N 73.04°E at the northern edge of the Potohar Plateau and at the foot of the Margalla Hills in Islamabad Capital Territory. Its elevation is 540 meters (1,770 ft.). The modern capital and the ancient Gakhar city of Rawalpindi stand side by side and are commonly referred to as the Twin Cities, where no exact boundary exists between the two cities.

To the northeast of the city lies the hill station of Murree and to the north lies the Haripur District of Khyber Pakhtunkhwa. Kahuta lies on the southeast, Taxila, Wah Cantt, and Attock District to the northwest, Gujar Khan, Rawat, and Mandrah on the southeast, and the metropolis of Rawalpindi to the south and southwest. Islamabad is located 120 kilometres (75 mi) SSW of Muzaffarabad, 185 kilometres (115 mi) east of Peshawar, 295 kilometres (183 mi) NNE of Lahore, and 300 kilometres (190 mi) WSW of Srinagar, the capital of Indian Kashmir.

The area of Islamabad is 906 square kilometres (350 sq. mi). A further 2,717 square kilometres (1,049 sq. mi) area is known as the Specified Area, with the Margalla Hills in the north and northeast. The southern portion of the city is an undulating plain. It is drained by the Kurang River, on which Rawal Dam is located.

The map of Islamabad has been provided in **Figure 5.1.**

Figure 5.1: Map of Islamabad



5.3 Physical Environment

5.3.1 Topography

Islamabad is located at the edge of the Potohar Plateau and at the foot of the Margalla Hills in Islamabad Capital Territory.

The Potohar Plateau has an uneven table and land is gradually rising in elevation from 500 to 600 meters above the sea level, and the highest point is 1,600 meters above mean sea level. The land gradually slopes towards the South. The land is composed either of alluvium (clay or silt) or of gravel caps. The plains are formed of alluvial deposits laid by the past and the present river systems of varying thickness. A large part of the area is undulating, and at various places, it is badly dissected by gullies and ravines.

The topography of Islamabad consists of plains and mountains. The northern part of the metropolitan area comprises mountains terrain of the Margalla Hills, and Rawal Lake lies in the northeast just below the hills. The southern portion of this city is an undulating plain drained by Korang River followed by its tributaries. Towards the east is a relatively flat area with bare soil and settlements.

5.3.2 Geology and Soils

The Potohar region has a complex geological history of mountain formation, alluvial-loessic depositions, and erosion cycles. Limestone is the characteristic rock of Margalla range. In age, it ranges from the Jurassic to Triassic. It is usually reddish or bluish white in colour, mixed or alternating with its beds of red or bluish clay or shades or sandstones. Adiala, Dhamial-Loibher forests are situated over alluvial deposits. The deposits contain small-sized rounded pebbles of sandstone, quartzite or granite and sand mixed or alternating with clayey deposits. They have been described as alluvial deposits, but it is equally probable that they have a glacial origin.

The ridges and valleys in the area are formed by alluvial deposits from the hills that that have been buried in the ridges of sandstone and covered by interbedded sandy silt and limestone gravel. Most of the urbanization in the region are primarily focused on the Piedmont bench area dissected more into the south side. The southern area which comprises sandstone, mudstone, and conglomerate of the Siwalik Group of Neogene to Pleistocene crop out along the many steep-sided stream valleys that dissect the land. The northern edge of which extends southwards is predominantly Piedmont bench. Landforms of the area can be further divided into land formed by erosion and landforms constructed by the deposition of sediments. Different soil types and landforms with a range of slopes and active geological processes may limit the suitability of the land for the various purpose.

The site is mainly consisting of Clayey Silt. This area is characterized by several mountain and hill ranges, which include the Southern Hazara range, the Margala, and Murree hills, and their associated piedmont aprons. The stratigraphical succession exposed in the project area ranges in age from Precambrain to Quaternary. Most of the area is comprised of sedimentary rocks and many strati-graphical formations are encoutered in the region in which the most notable formation is Murree formation, which is comprised of Shale and sandstone.

5.3.3 Land Use

Patterns of land use in Islamabad have evolved through years and have been influenced by environmental and physical factors such as landforms, climate, and water availability as well as human factors such as population size, growth, economic demands and cultural practices or customs.

5.3.4 Seismic Risk

Islamabad region can be divided into three major structural zones. The mountainous north, including Margalla Hills, is complexly folded and thrust along the Hazara Fault Zone. Southwards the mountains are a sloping piedmont bench that is truncated in sandstone and shale. The Soan River flows along the axis of Soan syncline. Islamabad lies just at the edge of Hazara Fault Zone that consists of an arc of thrust and folded rocks about 25km wide and

150 km long that is convex to the south and extends west-southward away from the Himalayan syntaxis. There are many thrust sheets in Islamabad area, some of these thrust faults are in front of Margalla Hills which extends north of Fateh Jang and form Kala Chita Range.

The Islamabad region lies in a tectonically active zone, where earthquakes have been frequent in the recent geological history due to faulting and folding of the structure. Geological past shows that there were many activities of earthquakes in the past in the region. The Soan syncline is an asymmetric, faulted fold of regional extent, plunging west southward. Although earthquake shaking is not confined to areas near-surface faults, the risk of surface rupture is greater where the surface has been broken previously. Earthquakes in 2005 (7.6 magnitudes) resulted in large area destruction in Islamabad.

The project area is located in seismic Zone II, where II represents a high hazard with moderate damage zone.

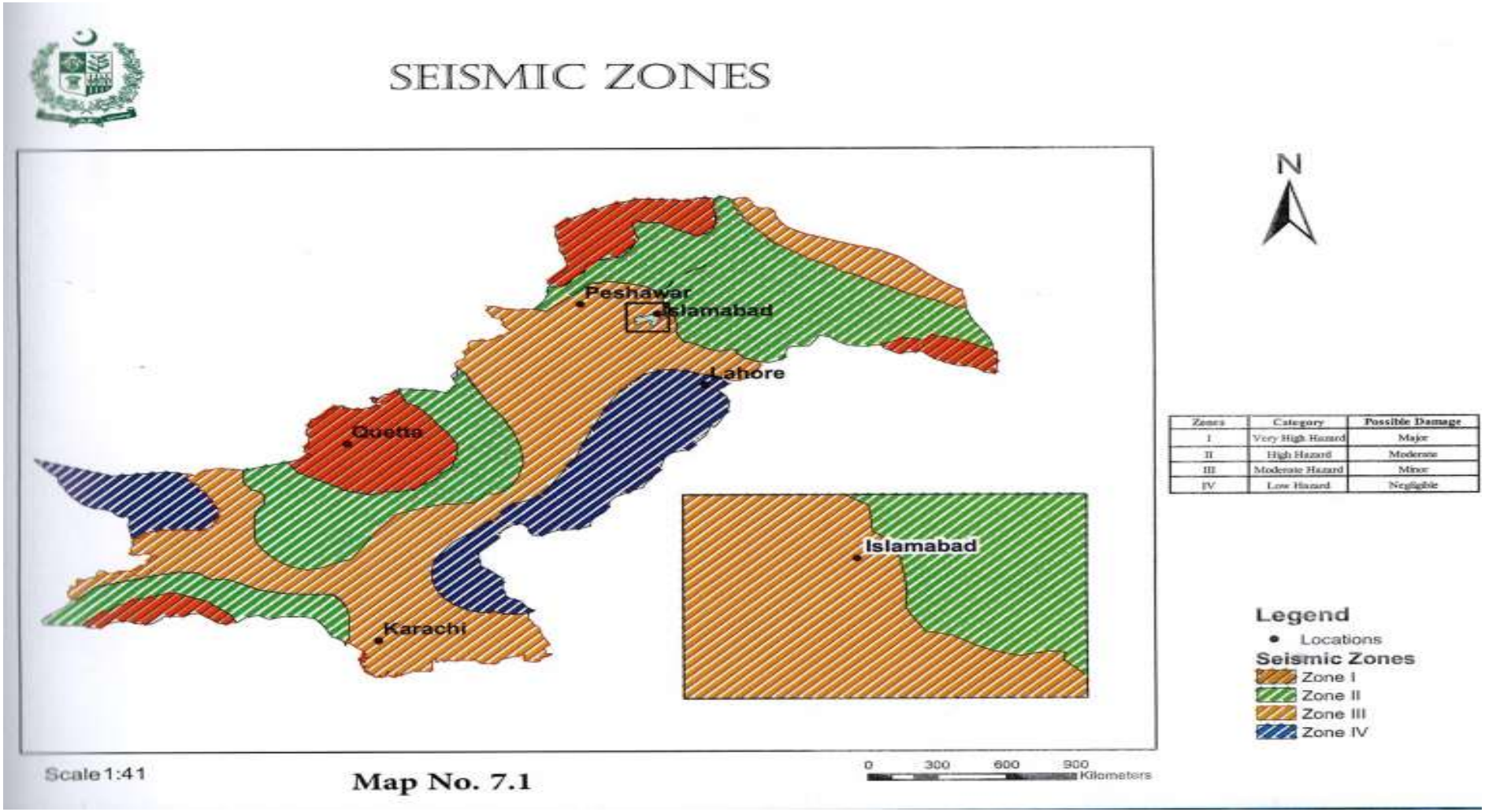
The Seismic Map of Islamabad is given in **Figure 5.2.**

5.3.5 Major Earthquakes

The Islamabad region lies in a tectonically active zone, where earthquakes have been frequent in the recent geological history due to faulting and folding of the structure. Geological past shows that there were many activities of earthquakes in the past in the region. The Soan syncline is an asymmetric, faulted fold of regional extent, plunging west southward. Although earthquake shaking is not confined to areas near-surface faults, the risk of surface rupture is greater where the surface has been broken previously. Earthquakes in 2005 (7.6 magnitudes) resulted in large area destruction in Islamabad. Repeated earthquakes have been hitting the area almost every year. [4]

[4] *DIGITAL ENVIRONMENTAL ATLAS OF ISLAMABAD:* Establishment of Geometric Centre for Climate Change and Sustainable Development Pakistan environmental Protection Agency Ministry of Climate Change

Figure 5.2: Seismic Map of Islamabad



Source: *DIGITAL ENVIRONMENTAL ATLAS OF ISLAMABAD (2016):* Establishment of Geometric Centre for Climate Change and Sustainable Development Pakistan Environmental Protection Agency Ministry of Climate Change

5.3.6 Surface Water

The Rawal Lake is a man-made water reservoir, located across Korang River at a distance of about 10 km from Rawalpindi. The Soan and Korang Rivers are the main streams draining in Islamabad area. Their primary tributaries are the Ling River, draining northwestward into the Soan; Gumreh Kas, draining westward into the Korang from the area between the Korang and Soan, and Lei Nullah, draining southward into the Soan from the mountain front and urban areas. The Korang and Soan Rivers are dammed at Rawal and Simly Lakes, respectively, to supply water for the urban area.

5.3.7 Ground Water

Ground water quality of the project site is good and used for domestic purposes. The commercial area comprises various buildings have Municipal Water supply from CDA..

A chemical analysis test of the ground water in the project site was conducted. The samples of ground water were collected on 17th May 2024 and were received by the Environmental Services Pakistan on 18th May 2024 for analysis.

Table 5.1: Chemical Analysis of Ground water at the project site

#	Parameters	Reference values	Conc. At project site	Method/ Equipment Used	Remarks
1	pH*	6.5-8.5	7.0	SMWW 4500H^+B	Within Limits
2	Total Dissolved Solids (TDS)*	<1000 mg/L	619 mg/L	SMWW 2540C	Within Limits
3	Chloride (as Cl^-) *	<250 mg/L	29 mg/L	SMWW 4500Cl^- B	Within Limits
4	Cadmium (Cd) *	0.01 mg/L	ND	U.S. EPA-200.7	Within Limits
5	Chromium (Cr) *	≤ 0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
6	Copper (Cu) *	2.0 mg/L	ND	U.S. EPA-200.7	Within Limits
7	Lead (Pb) *	≤ 0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
8	Manganese (Mn) *	≤ 0.5 mg/L	ND	U.S. EPA-200.7	Within Limits
9	Nickel (Ni) *	≤ 0.02 mg/L	ND	U.S. EPA-200.7	Within Limits
10	Zinc (Zn) *	5.0 mg/L	0.3 mg/L	U.S. EPA-200.7	Within Limits
11	Antinomy (Sb)	≤ 0.005 mg/L	ND	U.S. EPA-200.7	Within Limits
12	Aluminum (Al)	≤ 0.2 mg/L	ND	U.S. EPA-200.7	Within Limits
13	Arsenic (As)	≤ 0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
14	Boron (B)	0.3 mg/L	ND	U.S. EPA-200.7	Within Limits
15	Barium (Ba)	0.7 mg/L	ND	U.S. EPA-200.7	Within Limits
16	Mercury (Hg)	≤ 0.001 mg/L	ND	U.S. EPA-200.7	Within Limits
17	Selenium (Se)	0.01 mg/L	ND	U.S. EPA-200.7	Within Limits
18	Total Coliforms	----	ND	SMWW 9222 B	----
19	Fecal Coliforms Bacteria	Must not be detectable in any 100ml sample	ND	SMWW 9222 H	Within Limits
20	E. Coli	Must not be detectable in any 100ml sample	ND	SMWW 9222 H	Within Limits
21	Color	≤ 15 TCU	ND	SMWW 2120 C	Within Limits
22	Taste	Non Objectionable / Acceptable	Acceptable	Organoleptic	Within Limits
23	Odor	Non Objectionable / Acceptable	Acceptable	Organoleptic	Within Limits
24	Turbidity	<5NTU	73 NTU	SMWW 2130 B	Exceeding Limits
25	Total Hardness as $CaCO_3$	<500 mg/L	400 mg/L	SMWW 2340 C	Within Limits

26	Cyanide (CN^-)	≤ 0.05 mg/L	ND	SMWW 4500 CN^- F	Within Limits
27	Flouride (Fl^-)	≤ 1.5 mg/L	0.3 mg/L	U.S. EPA-9214	Within Limits
28	Nitrate (NO_3^-)	≤ 50 mg/L	41 mg/L	SMWW 4500 NO_3^-B	Within Limits
29	Nitrite (NO_2^-)	≤ 3 mg/L	ND	SMWW 4500 NO_2^-B	Within Limits
30	Residual Chlorine	0.2-0.5 mg/L	ND	SMWW 4500-Cl B	----
31	Phenolic Compounds (as Phenols)	No Guideline Value Set	ND	SMWW 5530 C	----

All parameters were within limits except Turbidity.

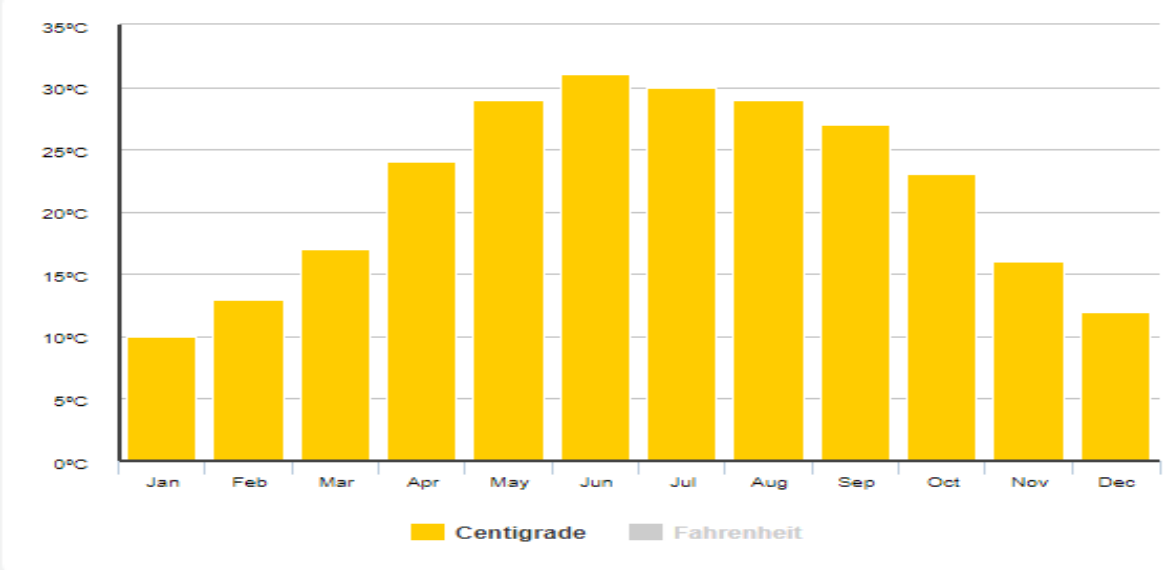
5.3.8 Climate

Islamabad has distinct seasons marked by the wide variation in temperature. The climate remains very salubrious from April to October, but the winters get very cold due to snowfall (in Murree). The coldest months are December, January, and February. The hottest months are June and July. Rainfall in April and May is occasional, but the heaviest rain is in July and August.

The temperature of capital territory Islamabad ranges between -1 ^{0}C to 46 ^{0}C. The coldest month is January when the mean maximum temperature is 18.3 ^{0}C, and the mean minimum is 3.8 ^{0}C. From February to May the temperature rises at the rate of 5.0 ^{0}C per month. The highest temperature reached in May when the mean maximum temperature remains 39.1 ^{0}C. Humidity varies greatly in Islamabad.

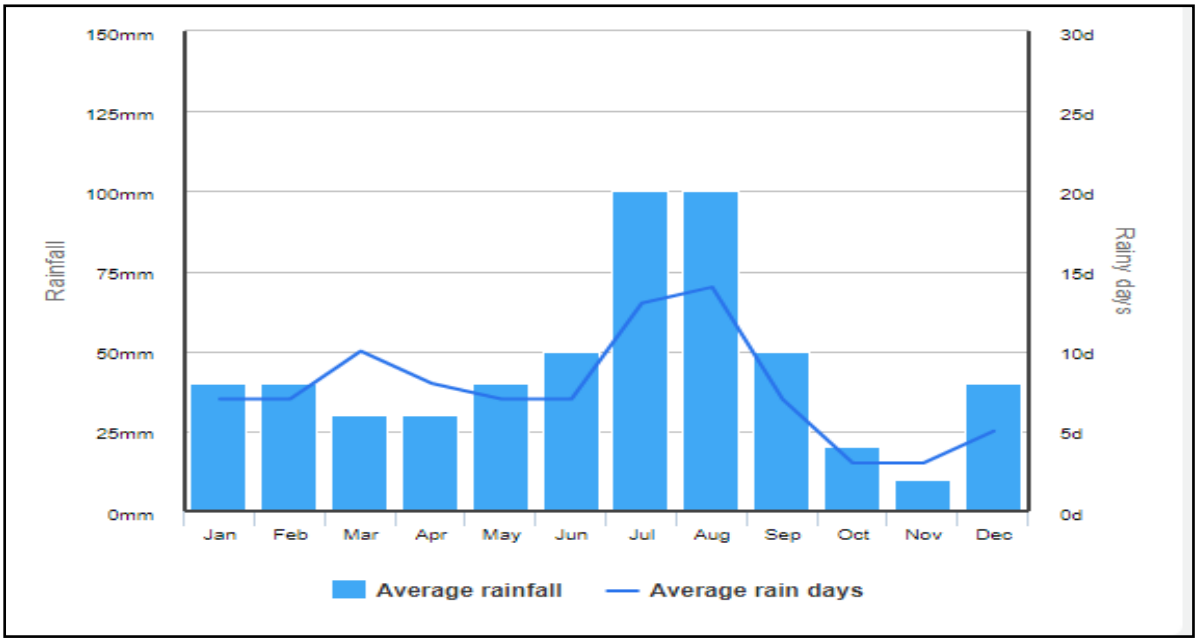
Metrological Data of Islamabad, including rainfall and mean minimum and the maximum temperature is shown in **Figure 5.3**.

Figure 5.3: Mean Monthly Meteorological Data of Islamabad[5]



[5] https://www.worldweatheronline.com/lang/en-pk/islamabad-weather-averages/islamabad/pk.aspx

Figure 5.4: Mean Monthly Precipitation Data of Islamabad6



5.3.9 Air Quality Monitoring

The vehicular traffic on Service Road South and Street No. 8 is high during peak hours which contributes to air and noise pollution in the project area. Moreover Srinagar Highway is also present in the vicinity of project site.

The ambient air quality and noise level monitoring was conducted and compared against the National Environmental Quality Standards (NEQS) for Sulphur dioxide (SO_2), Oxide of Nitrogen (as NO), oxide of Nitrogen (as NO_2), Ozone (O_3), Suspended Particulate Matter (as SPM), Respirable Particulate Matter (as PM_{10}), Respirable Particulate Matter (as $PM_{2.5}$), and Carbon monoxide (CO) during 24 hours at the project site.

The ambient air and noise level monitoring was conducted on 17th May 2024 for 24 hours at the project site.

The ambient air quality and noise monitoring was carried out by EPA Certified laboratory, Environmental Services Pakistan (ESPAK).

Sulphur dioxide (SO_2): Sulphur dioxide (SO_2) is a colourless, poisonous gas with a strong odour. Coal and petroleum containing Sulphur compounds produce Sulphur dioxide after their combustion. It is one of the main contributors of acid rains because of oxidation of SO_2 in the presence of a catalyst such as NO_2 forms H_2SO_4. It irritates eyes, nose and throat. It may impair lung function and aggravate respiratory diseases.

Nitrogen Monoxide (NO): Nitric oxide (nitrogen oxide, nitrogen monoxide) is a molecular, chemical compound with a chemical formula of NO. One of several oxides of nitrogen, it is a colourless gas under standard conditions. It is also produced naturally by the extremely high air temperatures produced along the path of lightning in thunderstorms.

Nitric oxide should not be confused with nitrous oxide (N_2O), an anesthetic, or with nitrogen dioxide (NO_2), a brown toxic gas and a major air pollutant, the latter being a product to which nitric oxide is rapidly oxidized in air.

Nitrogen dioxide (NO_2): Nitrogen dioxide (NO_2) is a light brown gas that can become an important component of urban haze. It is likely that oxides of nitrogen are the second most abundant atmospheric contaminants in many cities, ranking next to Sulphur dioxide.

Nitrogen oxides usually enter the air as a result of high-temperature combustion processes, such as those occurring in automobiles and power plants.

The primary sources of nitrogen oxides (NO_X) are motor vehicles and thermal power generation. The averaged (24h) concentration of NO_2 (41.7 µg/m^3) remained within compliance with NEQS (80 µg/m^3) at the project site.

Ozone (O_3): Ozone or tri-oxygen is an inorganic molecule with the chemical formula O_3. It is a pale blue gas with a distinctively pungent smell. It is an allotrope of oxygen that is much less stable than the diatomic allotrope O_2, breaking down in the lower atmosphere to normal oxygen.

Particulate Matter: Particulate matter (PM) is a solid matter from smoke, dust, fly ash, or condensing vapours that can remain suspended in the air for a long period of time. PM_{10} means the particulate matter is having an aerodynamic diameter of 10 micrometres while $PM_{2.5}$ means the particulate matter is having an aerodynamic diameter of 2.5 micrometres or less. Particulates include an array of atmospheric materials, carbon-based matter such as soot, ashes, windblown dirt, sand, soil dust, metals, and plant matter such as pollens. The composition of particulate matter varies with the place, season and weather conditions.

The fine PM can be sulfates, nitrates, organic matter (organic carbon compounds), elemental carbon (soot), and soil dust (crustal materials).

Carbon monoxide (CO): Carbon monoxide is an odourless, colourless and highly poisonous gas that has its major origin in the incomplete combustion of carbonaceous materials. Although industrial processes contribute to CO pollution levels, however, the principal source of CO is automobiles.

Vehicles operating at colder temperatures (in winter, during engine warm-up or in stop-and-go traffic) produce significant quantities of this deadly gas and is of particular concern in urban areas.

5.3.10 Noise Level Monitoring

Ambient noise levels were also continuously recorded at the project site for 24 hours. The sound pressure level (dB) was frequency weighted on A-curve (dB (A)) and time-weighted (dB (A) L_{eq}) on an hourly basis.

The 24-hour monitoring for noise level was carried out at the project site. The average noise level at the project site was found to be 63 dB at day time and 59 dB at night time, which are within the compliance limit of NEQS for day (65 dB) but not for night (55 dB). The reason could be the traffic at Service Road South and Srinagar Highway.

5.3.11 The conclusion of ambient air quality and noise level monitoring

The ambient air and noise level monitoring was conducted on 17th May 2024 for 24 hours at the project site.

The average 24-hour CO, SO_2, O_3, NO, NO_2, $PM_{2.5}$, PM_{10}, and SPM were recorded as 2.1 mg/m3, 1.6 ug/m^3, 20.1 ug/m^3, 0.7 ug/m^3, 3.1 ug/m^3, 31.6 ug/m^3, 131 ug/m^3, and 388 ug/m^3 respectively at project site. All the obtained values for the air quality parametes are within the permissible limit.

Proper plantation on open spaces of the project site will be promoted to help enhance and maintain the air quality of the area in future.

The laboratory report detailing the ambient air and noise level monitoring report is attached in **Annexure-6.**

The SO_2, NO, NO_2, O_3, CO concentrations meets the NEQS limits. A summary of ambient air quality and noise levels results are given in **Table 5.2** below:

Table 5.2: Summary of Ambient Air Quality and Noise Results at the Project Site

Parameters	Limit Values (NEQS)	Conc.	Method/Equipmnet Used	Remarks
Carbon Monoxide (CO)	5 mg/m^3 (1 Hour)	2.1mg/m^3	Non Dispersive Infrared Absorption (NDIR)	Within Prescribed Limits
Sulfur Dioxide (SO_2)	120 µg/m^3	1.6 µg/m^3	UV Fluorescence (UVF)	Within Prescribed Limits
Ozone (O_3)	130 µg/m^3 (1 Hour)	20.1 µg/m^3	Non Dispersive UV Absorption	Within Prescribed Limits
Oxides of Nitrogen (NO)	40 µg/m^3	0.7 µg/m^3	Chemiluminescence Detection	Within Prescribed Limits
Oxides of Nitrogen (NO_2)	80 µg/m^3	3.1 µg/m^3	Chemiluminescence Detection	Within Prescribed Limits
Particulate Matter $PM_{2.5}$	35 µg/m^3	31.6 µg/m^3	Particulate Sensor	Within Prescribed Limits
Particulate Matter PM_{10}	150 µg/m^3	131 µg/m^3	Particulate Sensor	Within Prescribed Limits
Suspended Particulate matter (SPM)	500 µg/m^3	388 µg/m^3	Particulate Sensor	Within Prescribed Limits
Noise Level Day Time	65 dB(A)	63 dB(A)	Sound Level Meter	Within Prescribed Limits
Noise Level Night Time	55 dB(A)	59 dB(A)	Sound Level Meter	Exceeding Prescribed Limits

5.4 Biological Environment

5.4.1 Flora

According to the natural vegetation of Pakistan, ecologically Islamabad lies under the thorny zone of vegetation. The vegetation is a representative of Dry Subtropical Scrub Forest which is dominated by *Acacia Modesta* (Phulai), *Ziziphus mauritiana* (Ber), etc.

The most common trees in Islamabad are of Amal Tas (*Casia fistulla*), Chinar (*Platanus orientalis*), Phulai (*Acacia modesta*), Dharek (*Melia zardorachita*), Jangali ber (*Zizyphus maurantiana*), Kiker (*Acacia nilotica*), Mulberry-Shahtoot (*Morus alba*), Safaida (*Eucalyptus camaldulensis*), Shisham (*Dalbergia sissoo*), Coconut (*Cocos nucifera*), Papeta (*Manilkara zapota*), Jaman (*Syzygium cumini*),Peli Kaner (*Thevetia peruviana*), Shireen (*Albizia lebbek*), Bamboo (*Bambusa*), Semal (*Bombax ceiba*), Palm (*Arecaceae*), Mango (*Mangifera indica*), etc. In the undergrowth *Cannabis sativa* (Bhang), *Calotropis procera* (Desi Ak), *Parthenium hysterophorous* (Gandi Booti) and *Ocimum bacilicum* (Niazbo) are predominant.

A few shrubs and tree species, including ber, bhang, shisham, ack, kikar, and behkarh, were also found within the project area.

Figure 5.5: Flora at the Project site

Exhibit 1: View of Tree near the project site

Exhibit 2: View of trees in project Area

Exhibit 3: View of Trees on Green belt with Service Road South

Exhibit 4: View of slight vegetation at the project site

5.4.2 Fauna

In its original form, the Dry Sub Tropical Semi-Evergreen Scrub Forest constitutes the habitat of wild fauna consisting of a host of animals and birds. As the disturbances increased to a maximum level with complete inhabitation, wildlife abundance and diversity decreased to a minimum degree.

The major wildlife of the area is jackal, fox, hare, wild boar, and grey partridges. The ecology of project area is under huge human pressure. The local people graze their livestock in the barren land, and the animals feed on standing scattered trees species, crop residues and grasses. Hence ecology has become very fragile. Similarly, there is very much hunting pressure on the fauna of the area. The local people are main hunter, and they facilitate the hunting. The usual hunt grey partridges and hare.

Mammals

Sr. No	Local Name	Scientific Name
1	Rat	*Rattus rattus*
2	Wild boar	*Sus sucrofa cristatus*
3	Porcupine	*Hystrix indica*

Birds

Sr. No	Local Name	Scientific Name
1	Quail	*Coturnix coturnix*

2	House Sparrow	*Passer domesticus*
3	House Crow	*Corvus splendons*

Reptiles

Sr. No	Local Name	Scientific Name
1	Monitor lizard	*Varanus bengalensis*
2	Spin tailed lizard	*Uromastix hardwickii*

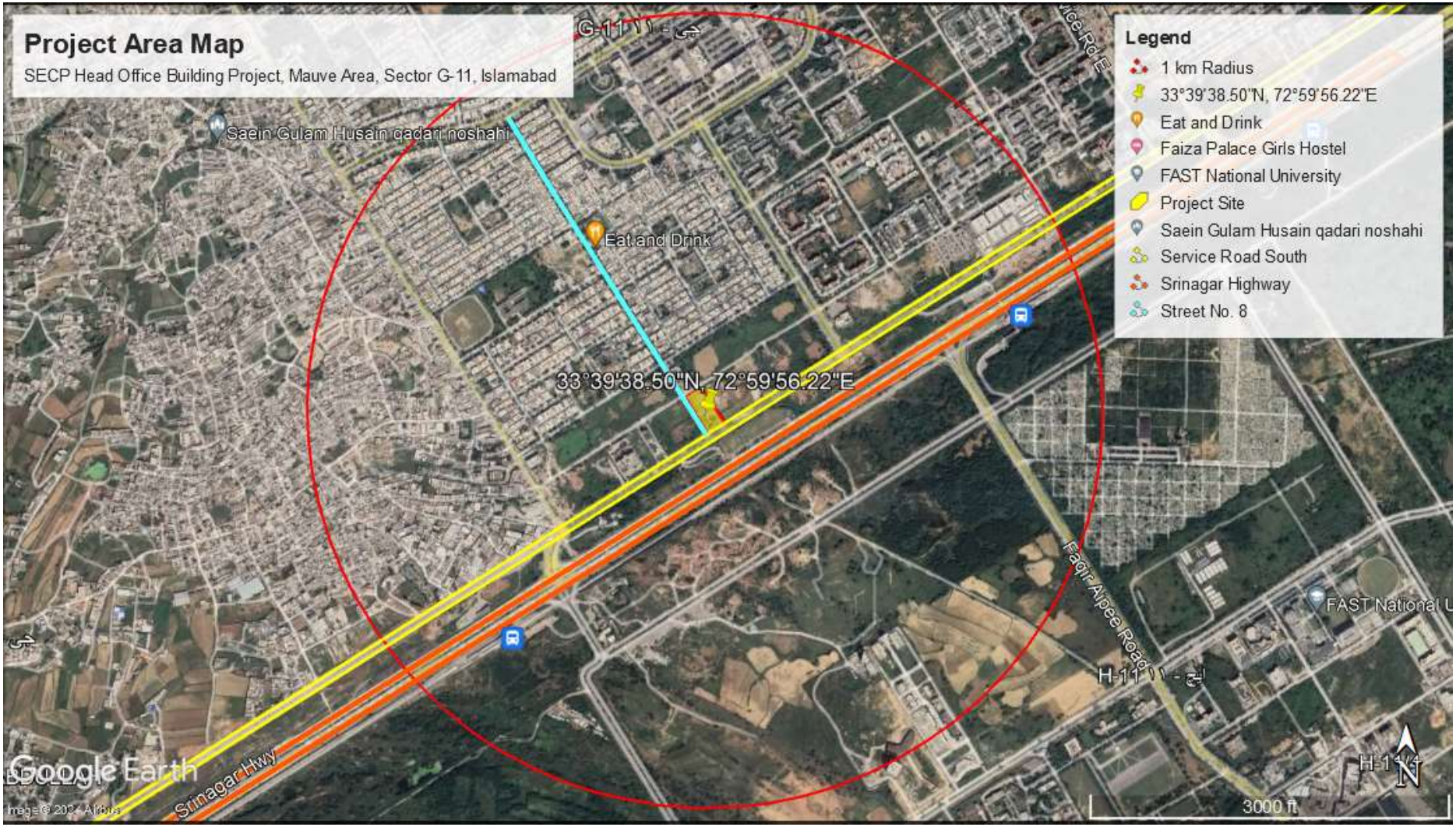
5.5 Socio-Cultural Environment

This section provides details of the socio-economic and socio-cultural environment of the local community in the project area. This area may get direct positive or negative impacts from the construction of SECP Head Office Building Project. **Figure 5.6** shows the main environmental receptor within 1 km radius of the project site.

5.5.1 Islambad Bar Council

The Islamabad Bar Council (IBC), located at the 3rd Floor, Federal Judicial Complex, G-11/1, Islamabad, is a statutory body responsible for regulating the legal profession and ensuring the administration of justice within the Islamabad Capital Territory. Established under the Legal Practitioners and Bar Councils Act, 1973, the IBC oversees the conduct, licensing, and discipline of lawyers practicing in Islamabad. It also works to protect the rights and interests of its members while promoting the rule of law and access to justice for all. The council plays a crucial role in the professional development of lawyers through various programs, seminars, and continuing legal education initiatives.

Figure 5.6: Project Area Map of SECP Head Office Building Project.



6 Stakeholder Consultation

6.1 Approach to Public Consultation

The public consultation process with various stakeholders has been approached to involve public and other stakeholders from the earliest stages. Public consultation has taken place during the planning and design phase of the project. The focus of attention has been the population near the proposed project site that may be affected by the project.

The viewpoints of the stakeholders have been taken into account, and their concerns and suggestions for possible improvements have been included in the EIA where appropriate.

The project will create both positive and negative impacts on the project area that may affect the local population and other stakeholders, both directly and indirectly.

Much of the public consultation process has revolved around concerns for the mitigation of construction stage impacts and possible traffic congestion on the Service Road South and Street No. 8 during the operational phase of the project.

The stakeholders involved in the process were the project management of SECP Head Office Building, neighbouring business near the project site, Professors from different universities, govt/private organizations and real estate dealers.

6.2 Objectives of Consultation

The overall objective of the consultation with stakeholders is to verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the project.

The important general objectives of the consultation process are:

- Providing key project information to the stakeholders, and to solicit their views on the project's potential or perceived impacts,
- Identification of potential problems and needs,
- To devise the way for collaborative problem solving,
- Develop and maintain communication links between the project proponents and stakeholders, providing opportunities to the public to influence the project design in a positive manner, and
- Ensure that views and concerns of the stakeholders are incorporated into the project design and implementation with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.

6.3 Categories of Stakeholders Contacted

Potential stakeholders for consultation and participation were identified, and discussions were held with the people living in the project area of impact, pedestrians, vendors and business/shop owners. Moreover, government and private employees, Public/private University Professors, national organizations, and local public representative were also contacted.

6.4 Major Stakeholders Involved

The stakeholders contacted during the survey belonged to different categories of people, as shown in **Table 6.1**.

Table 6.1: Categories of Stakeholders Interviewed in the Project Area

No.	Stakeholder Category
1	Local People (living in the vicinity of SECP Head Office Building Project site)
3	Government Organizations
4	Environment & Social Experts (Public and Private Institutes/Academia)
5	Grass-root stakeholder discussions

6.5 Scoping Session

During the public consultation process, both primary and secondary stakeholders were consulted. A scoping session was carried out with Pakistan Environmental Protection Agency on 14th June 2024. Similarly, consultation with the stakeholders was in the form of informal meetings and interviews.

During these interviews, the simple, non-technical description of the project was given, along with an overview of the project's likely impacts on people and the environment. Following the project description, a discussion was held so that people could voice their concern.

Generally, the community is aware of the proposed project of construction of SECP Head Office Building Project and indicated their support as it will provide employment opportunity and enhance the socio-economic status of the area as well as of the country.

6.6 Issues Discussed

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project and their possible impacts;
- Possible impacts on natural vegetation, flora and fauna;
- Possible mitigation measures and
- Beneficial factors and involvement opportunities for the local people in the set of activities of Project.

6.7 Major Stakeholders and their Apprehensions

Meetings with major stakeholders were organized to discuss project-specific issues and their potential impacts on the local and regional environment.

Stakeholders consulted, and their valuable suggestions and comments are described below:

Name and Designation	Location	Opinions/Concerns/Issues/Suggestions
Mr. Anwar Ghani, Head Project Management Unit, SECP Head Office Building Project	SECP Office, SECP Head Office Building Project	▪ The plot for construction of SECP Head Office Building has been acquired from CDA under certain terms and conditions. The construction phase of the project will adhere to all health, safety and environment consideration. ▪ The mitigation measures proposed in the EIA Report will be followed to avoid any environmental and social degradation during the construction phase of the project. ▪ Securities and Exchange Commission of Pakistan give importance to sustainable development, and we will adopt green and energy efficient technologies. ▪ The building will be constructed according to the National and International Standards to resist any natural calamity, and it will be sustainable. ▪ Rainwater Harvesting will be adopted.
Mr. Imaad-ud-din Additional Director Emergency & Disaster Management Directorate	Emergency & Disaster Management Directorate	▪ Emergency and Disaster Risk Management should be an integral part of the operational phase of the Project however; it should also be considered during the construction phase of the Project. ▪ A proper Fire Safety Plan is mandatory part of designing and planning. ▪ Awareness is necessary for workers and residents regarding fire safety and evacuation in case of emergency.
Mr Sher Afzal-Deputy Manager (Environment & Social) Islamabad Electric Supply Company Limited	IESCO- Head office, St # 40, G-7/4 Islamabad.	▪ High rise development projects are a part of the positive approach to catering for residential, commercial and office needs of increasing population only if they are cost-effective. ▪ Islamabad's allowable power supply is roughly 1,200 MW. Commencement of this Project will add 2-3 MW of electricity, which will further increase the load on IESCO. To entertain more consumers, the government should increase the electrical supply quota of Islamabad. WAPDA should contribute to making new dams and increase hydropower supply. ▪ It is highly recommended to consider the mixed source or alternate energy sources. Even with low production, it will contribute to sharing the extra burden of electric supply shortages ▪ Building structure should be designed to resist maximum earthquake. Installation of private tubewell will further lower the water table in Islamabad. Treatment/ reuse of grey water should be carried out for landscape irrigation. And there should be pipe coding for the sewage and drainage system of the building. ▪ In Building design phase, green technologies should be incorporated. This feature will reduce the

Name and Designation	Location	Opinions/Concerns/Issues/Suggestions
		carbon footprint and moreover, encourage other people to adopt environmentally friendly measures. Activities like rooftop plantation, rainwater harvesting, etc. should be added to the project in order to make it more sustainable. ▪ There should be proper plantation plan in order to compensate for environmental deterioration.
Dr. Musharib Ali, Assistant Professor, NUST	National University of Sciences and Technology	▪ Construction period should be short and multiple parallel activities should be carried out so that environmental impacts of construction phase are minimized. ▪ Negative impacts during operational phase should be mitigated according to international standards, and new green and energy efficient technologies should be adopted in the SECP Head Office Building. ▪ Water resources in the urban areas are already limited, so wastewater treatment plant should be part of the project. The grey water generated by the building should be reused. Standard piping colour codes should be developed for water and wastewater treatment plants. ▪ The proposed project will have a positive impact as it will provide employment opportunities. ▪ The SECP Head Office Building should have a detailed Solid Waste Management Plan available when the operational phase starts. ▪ The proponent should look towards introducing the concept of source segregation of solid waste in the buildings so that recycable material can be taken out and assist in making the entire operations (solid waste management) profitable.
Mr Farhan Lodhi, Chief Executive Officer, Environmental and Waste Management Solutions	Islamabad	▪ High rise buildings are the need of the hour due to increasing land prices ▪ Considering the high energy prices prevailing these days, proponents should actively implement energy conservation features in the building and the roof floor should be exclusively reserved for solar power panels.
Mr. Faisal Khan, Real Estate Dealer	Islamabad	▪ The construction of high-rise buildings is a right strategy for solving housing/commercial space shortage in Islamabad. ▪ The maintenance charges by the developer should be reasonable and the building should be kept clean. ▪ Building should be immune to seismic impacts. ▪ There is a need for strong and robust Security System at the building with CCTV camera at important locations including parking area. ▪ Overall, the project will have a positive impact on the area and will provide employement opportunities.

6.8 Consultation with the Communities

A series of discussions were carried out with the local community. During the discussion, the community was informed about the salient features of the project, its location, and activities. Exhibits of public consultation are in **Figure 6.1**.

Respondents in the majority showed a positive attitude towards the project. The viewpoints of respondents are as follows:

Location: Majority of respondents showed a positive attitude towards the project location. They stated that the project would bring further development in the area. A resident stated that mauve area is a good choice for constructing highrise building as its proposed land use is similar.

Job creation: Almost all respondents agreed that the project would create job opportunities for local populations. They viewed the project positively from an economic point of view. Others believe that the project will benefit labours as well as professionals.

Traffic load: Respondents had their concerns related to traffic. A traffic management plan should be developed.

Office facility: Respondents agreed that the proposed project will provide these facilities plus promote vertical expansion. Most of the respondents were not worried about high rise buildings and instead they were in support of it.

Business enhancement: Majority of the respondents believe that the project will have a positive impact on business in the project area.

Seismic Impacts: A respondent has mentioned that such project's building should be designed according to seismic conditions of the area.

Plantation: A respondent mentioned the importance of maintenance of plants after construction of such high rise project.

Sewerage System: A respondent highlighted that in some areas the sewerage system is not in good condition and this aspect should be considered during operational phase of the project.

6.9 Address of Concerns

Efforts have been made in the preparation of this Environmental Impact Assessment Report to address all the concerns raised by the stakeholders during the consultation meetings.

Proper management plans have been proposed in the relevant sections to deal with all the issues related to biodiversity conservation, management and disposal of solid waste, wastewater disposal and safeguarding interests of the local people

Figure 6.1: Pictorial presentation of the public consultation

Exhibit 1: Consultation with worker of project area

Exhibit 2: View of consultation with Buisness Owners in project area.

Exhibit 3: Consultation with Real Estate Dealers of the Proejct Area

Exhibit 4: Consultation with resident of the project area

Exhibit 5: Consultation with Residents of the Area and nearby Business Owners

Exhibit 6: View of Plaza in front of project site

7 Impact Assessment and Mitigation Measures

7.1 Introduction

This Chapter discusses the potential environmental and social impacts of the proposed activities, predicts the magnitude of the impact, assesses significance, recommends mitigation measures to minimize adverse impacts, and identifies the residual impacts of the proposed project.

The nature and the significance of the potential impact depend on the nature and magnitude of the different activities and also on the type of pollution control technologies to control or minimize the pollution related to the different activities of the project.

7.2 Impact Identification with Matrices

A Matrix has been prepared for the identification of impacts and their associated risks. The Matrix also presents the mitigation measures for the identified impacts and the change in risk after the mitigations have been adopted.

7.2.1 Impact Identification with Matrices

A Matrix has been prepared for the identification of different environmental impacts and their associated risks or benefits. The Matrix also presents the mitigation measures or environmental enhancement measures for the identified impacts and the change in risk after the mitigation techniques have been adopted.

7.2.2 Risk Assessment

The risk assessment of the project activities is carried out for all the negative impacts following the basic steps listed below:

- Identify the potential impact
- Assess the risk
- Apply the appropriate measure

Risk is assessed as the likelihood that the activity will have an effect on the environment as well as the consequence of the effect occurring. It is often described like this:

Risk = Likelihood X Consequence

The likelihood is further classified and relatively valued into Certain (5), Likely (4), Possible (3), Unlikely (2), Rare (1)

- Certain: Will undoubtedly happen/recur on a frequent basis.
- Likely: It Will probably happen/recur, but it is not a persisting issue/circumstance.
- Possible: Might happen or recur occasionally
- Unlikely: Do not expect it to happen/recur, but it may do so.
- Rare: This will probably never happen/recur.

The consequence is further classified and relatively valued into Remarkable (5), Major (4), Moderate (3), Minor (2), and Insignificant (1).

- Remarkable: Impact on a larger area and highly sensitive receptors.
- Major: Impact on a large area and slightly sensitive receptors.
- Moderate: Impact on a small area with few receptors.
- Minor: Impact on a very small area with almost no receptors.
- Insignificant: Almost no impact.

Based on the classification and values, a risk analysis matrix has been developed and presented in **Table 7.1.**

Table 7.1: Risk Analysis Matrix

Likelihood		Consequence and Value			
	Remarkable (5)	Major (4)	Moderate (3)	Minor (2)	Insignificant (1)
Certain (5)	25	20	15	10	5
Likely (4)	20	16	12	8	4
Possible (3)	15	12	9	6	3
Unlikely (2)	10	8	6	4	2
Rare (1)	5	4	3	2	1

Based on the related values in **Table 7.1** following risk impact categories are identified.

- Extreme Risk (score 20-25): require more intensive mitigation measures
- High Risk (score 10-19): Will have a large impact which requires specific mitigations
- Medium Risk (score 5-9): Will have a small impact that can be mitigated easily
- Low Risk (score 1-4): Professional judgment

7.2.3 Positive impacts

Positive impacts are also evaluated in the Matrix using the same methodology; however, a different colour scheme is used.

Based on the classification and values, a positive impact analysis matrix has been developed and presented in **Table 7.2**.

Table 7.2: Positive Impact Analysis Matrix

Likelihood		Consequence and Value			
	Remarkable (5)	Major (4)	Moderate (3)	Minor (2)	Insignificant (1)
Certain (5)	25	20	15	10	5
Likely (4)	20	16	12	8	4
Possible (3)	15	12	9	6	3
Unlikely (2)	10	8	6	4	2
Rare (1)	5	4	3	2	1

Based on the related values in **Table 7.2** following positive impact categories are identified:

- Extremely Beneficial (score 20-25): Will add a lot of value to the local environment
- Highly Beneficial (score 10-19): Will have a large positive impact on the environment
- Medium (score 5-9): Will have a small positive impact
- Low (score 1-4): Will does not have any significant impact

Table 7.3: Environmental Screening Matrix (un-mitigated) of SECP Head Office Building Project

Project activity	Environmental and Social issues	Risk Assessment			Mitigation Measures for risks/Enhancement measures for positive impacts	Risk Assessment after taking Mitigation Measures		
		Likelihood	Consequence	Significance		likelihood	Consequence	Significance
Construction Phase Impacts								
Construction Works	Land Acquisition	2	3	6	The designated land of the proposed project already belongs to the proponent (Securities and Exchange Commission of Pakistan). Construction camps will be established on site.	2	2	4
	Visual Impact	2	3	6	Dust pollution shall be controlled with water sprinkling. Workers shall be provided with personal protective equipment to minimize the risks of adverse impacts of dust on workers and surrounding areas. These impacts would remain for only two years of the construction period.	2	2	4
	Soil Erosion and degradation	5	3	15	Minimal land clearing, levelling, and grading to reduce soil erosion. Construction of temporary reinforced walls to contain debris. Waste to be categorized and recycled.	3	2	6
	Air Quality Deterioration	5	3	15	Construction equipment to be well maintained to reduce exhaust emissions. Workers are to be provided with Personal Protective gear (e.g., masks). Water to be used for dust suppression.	3	2	8
	Loss of vegetation	5	3	15	Spiling of chemicals and other effluents on the soil shall be avoided. Tree plantation shall also be carried out.	3	2	6
	Damage to Wildlife	5	3	15	Measures to be taken to enhance natural vegetation and minimize impacts on the local bird population	3	2	6

Project activity	Environmental and Social issues	Risk Assessment			Mitigation Measures for risks/Enhancement measures for positive impacts	Risk Assessment after taking Mitigation Measures		
		Likelihood	Consequence	Significance		likelihood	Consequence	Significance
	Noise and Vibration	4	3	12	Barriers to be constructed in sensitive areas. Night-time activities shall not be held unless unavoidable.	3	2	6
	Quarrying Hazards	3	4	12	Exposed soils are to be stabilized with mulch and grass to prevent hazards.	3	2	6
	Safety Hazard, Public Health, and Nuisance	5	3	15	EHS officer shall also monitor the construction crew and ensure the use of PPEs.	3	2	6
	Gender Issues	3	3	9	Campsite for construction shall be decided in consultation with the nearby housing schemes. Strict code of conduct shall be maintained by the construction crew. Local norms shall be respected.	3	2	6
	Child Labour	2	2	4	The provisions of the Child Labour Act shall be made part of the construction contracts to ensure that no child labour is employed at the Project site or campsite	1	1	1
	Traffic Congestion	3	4	12	Construction material shall be transported in the nighttime to avoid traffic congestion during the day.	3	2	6
Waste Disposal	Surface (and Groundwater) quality	4	3	12	Wastewater shall be properly drained into CDA sewerage line.	3	2	6
	Solid Waste Disposal	4	4	16	Any solid waste generated during construction shall be recycled or disposed of at the nearest waste disposal site after consultation with nearby schemes.	2	3	6
	Waste Effluent Disposal	4	4	16	Waste effluent generated from the septic tank shall be properly drained into the nearest sewerage line on the site.	3	3	9

Project activity	Environmental and Social issues	Risk Assessment			Mitigation Measures for risks/Enhancement measures for positive impacts	Risk Assessment after taking Mitigation Measures		
		Likelihood	Consequence	Significance		likelihood	Consequence	Significance
Positive impact	Job opportunities	4	4	16	Training shall be arranged to hire a local crew for the Project.	5	4	20
Operational Phase Impacts								
Operation of the SECP Head Office Building	Air Quality	3	5	15	Vehicular Traffic will emit pollutants that will be reduced by scheduled testing of vehicles.	2	4	8
	Safety Hazard, Public Health & Nuisance	4	4	16	To ensure safe operations at SECP Head Office Building Project, Signboards will be placed at important locations.	3	3	9
	Noise	4	3	12	Dense canopy trees shall be planted to provide shade and absorb the generated noise.	3	3	9
	Wastewater	4	3	12	Wastewater shall be properly treated in a septic tank proposed in plan.	3	2	6
	Traffic congestion	3	3	9	Defensive and best driving practices shall be inculcated.	2	2	4
	Monitoring	5	3	15	Monthly/Quarterly monitoring reports shall be submitted to the Pak EPA after obtaining conditional environmental approval.	3	2	6
	Solid waste disposal	4	4	16	Solid waste shall be handed over to responsible authority for disposal.	3	3	9
Positive impact	Employment	4	4	16	The project will generate a large number of local jobs and provide various services to the local people.	5	4	20

Project activity	Environmental and Social issues	Risk Assessment			Mitigation Measures for risks/Enhancement measures for positive impacts	Risk Assessment after taking Mitigation Measures		
		Likelihood	Consequence	Significance		likelihood	Consequence	Significance
	Safety and Security	4	4	16	Smart building management measures shall be adopted to improve safety and security.	5	4	20
	Reduction of waste	4	4	16	Proper waste management practices shall reduce the amount of waste.	4	5	20
	Business opportunities	4	3	12	SECP Head Office Building project will give rise to small, medium to large scale businesses.	4	4	16

7.3 Community and Stakeholders' View

As discussed in chapter 6, a public consultation was held with the community and stakeholders regarding their comments and suggestion on the construction of SECP Head Office Building Project, Islamabad. The views of the stakeholders are listed below:

- Mitigation measures should be adopted to control dust and noise pollution that may arise during the construction phase of the proposed project, and the Environmental Management Plan should be strictly followed.
- People emphasized that proper mitigation measures should be implemented to control the solid waste pollution.
- People were supporting the idea of constructing SECP Head office building in mauve area.
- The project will create jobs for many people. Due to high inflation these days, construction industry will create many jobs. The need for any kind of developmental projects to cope with this situation is evident.

An attempt has been made to address the above issues as much as possible in the EIA of SECP Head Office Building Project.

7.4 Environmental Impact Characterization

Various aspects of the impact characterization include:

- Nature (direct/indirect)
- Duration of impact (short term, medium-term, long-term)
- Geographical extent (local, regional)
- Timing (project phase)
- Reversibility of impact (reversible/irreversible)
- Likelihood of the impact (certain, likely, unlikely)
- Impact consequence severity (severe, moderate, mild)
- Signification of impact (high, medium, low)

The above aspects of environmental characterization are defined in **Table 7.4**.

Table 7.4: Impact Characterization of SECP Head Office Building Project

Categories	Characteristics
Nature	Direct: The environmental parameter is directly changed by the project. Indirect: The environmental parameter changes as a result of a change in another parameter.
Duration of impact	Short-term: Lasting only for the duration of the project, such as noise from the construction activities. Medium-term: Lasting for a period of few months to a year the project before naturally reverting to the original condition such as loss of vegetation due to the clearing of the campsite, contamination of soil or water by fuels or oil. Long-term: Lasting for a period much greater than medium-term impact before naturally reverting to the original condition such as loss of soil due to soil erosion.
Geographical extent	Local, regional (spatial dimension)
Timing	Construction and operation

Categories	Characteristics
Reversibility of impact	Reversible: When a receptor resumes its pre-project condition. Irreversible: When a receptor does not or cannot resume its pre-project condition.
Likelihood of the impact	Almost Certain: Impact expected to occur under most circumstances Likely: Impact will probably occur under most circumstances Possibly: Impact may possibly occur at some time Unlikely: Impact could occur at some time Rare: Impact may occur but only under exceptional circumstances
Impact consequence severity	Major: When an activity causes irreversible damage to a unique environmental feature; causes a decline in abundance or change in distribution over more than one generation of an entire population of species of flora or fauna; has long-term effects (period of years) on socio-economic activities of significance or regional level. Moderate: When an activity causes long-term (period of years), reversible damage to a unique environmental feature; causes reversible damage or change in abundance or distribution over one generation of a population of flora or fauna; has short-term effects (period of months) on socioeconomic activities of significance on a regional level. Minor: When an activity causes short-term (period of few months) reversible damage to an environmental feature; sight reversible damage to a few species of flora or fauna within a population over a short period; has short-term (period of months) effects on socio-economic activities of local significance. Negligible: When no measurable damage to the physical, socio-economic, or biological environment above the existing level of public concern; and conformance with legislative of statutory requirements.
Significance of impact	Categorized as High, Medium, or Low Based on the consequence, likelihood, reversibility, geographical extent, and duration; the level of public concern; and conformance with legislative of statutory requirements.

Subsequent to the characterization, appropriate mitigation measures were identified, in order to minimize, if not completely eliminate, the adverse impacts associated with project activities. Finally, residual impacts were identified.

The impact characterization of the predicted impacts, mitigation measures and residual impacts are discussed below:

7.5 Pre-Construction/Design Phase Impacts

7.5.1 Shadow Analysis

Need for the Shadow Analysis: The proposed project would result in a new building reaching approximately 340 feet in height including rooftop in the Muave Area, Sector G - 11 which is dedicated to the construction of large/multi-story govt./semi govt. buildings. Shadow Studies illustrate the impact of development in terms of sun and daylight access to the surrounding context including surrounding buildings, the public realm, public and private open space.

Shadow Studies may be required in support of development applications to demonstrate that the location and height of a proposed building if greater than 10.7m,[6] will not cause undue shade on the subject lands, and on surrounding context including building facades, private and public outdoor amenity and open spaces, public parkland, sidewalks and other

[6] Standards for shadow studies

components of the public realm. The proposed building is planned to be 24 stories above ground level.

Therefore, it's intended to examine whether the proposed building would cast shadows on any publicly accessible sunlight-sensitive resources and assesses the potential effects of any such shadows.

Sun Light Sensitive Resources: Sunlight-sensitive resources are those resources that depend on sunlight or for which direct sunlight is necessary to maintain the resource's usability or architectural integrity. Following are the general classes of the shadow sensitive areas:

- Public open space (e.g. parks, beaches, playgrounds, plazas, schoolyards, greenways, landscaped medians with seating).
- Features of architectural resources that depend on sunlight for their enjoyment by the public. Only the sunlight-sensitive features need be considered, as opposed to the entire resource. Such sunlight-sensitive features might include: design elements that depend on the contrast between light and dark (e.g. recessed balconies, arcades, deep window reveals); elaborate, highly carved ornamentation; stained glass windows; historic landscapes and scenic landmarks; and features for which the effect of direct sunlight is described as playing a significant role in the structure's importance as a historic landmark.
- Natural resources where the introduction of shadows could alter the resource's condition or microclimate. Such resources could include surface water bodies, wetlands, or designated resources such as coastal fish and wildlife habitats. There is no such resource located within the proximity of the buildings leading to adverse impacts of the shadow on these resources.

Non-Sunlight-Sensitive Resources: Non-sunlight-sensitive resources include:

- Sector streets and sidewalks (except green belts located around side the roads as well as buildings);
- Private open space (e.g. front and back yards, stoops, vacant lots, and any private, non- publicly accessible open space);
- Project-generated open space cannot experience a significant adverse shadow impact from the project because without the project the open space would not exist.

Significant Adverse Shadow Impact: Any building puts adverse shadow impacts on its surroundings when its shadow falls on sunlight sensitive resources and reduces/ eliminates the provision of direct sunlight, thereby significantly changing the public use of the resources or threatening the flora or other resources. For the proposed development each case will be thoroughly investigated based on the extent of the incremental shadow and the analysis of the resource sensitivity.

Shadow impacts from proposed developments should not exceed one hour in duration on the roofs, front, rear and exterior side walls of adjacent low rise (one to four stories) residential buildings including townhouses, detached and semi-detached dwellings. The line of impact assessment shall be a line at grade, 3m from the front, rear and exterior side wall of the adjacent low rise residential building. This criterion is met if there is shadow impact for no more than two consecutive hourly test times in the "No Impact Zone," i.e. the space between the front, rear and exterior side walls of the adjacent low-rise residential buildings and the respective lines of impact assessment.

Figure 7.1: Sun angle for Summer Solstice, 21st June 2024

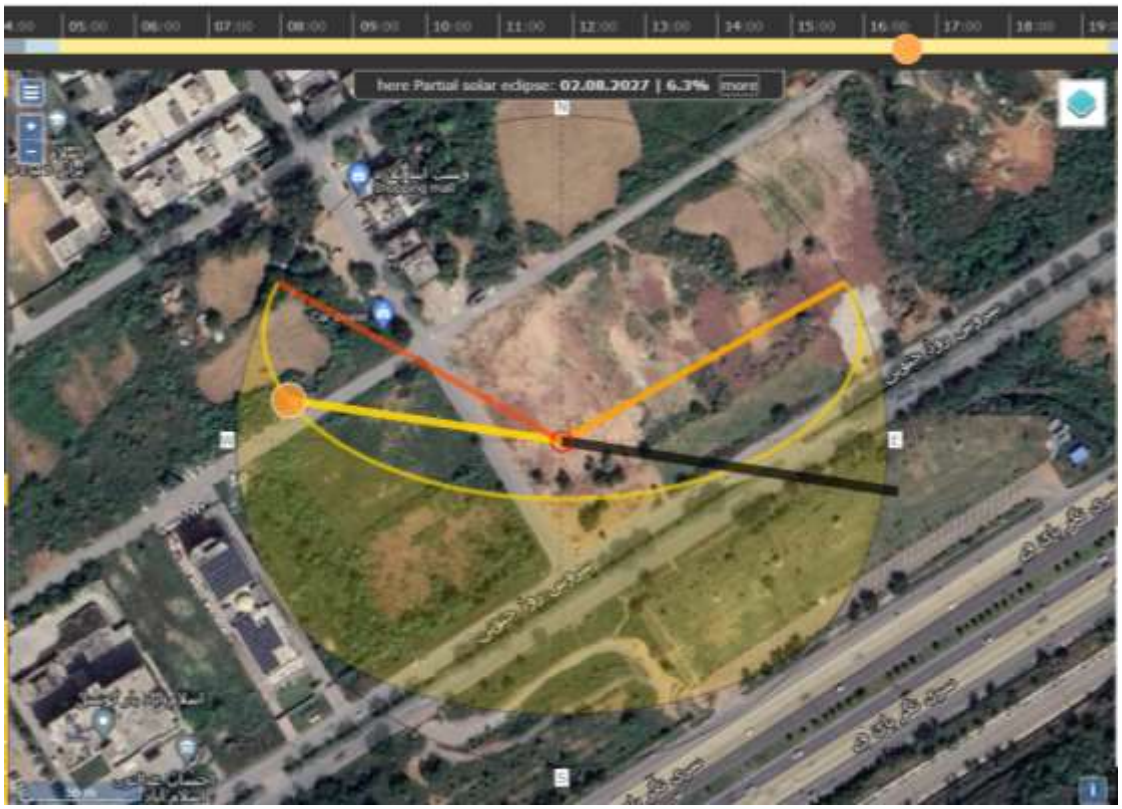


Figure 7.2: Sun angle for Winter Solstice, 21st December 2024

Shadow Length

Using sun angle, a degree from the north and altitude, the SLF is calculated and is as follows:

Table 7.5: Liner Shadow length-June 21, 2024

Time	Azimuth	Altitude	Shadow Length (m)
5:45	67.06°	8.04°	708.36
6:00	68.94°	10.90°	519.2
6:15	70.79°	13.81°	406.67
6:30	72.60°	16.77°	331.93
6:45	74.39°	19.75°	278.53
7:00	76.16°	22.76°	238.35
7:15	77.92°	25.80°	206.89
7:30	79.69°	28.85°	181.49
7:45	81.47°	31.93°	160.47
8:00	83.27°	35.02°	142.71
8:15	85.11°	38.12°	127.44
8:30	87.02°	41.23°	114.1
8:45	88.99°	44.35°	102.3
9:00	91.07°	47.47°	91.74
9:15	93.29°	50.59°	82.18
9:30	95.68°	53.69°	73.47
9:45	98.31°	56.79°	65.46
10:00	101.25°	59.87°	58.05
10:15	104.61°	62.91°	51.16
10:30	108.54°	65.90°	44.74
10:45	113.29°	68.81°	38.77
11:00	119.21°	71.61°	33.24
11:15	126.82°	74.23°	28.24
11:30	136.90°	76.56°	23.9
11:45	150.32°	78.42°	20.49
12:00	167.39°	79.56°	18.43
12:15	186.58°	79.72°	18.14
12:30	204.61°	78.87°	19.67
12:45	219.22°	77.21°	22.69
13:00	230.28°	75.01°	26.77
13:15	238.58°	72.47°	31.59
13:30	244.97°	69.72°	36.95
13:45	250.04°	66.83°	42.79
14:00	254.21°	63.87°	49.06
14:15	257.73°	60.84°	55.8
14:30	260.79°	57.77°	63.04

14:45	263.51°	54.68°	70.85
15:00	265.97°	51.58°	79.32
15:15	268.23°	48.46°	88.59
15:30	270.35°	45.34°	98.81
15:45	272.36°	42.23°	110.19
16:00	274.29°	39.11°	123
16:15	276.15°	36.01°	137.61
16:30	277.96°	32.91°	154.5
16:45	279.75°	29.83°	174.38
17:00	281.52°	26.77°	198.23
17:15	283.28°	23.73°	227.53
17:30	285.05°	20.71°	264.56
17:45	286.83°	17.71°	313.1
18:00	288.63°	14.75°	379.8
18:15	290.46°	11.83°	477.63
18:30	292.34°	8.94°	635.5

Figure 7.3: Shadow length over different times of day for June 21

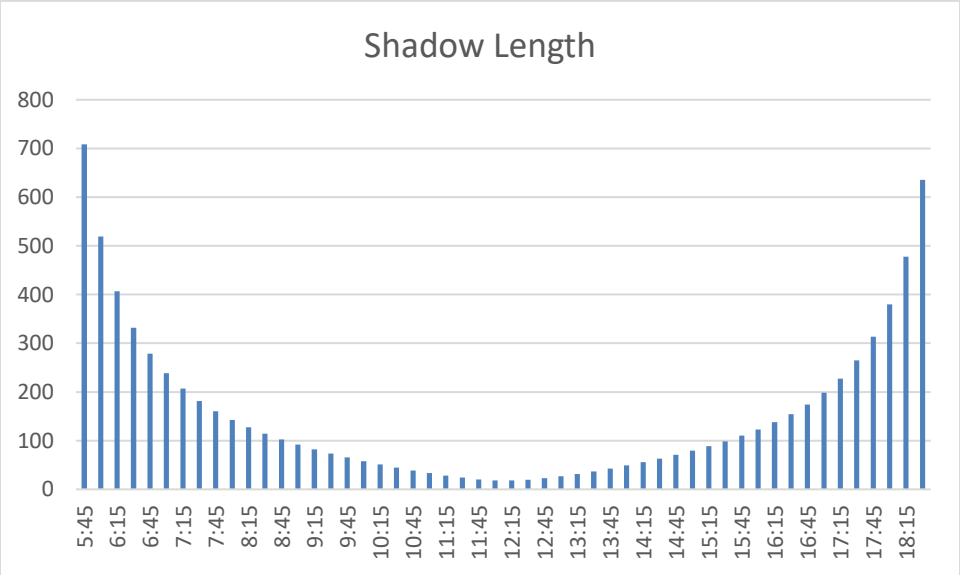
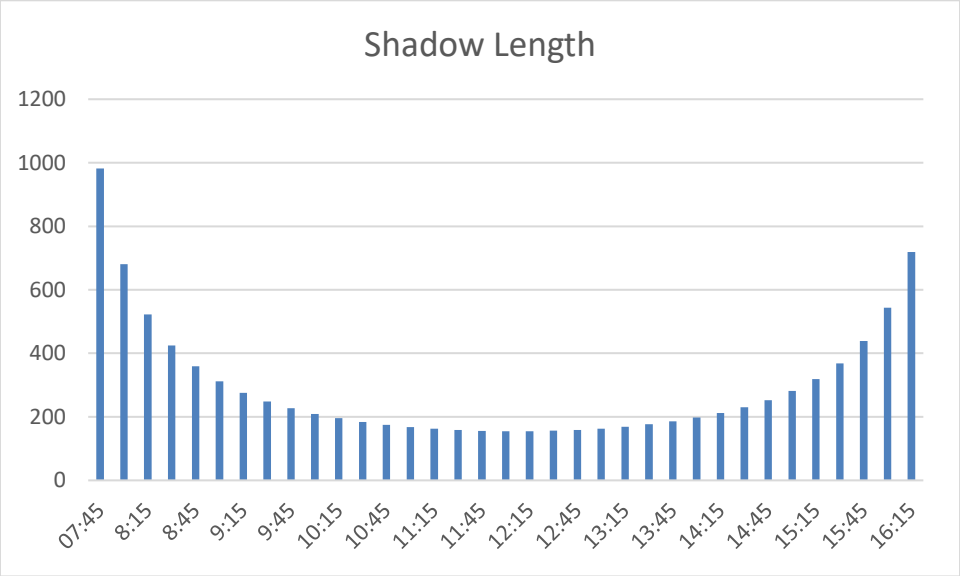


Table 7.6: Liner Shadow length-December 21

Time	Azimuth	Altitude	Shadow Length
07:45	123.12°	5.82°	981.76
8:00	125.41°	8.36°	680.88
8:15	127.80°	10.84°	522.38
8:30	130.30°	13.25°	424.83

8:45	132.91°	15.57°	358.92
9:00	135.64°	17.80°	311.55
9:15	138.49°	19.92°	276.02
9:30	141.48°	21.92°	248.54
9:45	144.61°	23.79°	226.84
10:00	147.88°	25.52°	209.46
10:15	151.29°	27.10°	195.43
10:30	154.83°	28.51°	184.1
10:45	158.50°	29.75°	175
11:00	162.30°	30.79°	167.81
11:15	166.19°	31.64°	162.31
11:30	170.17°	32.28°	158.33
11:45	174.22°	32.70°	155.77
12:00	178.30°	32.90°	154.56
12:15	182.40°	32.88°	154.67
12:30	186.48°	32.64°	156.11
12:45	190.51°	32.18°	158.91
13:00	194.48°	31.51°	163.14
13:15	198.36°	30.63°	168.92
13:30	202.13°	29.55°	176.41
13:45	205.79°	28.28°	185.87
14:00	209.31°	26.84°	197.63
14:15	212.69°	25.23°	212.18
14:30	215.93°	23.48°	230.22
14:45	219.04°	21.58°	252.79
15:00	222.00°	19.56°	281.45
15:15	224.84°	17.42°	318.68
15:30	227.55°	15.18°	368.64
15:45	230.13°	12.84°	438.77
16:00	232.61°	10.42°	543.94
16:15	234.98°	7.92°	718.45

Figure 7.4: Shadow length over different times of day for December 21



Assessment Findings and Mitigation Measures for Shadow

Assessment Findings: Shadows are resulting from SECP Head Office Building Project to be considered because of its height. The project is 24 story above the ground level including ground floor so, the sun rises during the morning will cast low shadows on the west, but with time, the shadow of the proposed building would increase and will fall on the buildings towards northwest and east.
Following inferences might be drawn from the Shadow Analysis.

- In June, at 5:45 "O" Clock in the morning, the shadow of the proposed building will be in a **South-East** direction extending to **708.36 m** long. However, on performing screening assessment, it was found that there is no light-sensitive area. Beside this, it's early morning and sunlight is not required.
- The Building will see caste longest shadows in December in **North-East** side. The shadow length will be **981.76 m** at 07:45 hr and will fall on the Street 8 and Open Area near Street 1 for half an hour. However, No light-sensitive body has been found on screening assessment under the range of the building shadow.

7.6 Construction Phase Impacts

The construction phase will be the most significant part of the project with respect to environmental considerations since most of the impacts are likely to take place during this period.

Various construction activities will invariably create environmental disturbances, which may have impacts on the physical, biological and social environment of the area and nearby communities. Such impacts include the following:

Physical Environment

- Soil erosion and degradation
- Air quality deterioration
- Water Quality (Surface and groundwater)

Biological Environment

- Loss of Vegetation
- Damage to wildlife

Social Environment

- Traffic congestion
- Noise and vibration
- Safety hazards, Public health and nuisance issues
- Sites of Archeological or Historical Significance

These impacts and their respective mitigation measures are discussed hereunder:

7.6.1 Soil Degradation and Contamination

The soil-related issues include soil erosion, slope stability, and soil contamination. These may be caused by land clearing, levelling and grading, excavation and filling, construction activities and maintenance of equipment/vehicles.

The soil may be contaminated as a result of improper handling of fuel, oil, chemical and a solid waste or untreated wastewater from the campsite. Extraction of stone or gravel from the project area may potentially lead to soil erosion.

This contaminated soil may adversely affect the natural vegetation in the area.

Nature:	Direct
Duration:	Long term
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Certain
Consequence:	Moderate
Significance of Impact:	Moderate

Mitigation Measures

The followings mitigation measures will minimize soil erosion and contamination:

- Good management of topsoil should be done to prevent the loss of soil fertility.
- Construction activities carried out in a manner to minimize soil erosion.
- Land clearing, levelling and grading be minimized.
- Provision of such vegetation native species of trees which help in reducing the erosion.
- Excavated slopes will not be left untreated/unattended for long durations. Appropriate slope stabilization measures will be taken as per the design (i.e. Stone pitching).
- Temporary measures, such as the construction of temporary walls reinforced with brick lining bordering the construction areas to contain debris and soil, will also be undertaken to avoid soil erosion and water contamination.
- The stone and gravel will not be extracted from the project area.
- Vehicles and equipment will not be repaired in the project site. If unavoidable, impervious sheathing will be used to avoid any soil contamination.
- For the domestic sewage from the campsite, septic tanks with soaking pits will be constructed having adequate capacity. Waste oils (if any) will be collected in drums and sold to the recycling contractor.
- The recyclable waste from the project site (such as cardboard, drums, broken/used parts, etc.) will be used as appropriate or to be sold to recycling contractor.

- The hazardous waste should be kept separate and handled according to the nature of the waste. While storing, hazardous waste will be marked.
- Domestic solid waste will be disposed of in a manner that does not cause soil contamination/water contamination.
- The campsites will be completely restored after the completion of the construction works. All temporary structures will be demolished, the land levelled and re-contoured to the original condition or better. All debris and any other material will be removed from the site.

Residual Impacts

Appropriate construction practices and management actions as listed above will greatly minimize the soil erosion and contamination. The significance of the residual impacts is therefore expected to be 'low'.

Figure 7.5: Preventive Measures to prevent Soil Erosion/Degradation

7.6.2 Air Quality Deterioration

The Construction machinery and project vehicles will release exhaust emissions, containing Carbon Monoxide (CO), Oxides of Sulfur (SOx), Oxides of Nitrogen (NO_x) and Particulate Matter (PM).

Impacts of air emissions may be carried over long distances depending upon the wind speed, direction, temperature of the surrounding air and atmospheric stability.

These emissions can deteriorate the ambient air quality in the immediate vicinity of the project site. Furthermore, construction activities such as excavation, land levelling, filling and vehicular movement on unpaved tracks may also cause fugitive dust emissions.

The unmitigated impacts related to air quality deterioration are characterized below:

Nature:	Direct
Duration:	Temporary
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Certain
Consequence:	Moderate
Significance of Impact:	High Negative

Mitigation Measures

- Construction machinery and vehicles will be kept in good working condition and properly tuned, in order to minimize the exhaust emissions.
- Fugitive dust emissions will be minimized by sprinkling water on the soil, where required and appropriate.
- Vehicular traffic on unpaved track will be avoided as far as the possible and unpaved road will be sprinkled with water.

- To minimize the occupational health hazard, proper personal protective gears, i.e. masks, shall be provided to the workers who are engaged in dust generation activity.

Figure 7.6: Water Sprinkling to reduce Dust Generation

Figure 7.7: Masks for Safety of Workers working in dusty environment

Residual Impacts

The above measures will reduce the magnitude of the adverse impacts on ambient air quality. The significance of the residual impacts on air quality is expected to be low.

7.6.3 Noise and Vibration

Due to the movement of heavy vehicles, there would be excessive noise and vibration. Other construction activities which may result in intermittent noise and vibration include:

- Piling – boring steel and concrete support structures below ground to support retaining walls and deep excavations, such as the tunnel shaft
- Vibratory rolling – used to compact fill material in order to reach required compaction levels, used during the installation of piling pads and during road reinstatement as required
- The use of air compressors, concrete plants, generators and light towers.

The unmitigated impacts related to the noise and vibration caused by the project are characterized below:

Nature:	Direct
Duration:	Temporary
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Certain
Consequence:	Moderate

Significance of Impact: Moderate negative

Measures and Mitigation

- To mitigate these impacts noise barriers should be constructed in sensitive areas.
- Construction equipment and vehicles will have exhaust mufflers (silencers) to minimize noise generation.
- Nighttime traffic and construction activities will be avoided. The local population will be taken in confidence if such work is unavoidable.
- Construction machinery will be kept in good condition to reduce noise generation.
- All generators and heavy-duty equipment will be installed and placed enclosures to minimize ambient noise levels.

Figure 7.8: Noise Preventing Measures

Residual Impact

Despite the above mitigation measures, there will be some residual impacts of the project on the noise and vibration of the area. The significance of these residual impacts is expected to be low.

7.6.4 Surface Water and Groundwater Contamination

The project activities that can contaminate soil may also contaminate the surface water and groundwater. These include:

- Solid waste disposal
- Sewerage disposal
- Equipment/ vehicles maintenance
- Spillage/ leakage of fuels, oils and chemicals
- Campsite sanitation facilities

The quality of water may deteriorate in the area. During the deep excavation for the foundation of buildings, the aquifer may be hit, and quality of water will be depleted. Because of the preparation of material on-site, the leachate may be produced and percolate through the soil and reach the water table and contaminate it that may be consumed by the local people.

Following are the most susceptible locations for contamination of water during construction:

- Waterlogged areas that have water in them during the period of construction;
- Surface and groundwater resources close to construction material storage yard, concrete mixer plants and maintenance sites of construction vehicles; and

The unmitigated impacts of the proposed construction activities on the water quality of the area characterized below:

Nature:	Direct and indirect
Duration:	Short-term impact
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Certain
Consequence:	Moderate
Significance of Impact:	Moderate negative

Mitigation Measures

- Protection of the groundwater reserves from any contamination.
- Water required for construction should be obtained in such a manner that water availability to the local community remains unaffected.
- Prohibit the washing of vehicles and machinery at the project site.
- Concrete should be brought in concrete movers and used.
- Rainwater harvesting shall be practised for the collection of stormwater from the roofs and pavements for possible horticultural use.
- The mitigation measures recommended forestalling soil contamination will also prevent surface and groundwater contamination.
- Fecal Coliforms Bacteria and E.Coli values if exceed the reference values then do chlorination.

Residual Impacts

If the recommended mitigation measures are effectively employed, the residual impacts of the project activities on the water quality of the area will be negligible.

7.6.5 Loss of Vegetation

The project site has limited vegetation cover. The project site preparation and construction activities may necessitate the removal of the shrubs. There are no trees at the project site.

Damage and/or loss of vegetation and clearing of other indigenous species, as well as undergrowth species, comprising of bushes, grass, etc. will also be lost.

The construction crew can also indulge in tree/shrub cutting to obtain fuelwood for the camp from the project area.

The unmitigated impacts of the proposed activities on the loss of vegetation of the area are characterized below.

Nature:	Direct
Duration:	Long Term
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Certain
Consequence:	Moderate
Significance of Impact:	Significant Impact

Mitigation Measures

- Endeavors will be made to compensate for the loss by enhancing the environment, through a plantation of trees.
- Indigenous species should be preferred, and invasive should be avoided. Flowering and fruiting shrubs can be planted to beautify the landscape.
- All preventive measures will be adopted to control the spill-over of chemicals and other effluents on the ground to protect soil fauna and ensure microbial activity in accordance with NEQS.
- The construction workforce will be provided with LPG as cooking and heating (if required) fuel. The burning of fuelwood will be strictly prohibited.
- A plantation plan for SECP Head Office Building Project has been prepared, which has a mix of appropriate trees /bushes which will be raised within the available open spaces particularly along its boundary.
- All preventive measures will be adopted to control the spill-over of chemicals and other effluents on the ground to protect soil fauna and ensure microbial activity.

Residual Impact

At present, there are no trees at the project site only some wild shrubs. The trees and plants planted under the plantation plan will take some time to grow and mature.

This impact cannot be fully mitigated, and the residual impact would be medium; at least in the short term.

7.6.6 Damage to Wildlife

The project site is located in a commercial area of Islamabad, which provides less and minor habitat for wildlife. The loss of natural vegetation discussed above and other project activities will potentially have adverse impacts on the faunal resources and habitats of the area as well. Smoke, chemicals, dust particles, and noise generated by heavy machinery are a scaring factor for wildlife. Rodents, hedgehogs, porcupines would lose their abode. Similarly, natural population of wild boar, also considered a pest, is maximum due to lack of predators in the project area.

The unmitigated impacts of the proposed activities on the faunal resources of the area are characterized below:

Nature:	Direct
Duration:	Medium to long-term
Geo extent:	Local
Reversibility:	Irreversible (reversible in medium to long-term)
Likelihood:	Certain

Consequence: Severe

Impact significance: High

Mitigation Measures

- The measures to prevent soil and water contamination will forestall any adverse impact on the faunal resources of the area.
- Special measures will be adopted to minimize impacts on birds, such as avoiding noise-generating activities.
- Solid waste from the contractor's camp and construction waste will not be left in the open and be disposed of properly.
- The measures to restore natural vegetation loss in the area will benefit the area's fauna as well.
- The project staff will not be allowed to indulge in any hunting or trapping activities.
- Illumination levels at the site will be minimized, as far as possible.
- Appropriate diffusers should be used to restrict the illumination within the project site.
- Blasting should not be undertaken at the site for excavation purposes.
- Porcupine population has increased, as it is not palatable because of its quills. Destruction of habitat and consequent check on the population of this pest may prove to be boon to maintain ecological balance.
- Developmental activities and establishment of the project site would be a positive step to keep down the number of this undesirable species at the desirable level from the human point of view.

Residual Impact

Despite the above mitigation measures, there will be some residual impacts of the project on the faunal resources of the area. The significance of these residual impacts is expected to be medium.

7.6.7 Disposal of Construction Waste/Excavated Material

Dumping of construction wastes/excavated material, in the surrounding area, may limit the use of land in the project area. The solid waste may be generated due to different construction activities, and it will mainly include surplus excavated and construction material. It may also be generated from the construction camp.

The indiscriminate disposal of solid waste may cause dust emissions due to the wind blowing thereby affecting the health of the workers working or passing in the immediate vicinity of solid waste heaps. The impacts of solid waste would be temporary and minor negative in nature.

The unmitigated impacts of the proposed activities area are characterized below:

Nature: Direct

Duration: Medium to long-term

Geo extent: Local

Reversibility: Irreversible (reversible in medium to long-term)

Likelihood: Certain

Consequence: Severe

Impact significance: Moderate

Mitigation Measures

- Management of construction activities will be done in a way to ensure minimal degradation to the soil around the project site
- Dumping of excavated waste and waste generated from the construction camp will be done at a designated site approved by CDA.
- The contractors will be bound by contractual obligations to take care of the waste generated from the construction activities.

7.6.8 Traffic Management

During the construction phase, the movement of heavy machinery and transportation of construction material and equipment may cause traffic problems. As a result, the daily activities of the people of nearby localities as well as the traffic on Service Road South may be disturbed, which will require proper mitigation measures. This impact is temporary and minor negative in nature.

Mitigation Measures

- A traffic management plan has been prepared to avoid traffic jams/public inconvenience.
- Movement of vehicles carrying construction materials will be restricted during the night time to reduce traffic load and inconvenience to the local residents.
- The management is required to maintain liaison between the Traffic Police, local residents/ travellers and the contractor to facilitate traffic movement during the construction stage.

7.6.9 Safety Hazards, Public Health and Nuisance

The project may pose some safety hazards to the people and pose a varying degree of a safety hazard.

The public health issues related to the project location are the possibility of contamination of local drinking water resources and dust emissions during the construction phase. The anticipated health impacts are classified into the following categories:

Dust and Pollen Allergy: One of the main problem people are facing here is of dust and pollen allergy.

Eye and Respiratory Diseases: Construction workers may be susceptible to eye and respiratory diseases due to their routine exposure to dust and exhaust emissions on site. These effects could possibly be mitigated by routine health screening and training of contractor's employees.

Physical Injuries: Injuries could happen primarily by occupational-related accidents, animal bites, etc. Activities such as land clearing, earthworks, and construction of facilities present various occupational hazards to the workers on site. These risks can be mitigated through the provision of appropriate training and emergency response procedures.

Psychological Disorders: Some workers may suffer from depression and anxiety disorders due to working and accommodation conditions, and their relationship with fellow workers. The psychological wellbeing of some members of the community may be affected due to disturbances created by the project activities. Mitigation measures for workers include the devotion to standards regarding working conditions.

Excessive illumination at the construction site may potentially cause light pollution, creating a public nuisance.

The unmitigated impacts related to the safety hazards; public health and nuisance are characterized as follows:

Nature: Direct and indirect

Duration:	Short to medium term
Geo extent:	Local
Reversibility:	Reversible
Likelihood:	Likely
Consequence:	Major
Impact significance:	High.

Mitigation Measures

- Protected fencing will be fixed around the construction site. Unauthorized access within the construction area will not be allowed.
- The local community will be educated regarding the safety hazards at the site.
- The mitigation measures discussed under air quality deterioration, soil and water contamination will address the public health concerns as well.
- Defensive driving practices will be inculcated in the project drivers through training, posters and other similar measures.
- Vehicle speeds of 5 km/hr at the project site will be implemented.
- Appropriate light diffusers and reflectors will be used, if required, to minimize the public nuisance caused by light pollution.
- A traffic management plan will be prepared and implemented during the construction phase to control the accidents.
- The contractor will ensure better working conditions for its employees.
- Regular routine health screening of the staff should be carried out.
- Firefighting equipment will be made available at the camp.
- The camp staff will be provided firefighting training.
- The construction camps and site offices will have first-aid kits.
- The construction crew will be provided with awareness of the transmissible diseases (such as HIV/AIDS, hepatitis B and C).
- All safety precautions will be taken to transport, handle and store hazardous substances such as fuel.
- Road signage will be fixed at appropriate locations to reduce safety hazard associated with project-related vehicular traffic.

Figure 7.9: Typical First Aid Kit for Construction Site

Residual Impacts

There will be a moderate level of residual impact of safety hazard associated with the vehicular traffic and construction activities.

The residual public health and nuisance issues will be quite negligible after the effective implementation of the mitigation measures.

7.6.10 Sites of Archaeological or Historical Significance

There are no reported sites of archaeological or historical significance at the land acquired for the project. However, in case an artifact of such significance is found during the construction activities, the Archaeology Department, Government of Pakistan will be informed.

7.6.11 Impacts Associated with Carbon Footprints

The carbon footprint represents the total amount of greenhouse gas emissions, primarily carbon dioxide (CO_2), generated throughout its life cycle of the project.This assessment considers factors such as embodied carbon in materials, construction-related emissions, and day-to-day energy consumption.

Embodied Carbon in Materials: The production, transportation, and construction of materials contribute to carbon emissions. The material transportation stage is very important, which is a major contributor to carbon emission by vehicle emission. If the transporting distance is long, the emissions will be higher.

Construction Emissions: The energy use during construction activities, machinery operation, and transportation of materials results in carbon emissions. Heavy machinery, transportation of construction materials from long distances, and on-site energy consumption contribute to emissions during this phase.

Construction Waste and Site Preparation: Improper disposal of construction waste contributes to greenhouse gas emissions, particularly if organic waste decomposes in landfills. Clearing the land and preparing the construction site can release stored carbon from the soil and vegetation.

Nature:	Direct
Duration:	Short Term
Geo extent:	Local

Reversibility: Reversible

Likelihood: Probable

Consequence: Significant

Impact Significance: High

Mitigation Measures:

Material Selection:It will be preferred to opt for low-carbon materials which involves selecting products with lower embodied carbon, which will reduce the environmental impact. For example; Choosing sustainably sourced timber, recycled steel, and low-carbon concrete can minimize the carbon footprint associated with material use.

Recycled Content: Using materials with recycled content decreases the demand for virgin resources, lowering overall embodied carbon.Such materials which have recycled content will be preffered.For example; Incorporating recycled steel, glass, or concrete reduces the environmental impact by reusing materials instead of relying solely on newly extracted resources.

Energy-Efficient Equipment: Energy-efficient machinery will be selected which reduces energy consumption during construction, minimizing emissions.For example;employing construction equipment with advanced fuel efficiency, emission controls, and low energy consumption helps mitigate the environmental impact.

On-site Renewable Energy: Renewable energy sources during construction will be Incorporated which helps offset emissions generated on-site.Temporary solar panels on site offices will be installed or other renewable sources which will contribute to a cleaner construction phase.

Construction Waste and Site Preparation: A comprehensive waste management plan will be implemented to recycle and reuse materials.Waste generation will be minimized through careful planning and design. Contractors will be encouraged to use salvaged or recycled materials.It will be preffered to adopt sustainable site development practices, such as preserving existing vegetation where possible. Erosion control measures will be implemented to maintain soil stability.

Residual Impacts

The residual impacts associated with carbon footprints may be minimized by effectively implementing the proposed mitigation measures.

7.7 Operational Phase Impacts

The operation of SECP Head Office Building Project will interact with different components of the environment. This interaction may result in the following adverse impacts:

- Solid Waste Management
- Surface and Ground Water Contamination
- Traffic Congestion and Parking Issues

However, the magnitude of some of the above impacts is likely to be lower as compared to the construction phase impacts.

The potential environmental impacts of the proposed project during the operational phase are characterized in **Table 7.3** and discussed below:

7.7.1 Solid Waste Management

The Solid waste generated during operational activities will be safely collected and disposed at an approved waste disposal site in Islamabad. The management will prepare a solid waste

management plan which details municipal waste collection and disposal as well as promotes recycling. The hazardous waste will be collected in a separate vehicle and transported to the designated dumping site in Islamabad in consultation with CDA.

The unmitigated impacts related to the solid waste management caused by the project are characterized as follows:

Nature:	Direct to indirect
Duration:	Medium-term
Geo extent:	Local
Reversibility:	Reversible
Likelihood:	Certain
Consequence:	Moderate
Impact significance:	Medium

Mitigation Measures

Solid Waste Management will also be an important issue during the operational phase of SECP Head Office Building Project.

- Solid waste segregation facility shall be established that should separate the recyclable and non-recyclable waste. Recyclable waste should be sold to vendors.
- All the solid waste from the building will be collected at one location and will be transported by the contractor for disposal at the designed dumping site at Islamabad.

Residual Impact

The residual impacts of the implementation of the above measures will be low if solid waste is collected and disposed of properly.

7.7.2 Contamination of Surface and Groundwater

The nature of the impact of the project's operation activities on the surface and groundwater quality is expected to be quite similar to those predicted for the construction phase, except that the magnitude is likely to be lesser. During operational phase, water supply will be provided through CDA water connection instead of groundwater.

The unmitigated impacts on the surface and groundwater resources of the area are characterized below:

Nature:	Direct
Duration:	Short-term
Geo extent:	Local
Reversibility:	Reversible
Likelihood:	Likely
Consequence:	Major
Impact significance:	High

Mitigation Measures

The mitigation measures against soil contamination discussed above for the operation activities will forestall any possible water contamination as well. Moreover, groundwater should not be used for any purpose. All water requirements should be made through CDA water connection and water tankers (if needed). Rain water harvesting is also proposed in design of SECP Head office building project.

Residual Impact

After the effective implementation of the above measures, the residual impacts of the operation of the SECP Head Office Building Project on the water resources of the area will be negligible.

7.7.3 Traffic Management

During the operational phase of the SECP Head Office Building Project, the movement of vehicles may increase traffic congestion at Service Road South and Street No. 8.

The characterization of the unmitigated impacts associated with vehicular traffic is as follows:

Nature:	Direct
Duration:	Short Term
Geo extent:	Local
Reversibility:	Reversible
Likelihood	Certain
Consequence	Mild
Significance of Impact:	Medium

Mitigation Measures

- A traffic management plan will be prepared to avoid traffic jams/public inconvenience at Service Road South and Street No. 8.
- It is highly recommended to promote carpooling and public transport for SECP workers so that less traffic congestion issues take place.
- Parking facilities are provided in the 4 basements of the SECP head office building which will be enough for the parking requirements. In case, if more parking is required, there is parking facility near the Islamabad Bar council, which can also be used by visitors to SECP Head Office.
- Securities and Exchange Commission of Pakistan will keep a liaison between the Islamabad Traffic Police to facilitate traffic movement during rush hours.

Residual Impacts

The implementation of the mitigation measures, the impact of SECP Head Office Building Project operation on the traffic congestion will be greatly reduced and residual impacts are expected to be low to medium.

7.7.4 Carbon Footprints

Energy Consumption:The building's day-to-day energy use for heating, cooling, lighting, and appliances contributes to operational carbon emissions. Energy consumption from HVAC systems, lighting, and electronic devices during the building's operational life is a key source of carbon emissions.

Nature:	Indirect
Duration:	Long Term
Geo extent:	Global
Reversibility:	Partially Reversible
Likelihood:	Probable
Consequence:	Moderate to Severe
Significance of Impact:	High

Mitigation Measures

Energy Efficiency: The Designing of the building will be done with energy-efficient systems and appliances which reduces overall energy demands such as by Implementing LED lighting, energy-efficient HVAC systems, and smart building controls can significantly improve energy efficiency.

Renewable Energy Integration: Installing renewable energy sources on-site helps offset operational energy consumption such as, Rooftop solar panels or other renewable energy installations can generate clean energy, reducing the building's reliance on traditional power sources.

Green Design: Sustainable and green building design principles will be implemented which focuses on minimizing energy needs and promoting environmentally friendly construction practices.

Figure 7.10: Solar Rooftop for Renewable Energy Integration

Residual Impacts

By the implementation of the mitigation measures, the Carbon footprint impacts of SECP Head Office Building Project during operational phase can be minimized.

7.8 Positive Impacts

The positive impacts of the SECP Head Office Building Project are as follows:

7.8.1 Centralized Office Facility

The SECP Head Office Building Project is a office building that will provide centralized office facility for SECP workers. The building will occupy a low land footprint with vertical expansion.

The multi-dimensional impact of the proposed project will be to

- Provide sustainable development
- Provide more space while covering less land.
- Enhance economic activities and contribute to the promotion of skill applications and improved business practices.

7.8.2 Business Opportunity

With the startup of operation of SECP Head Office Building Project business opportunities in the area will be enhanced, thus, boosting up the local economy.

7.8.3 Employment

The construction and operation of SECP Head Office Building Project will improve the employment opportunities in the project area. It is anticipated that the local community will get direct or indirect employment due to the project. Employment will have a positive impact on the local economy.

7.9 Summary of Impacts and their Mitigation Measures

The impacts, mitigation measures have been developed to minimize the likelihood, extent or duration of their occurrence and any associated adverse effects. **Table 7.7** summarizes potential impacts and proposed avoidance and mitigation measures associated with construction camps.

Table 7.7: Summary of Impacts and Mitigation Measures

Impact	Mitigation Measures
Construction Phase Impacts	
Air Quality Deterioration	The project site should be monitored throughout to keep a record of air quality and any change in it. Vehicular traffic on unpaved track will be avoided as far as possible, and the track will be sprinkled with water to control dust. Operation of vehicles and machinery close to the water channel will be avoided.
Surface Water and Groundwater Contamination	Protection of the groundwater reserves from any contamination. Excavation should be done in the supervision of the site engineer so he can decide up to which limit excavation should be done. Prohibit the washing of vehicles and machinery in the project area.
Damage to Faunal Resources	Provision of such vegetation native species of trees which help in making similar old habitat. The measures to restore natural vegetation loss in the area will benefit the area's fauna as well.
Noise and Vibration	To mitigate these impacts noise barriers should be constructed in sensitive areas. Construction equipment and vehicles will have exhaust mufflers (silencers) to minimize noise generation.
Safety Hazards, Public Health and Nuisance	There should be proper check and balance on construction activities. There should be proper control on oil spillage and leakage of vehicles. Firefighting equipment will be made available at the camps. The camp staff will be provided for firefighting training.
Sites of Archaeological or Historical Significance	There are no reported sites of archaeological or historical significance at the land acquired for the project. However, in case an artifact of such significance is found during the construction activities, the Archaeology Department, Government of Pakistan will be informed.

Impact	**Mitigation Measures**
Carbon Footprints	In sustainable construction, low-carbon materials like recycled steel and sustainably sourced timber will be prioritized. The implementation of recycled content and the use of energy-efficient machinery will minimize environmental impact. On-site renewable energy sources and a comprehensive waste management plan will further contribute to a cleaner construction phase.
Operational Phase	
Damage to Flora and Fauna	Most of the mitigation measures for protecting the biological resources during the construction phase would be applicable during the operation as well. Proper maintenance of the plants grown will reduce the impact due to project operation.
Soil Contamination	The solid waste generated by the residents of SECP Head Office Building Project shall be collected through garbage chutes. The collected solid waste will be transported to the CDA designated disposal site.
Contamination of Surface and Ground Water	The mitigation measures against soil contamination discussed above for the operation activities will forestall any possible water contamination as well.
Solid Waste Management	Solid Waste Management will also be an important issue during the operational phase of SECP Head Office Building Project.
Carbon footprints	It will prioritize to use energy efficiency by incorporating LED lighting, energy-efficient HVAC systems, and smart controls in building to reduce overall energy demands. Additionally, there will be a focus on renewable energy integration through the installation of on-site sources like rooftop solar panels to generate clean energy. The project will implement on-site commercial spaces and mixed-use development, fostering a self-contained and sustainable community.

8 Environmental Management Plan

8.1 Introduction

The EIA report has identified the potential impacts that are likely to arise during the project. The EIA report has identified both positive and negative impacts at each stage of the project.

To minimize the effects of adverse impacts, the EIA has recommended the mitigation measures. These mitigation measures include the use of alternative technologies, management and physical control or compensation in monetary terms. The proposed mitigation measures have been based on the understanding of the sensitivity and behavior of environmental receptors in the project area. The legislation controls that apply to the project and a review of good industry practices while operating in sensitive environments.

For residual impacts (impacts remaining after applying the recommended mitigation measures) and for impacts in which there can be a level of uncertainty in prediction at the EIA stage, monitoring measures have been recommended ascertain these impacts during the course of the project.

For the effective implementation and management of mitigation measures, an environmental management plan (EMP) has been prepared. The EMP satisfies the requirement of the Pakistan Environmental Protection Act, 1997.

This chapter outlines the implementation mechanism for the EMP and defines the institutional arrangements required for the implementation of the plan. The EMP provides the implementation mechanism for the mitigation measures identified during the EIA.

8.2 Purpose and Objectives of EMP

An Environmental Management Plan (EMP) 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 best practices to be adopted for all phases of the project.

The primary objectives of the EMP are to:

- Facilitate the implementation of identified mitigation measures.
- Develop a proper monitoring mechanism and identify requisite monitoring parameters to confirm the effectiveness of the proposed mitigation measures.
- Define the responsibilities of the project proponent, design & supervision consultant and contractor, and provide a means of effectively communicating environmental issues among themselves.

8.3 Management Approach

8.3.1 Construction Phase

The organizational roles and responsibilities are summarized below:

a) **Securities and Exchange Commission of Pakistan**

Securities and Exchange Commission of Pakistan being project proponent, will have the overall responsibility for compliance with the Environmental Management Plan of SECP Head Office Building Project. Furthermore, Securities and Exchange Commission of Pakistan will implement an Environmental Monitoring Plan, which has been prepared for the construction and operational phases of the project.

b) **Project Manager**

The project manager will carry out field activities and will be responsible for implementing various mitigation actions prescribed in the EIA report relevant to the contract. The project manager will make sure the Environmental Monitoring Plan is being followed and complied

with on the project site. The Executing Agency will monitor the project site and ensure the implementation of the EMP and the EIA report.

d) **Pak EPA**

The Pakistan Environmental Protection Agency, Government of Pakistan, will periodically visit the project site to monitor the compliance of environmental protection measures detailed in the EIA report.

8.3.2 Operational Phase

The magnitude of environmental impacts during the operational phase will be less as compared with the construction phase; therefore, Securities and Exchange Commission of Pakistan will have to implement various mitigation actions as described in the operational phase. Furthermore, keeping in view the magnitude of environmental impact, an Environmental Monitoring Plan has been proposed for the operational phase of the project.

8.4 Organizational Structure and Responsibilities

8.4.1 Construction Phase

The organizational structure for the construction phase EMP is described as follows:

Primary Responsibilities: The primary responsibilities for the environmental performance of the project proponent, design and consultant will be assumed by respective highest-ranking officers during the project.

The Project Manager, SECP Head Office Building Project, will be responsible for the compliance with the EMP of the project.

Field Management and Quality Control: The construction activities will be carried out in an environmentally sound manner during the construction phase of the project and will be the responsibility of the Site Engineer. He will be responsible for implementing EMP and EIA recommendations.

The Project Manager, SECP Head Office Building Project, will be responsible for ensuring the overall environmental soundness of all construction activities. He will ensure the implementation of EMP and EIA.

Environmental Monitoring: Securities and Exchange Commission of Pakistan will make necessary arrangements to monitor the key environmental data during the construction phase.

These will include the quantity of water used, record of waste produced, a record of waste disposal and project-related vehicular traffic.

8.4.2 Operational Phase

Securities and Exchange Commission of Pakistan will assume the main responsibility for the environmental performance of the SECP Head Office Building Project during the operational phase.

An environmental monitoring plan has been developed as part of the EIA of SECP Head Office Building Project. The key environmental parameters, such as water consumption, waste disposal, water quality, traffic count, noise, the performance of wastewater treatment plant and status of implementation of plantation plan will be monitored on a regular basis. The environmental monitoring reports will be produced and shared with the concerned authorities if required.

8.4.2.1 Legislation and Guidelines

The EIA of SECP Head Office Building Project has discussed national and international legislation and guidelines that are relevant. The proponent will ensure that his staff and all its assigned design & supervision consultant and contractor are aware of this legislation and guidelines prior to the start of the project activities.

The Pakistan Environmental Protection Act, 1997 is the basic environmental legislation. The act also requires that no person shall emit pollutants or noise in amount, concentration or level that exceeds the National Environmental Quality Standards (NEQS). The NEQS will be followed throughout the construction and operational phases of the project.

8.4.2.2 Environmental Improvement Cell and Responsibilities

SECP Head Office Building Project will form up an Environmental Improvement Cell, which will be responsible for the environmental management and supervisory affairs during the construction and operational phases of the proposed Project.

The responsibilities of the Environmental Improvement Cell are as follows:

- To ensure implementation of all the proposed mitigation measures during and after the proposed project.
- Capacity building of the staff regarding environmental improvement and awareness.
- To develop operational guidelines and implementation schedule.
- Receiving complaints from the local community and other people and assisting the local environmental authority.
- To ensure that the proposed project is implemented in an environmentally friendly manner, causing the least harm to the existing environment including flora and fauna.
- To make sure that the business and affecters of the proposed project are relocated or compensated in the most judicious manner.

8.4.2.3 Project Monitoring

Securities and Exchange Commission of Pakistan will make necessary arrangements to monitor the key environmental data during the operational phases at intervals. These will include a record of waste produced, a record of waste disposal, and vehicular traffic.

The Project Manager, SECP Head Office Building Project shall monitor project impacts during the operation. He will keep a record of all non-conformance observed and report these along with actions to Securities and Exchange Commission of Pakistan management for further action. He will also have to report any impacts anticipated, along with his recommendations for further action.

8.4.3 Approvals

Securities and Exchange Commission of Pakistan will obtain all the relevant clearances and necessary environmental approvals required by the Pakistan Environmental Agency, Government of Pakistan and other regularity agencies.

8.4.4 Contractual Provisions

Adherence to the requirements of the EIA and EMP in terms of environmental mitigation will be required from all project contractors, and thus EMP will form part of their contracts with the management of Securities and Exchange Commission of Pakistan.

The contractor shall be responsible for implementing the mitigation measures and monitoring of various environmental parameters. The management shall monitor the contractor's performance with respect to EMP implementation.

8.4.5 Environmental Mitigation Matrix

An Environmental Mitigation Plan (Matrix) describing the summary of the impacts and mitigation measures and institutional responsibility is provided in **Table 8.1**.

Table 8.1: Environmental Matrix of SECP Head Office Building Project

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Construction Phase									
Campsite and construction work									
Site selection of construction camp, materials storage, human activities on site, travel to and from the construction camp	Socio-cultural, environmental,	Sanitary waste disposal, solid (kitchen) waste disposal, fuel leakage, noise and additional traffic, water usage and pollution	Contractor's Camp Site for Construction	Throughout construction period	Minor if Recommendations are followed	Camp Site construction to be supervised. Proper storage and fencing, locking of storage rooms containing hazardous material. Construction camp will be located in a stable and flat area, requiring minimal removal of vegetation and levelling. Camp Site construction to be supervised. Proper storage and fencing, locking of storage rooms containing hazardous material.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Land Analysis

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Sanitation and waste disposal facilities at the campsite	Sanitation and waste disposal problems	Worker's health may impair which may result in slow progress	At all solid and liquid waste collection areas, latrine sites of camp	Throughout construction period	Moderate	Contractor to provide a proper waste management plan for campsite waste. Sewerage system at the camp to be properly designed (septic tank with soakage pit) to receive all sanitary wastewater.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Waste Management
Movement of vehicles in a construction site and along haulage routes	Environmental impact, impacts from temporary haul and access roads	Soil compaction and alteration of percolation and vegetation pattern, Dust emissions	At the project site	During construction period	Low	Construction vehicles, machinery, and equipment shall move or be stationed in the designed right-of-way to avoid unnecessary soil compaction. Air, water, and soil quality to be regularly monitored as in EMP Existing road will be used to the extent possible for hauling materials	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Air and Soil Quality
Movement, maintenance, and fuelling of construction vehicles	Environmental pollution and contamination	Contamination of soil, surface and groundwater from fuel and lubricants, air pollution due to dust and exhaust from vehicles movement	Fuelling and maintenance sites near construction camp, seasonal waterways present near the project site	During construction period	Low	Slopes of the embankment to be designed so that pollutants do not enter water bodies. Construction vehicles and equipment to be properly maintained and fuelled so that oil and diesel spillage do not contaminate soil. Fuel storage and refuelling sites to be kept away from drainage channels.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Air, Soil and Water Quality

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
						Oil and grease traps to be provided at fuelling locations to prevent contamination of water Unusable debris shall be dumped at the designated site in Islamabad.			
Creation and burning of waste at/or near the campsite	Solid waste generation and air pollution associated with burning	Eyes irritation for workers and public, nuisance, deteriorated air quality, smell from organic wastes	Around Campsite	Throughout construction period	Moderate	Devise a plan for safe handling, storage, and disposal of harmful materials Waste burning not allowed Introduce re-use and/or recycle Discourage use of disposables	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Solid Waste Management
Health and safety at the workplace	Health risks for workers if unfavourable working conditions prevail	Worker's progress may impair which will result in slow progress of the project	Throughout construction area and construction campsite	Throughout construction period	High	Obligatory insurance against work accidents for labourers Provide basic medical service and supplies to workers. Layout plan for a campsite is indicating safety measures taken by the contractor (e.g., firefighting equipment, safe storage of hazardous materials, first aid, security, fencing, and contingency measures in case of accidents). Work safety measures and good workmanship practices	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Workers Health

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
						to ensure no health risk for labourers. Proper maintenance of facilities for workers. Regular pest control measures in the site camp.			
Soil and Burrow Material, Blasting and Cutting, Cut and Fill									
Disposal of Surplus material, storing material for reuse	Physical environment	Water pollution from runoff of discarded asphalt, loss of productive land due to dust	Along the full length of the service roads around SECP Head Office Building Project	At the start of construction	Low	Construction waste to be collected for reuse. Waste disposed of in existing Dump Site. Water spraying to reduce dust.	Contractor via bid documents	Engineering Consultant & Securities and Exchange Commission of Pakistan	Water
Excavation for the foundation of the building	Changes of topographic characteristic, loss of topsoil, soil erosion, loss of vegetation, loss of habitat	Aesthetic, water storage, seepage, soil erosion, water contamination, vegetation clearing, loss of habitat for various faunal species	Designated Borrow areas, and at all sites where high embankments are required	Long lasting	Medium	Remove topsoil and reintroduce for returning to nature. In areas with the strong flash flow, high embankments are provided to minimize soil erosion. Concrete retaining walls at high embankments in critical areas.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Soil erosion and Water

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Acquisition of construction materials	Landscape degradation by use of quarries and borrow areas in the immediate vicinity of the Project site.	Accelerate erosion at the site	Quarries and borrow areas	Long-term effects	Low	No use of any quarries for construction material from inside Islamabad.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Soil erosion
Storage, handling, and transport of hazardous construction materials	Work safety and human health risk	Health risk for workers, impair their progress	At all construction sites	Throughout construction period	Low	Provision of protective items for labourers handling hazardous materials (e.g., helmets, adequate footwear for bituminous pavement works, protective goggles, gloves, etc.). Proper training for workers by HSE staff.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Construction material storage
Creation of construction waste material and spoil management	Contamination of soil and water from waste and/or quarry materials, and impact on landscape value	Air, water, and solid waste generation	All construction site.	During construction	High	All spoils to be disposed of in environmentally friendly manner and sites to be restored to original conditions.	Contractor	Engineering Consultant Securities and Exchange Commission of Pakistan	Water and Soil analysis
Transporting materials to the site	Physical environment	Creation of noise, fumes, and dust	Throughout the Project	During construction	Medium	All vehicles are carrying loose, friable material to be properly covered.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Noise and Air Quality

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Planting trees	Ecological	Introduction of Indigenous trees species	In green areas and green belts	After construction	Medium	Implement Plantation Plan.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Site restoration
	Social	Trees create safety hazards	Where trees are planted	Once trees have matured	Medium	Proper monitoring of the matured trees.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	
Closure Plan									
Clearing site	Damage not restored on departure	Air, soil and water pollutions in future, a nuisance for the residents	where construction took place	After completion of construction activities	Low	Construction and campsites should be restored according to proper Site Restoration Plan. Compliance monitoring of the restoration.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Site restoration
Utility Disruption									
No utility except electricity is available	Affected utilities create disruption of public services and economics	Disruption in utilities may create problems for adjoining buildings	To be checked	Construction period	None, if organized in a timely manner and implemented; otherwise, Intermediate.	Timely notifications and consultations with respective departments especially with IESCO.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Electricity supply managemen t
Water Issues									

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Use of water for construction and consumption for human use	Conflict with local water demand under very limited supply	Water shortage	In the immediate vicinity of the project site	During construction	Low	The contractor will arrange required water for construction in such a way that water availability and supply nearby to community remain unaffected.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Water management
Spillage of liquid waste	Environmental and Social Impacts	Risk of polluting surface and groundwater from spillage, drainage, and runoff from construction sites.	SECP Head Office Building Project site	During construction	Low	Regular water quantity monitoring according to determined sampling schedule. Contractor shall ensure that construction debris does not find its way into the drainage.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Water quality
Earthwork, stonework, and, other construction activities	Environmental and Social Impacts	Contamination of water due to construction waste, health risks for public	SECP Head Office Building Project site	During construction	Low	Construction works close to water bodies to be avoided, especially during the monsoon period. Waste must be collected, stored, and taken to the existing Dump Site.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Social Issues
Air Pollution Control									
Vehicular movement and operation of machinery	Environmental and Social Impacts	Emission from construction vehicles and machinery, causing a public health risk, nuisance, and other impacts on	Workshops of contractor campsite, Construction sites	Throughout construction period	Low	All temporary service and access roads to be regular water sprayed be carried out to minimize the dust generation. All vehicles, equipment and machinery used for construction to be regularly maintained to ensure that	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Air Quality

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
		the biophysical environment				pollution emission levels conform to National Environmental Quality Standards (NEQS) of Pakistan. Air quality parameters to be monitored, as determined.			
Transportation of materials, and other construction activities that create dust and emissions	Environmental and Social Impacts	Dust and emissions from machines causing a health risk to operators; Impacts on the biophysical environment	Service Road South and Street No. 8	During construction	Low	Vehicles are delivering loose and fine materials, like sand and fine aggregates, shall be covered to reduce spills on the existing road. Ambient air quality monitoring will be carried out in accordance with the EMP. If monitored parameters are above prescribed NEQS limits, suitable control measures must be taken.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Air quality and workers health
Noise Pollution									
Operation of construction machinery,	Noise from vehicles, asphalt plants, and equipment;	A nuisance for workers and public	At mix plant, batching plants, and construction sites; built-up areas;	During construction	Medium	Plants, vehicles, and equipment to strictly conform to NEQS specified noise standards. Vehicles and equipment used will be fitted, as applicable, with silencers and properly maintained. In accordance with EMP, noise measurements to be	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Noise

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
						carried out at locations and schedules specified to ensure the effectiveness of mitigation measures.			
Fauna and Flora: Wildlife and adjacent Ecological Sensitive Areas									
No sensitive area is present	Ecological Impacts	Disturbance to Local flora and fauna	Throughout the proposed project	Throughout construction period	Low	Use of firewood for cooking and execution of work to be prohibited. No open fire is allowed. Restoration of damaged vegetated areas. Strict instructions to contractors' staffs (particularly the cooks) with respect to poaching wildlife Assist in public awareness program.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Ecological sensitive area
Road Safety and Community Life									
The risk associated with construction activities	Accident and health risks, Social Impacts	Road accidents may occur to general public and workers; social problems may arise; the progress of the project may impair	Project Site	Throughout construction period	Low	Ensure safely code for work staff is observed, including provision and wearing of safety equipment required for specific works (e.g. helmets, dust masks, ear muffs, safety goggles, etc.). At the construction site, a readily available and fully equipped first aid unit to be provided.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Health and safety of workers

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
						Elaboration of contingency planning in case of major accidents. Adequate signage, lighting devices, barriers, persons with flags during construction to manage traffic at a construction site.			
Archaeological Sites									
Encountering archaeological sites during earthworks and construction	Impacts of historically important sites and damage to fossils, artifacts, tombs, structure, and others, as defined in Antiquity Act of 1975	If sites of special interest not identified and flagged, contractors may inadvertently cause damage	Near Project site	Throughout construction period	Low	In case of finding any archaeological artifact structure, tomb, etc., the contractor must immediately halt all works and contact the Archaeological Department. In the event of such finding, the contractor has the duty to secure the site against any intrusion until an archaeological expert decides for further action.	Contractor	Engineering Consultant & Securities and Exchange Commission of Pakistan	Sensitive area
Operation Phase									
Water and Soil									
Drainage of runoff from roads into water bodies	Physical and Environmental Impacts	Physical congestion of drainage structures, Localized flooding, water and soil contamination	At natural drainage points in and around the Project site.	When road operates and in the rainy season, as required	Medium	Adopt performance specified maintenance contracts. Ensure proper cleaning scheme for keeping drainage structure clear of debris and blockage.	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	Stormwater runoff

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Vehicular movement	Environmental Impacts	Contamination from spills due to traffic and accidents	Project Site	As incidents occur	Medium	Accidental spillage to be cleared and disposed of immediately and properly.	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	
Ambient Air Quality									
Induced vehicular traffic movement	Environmental and Social Impacts	Adverse effects on PIMS and public health risk, nuisance, and other impacts on the biophysical environment	Project area	At operation	Medium traffic generation will be for short duration	Roadside tree plantation as applicable and feasible under harsh climatic condition; plants should be selected according to their abilities to absorb emissions. Regular road maintenance to ensure the good surface condition Regular vehicle checks to control and ensure compliance with NEQS.	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	Air Quality
Noise Level and Vibrations									
Induced vehicular traffic movement	Environmental and Social Impacts	Traffic-related noise pollution and vibrations from engines, tires, and use of(pressure) horns	Project area	At operation stage	Medium traffic generation will be for short duration	Noise measurements to be carried out to ensure the effectiveness of mitigation measures, (e.g., speed limits at the Project site).	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	Noise
Flora and Fauna									

Project Activities	Type(s) of Impact	Potential Impacts on Environment	Where the impact is likely to happen	When the impact is likely to occur	Magnitude of impacts	Mitigation Measures	Institutional Responsibility		Parameters for Monitoring
							Implementation	Supervision	
Roadside right-of-way plantation	Environmental and Social Impacts	Soil erosion if site not vegetated acts as a sound barrier against noise and dust, aesthetically valuable,	Along with service roads along SECP Head Office Building Project	Operation stage	Low	Plantation/Vegetative barriers to lessen visual and other impacts. Monitoring of survival of trees at the specified rate and suitable measures should be taken to protect trees. Indigenous flora should be preferred.	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	Plantation
Road Safety									
Vehicular movement	Social Impacts	Road accidents may occur, life risk of the general public	Near populated areas	Operation stage	Low	Traffic management plan to be developed. Traffic control measures, including speed limit, to be enforced. Mass awareness regarding traffic rules.	SECP Head Office Building Project Management	Securities and Exchange Commission of Pakistan	Social Issues

8.5 Solid Waste Management Plan

Construction Phase: Several solid waste bins will be placed at the site camp for the collection of solid waste.

Securities and Exchange Commission of Pakistan will make arrangements for collection, transportation and disposal of solid waste generated by SECP Head Office Building Project.

Empty chemical drums, iron cuttings, etc. will be collected separately at the project site within an area marked as “Scrap Yard”. After a suitable timeframe, scrap will be sold to a recycling contractor.

The construction waste generated will be recycled to the extent possible. Open burning of solid waste will not be allowed.

Figure 8.1: Typical Solid Waste Bins for Construction Waste

Operational Phase: The internal collection of solid waste will be carried out by the Securities and Exchange Commission of Pakistan through garbage chutes from each floor of the building. Securities and Exchange Commission of Pakistan will make arrangements for collection, transportation and disposal of solid waste generated.

The waste will be collected daily and stored at a designated site where the collection crew will take the waste. The solid waste will be segregated into three categories before disposal.

- Refuse suitable for preparation of compost
- Recyclable and reusable
- Remaining

The solid waste will be temporarily stored in a designated area for solid waste before being handed over for disposal.

Figure 8.2: Typical Garbage Chute

8.6 HSE Management Plan

- Health Safety and Environment (HSE) induction/orientation will be provided to all workforce at the project site.
- Assembly point will be established for the gathering of workforce regarding daily HSE Toolbox Talk at the project site.
- HSE Toolbox Meeting will be held by HSE Manager on a weekly basis.
- Special education sessions will be conducted properly at the site.
- The daily walkthrough will be conducted at the project site.
- All the Mandatory PPE's (Safety Helmet, Safety Jacket, Safety Shoes, Coverall, Full body Harness, Safety Goggles, Earplug, Earmuff, Dust mask/Special Safety Gloves, etc.).
- Proper and safe scaffolding will be provided at the site for safe work at height.
- All the heavy machinery will be inspected properly at the site.
- All Cranes and lifting gears will be inspected/checked on a regular basis.
- Inspection Tagging system will be maintained at the project site.
- Safety signage will be provided at the project site.
- Fire posts will be established at the project site at easy approach location.
- Waste will be maintained properly.
- HSE Signboard will be installed at the project site for an Emergency response.
- Rest area smoking zones will be established at the site.
- Regular First Aid Center, along with all required medicines 24/7, will be available at the project site.
- Paramedic (dispensers) will be deployed at the first-aid post for day-night shift
- Fully equipped Ambulance will be made available at the site for 24/7
- In-house training will be conducted on the project site.

The Securities and Exchange Commission of Pakistan will develop its HSE policy, roles and responsibilities of HSE Manager and staff. It will also provide information about HSE objectives, Personal Protective Equipment (PPE's) to be used at the site, first aid training and communication and documentation regarding HSE.

- First Aid Boxes: First aid boxes will be provided at all active construction sites to cope up the emergency situations. Usually, a typical first aid box mainly contains antibiotics, basic medicines, cotton, bandages, sunny plasts, healing balms, pyodine, spirit, pain killer, etc.
- Dispensaries: Medical facilities will be established on-site. A dedicated room will be established as a dispensary and first aid services at the campsite.
- PPEs: Site Engineer and HSE Manager will be responsible for providing PPEs to all workers.
- Safety Signs: Relevant safety signboards will be displayed on the worksites and labour camps to make aware / train workers about safety rules. Mainly safety signs include signs of speed limits, electric spark, etc.
- TBTs: Tool Box Talks (TBTs) will be delivered on a regular basis and when a new team of workers start a new activity like shuttering, steel fixing, steel cutting, steel bending, scaffolding, concrete pouring, mechanical works, electrical works, etc. at sites to promote safety culture.
- Water Sprinkling: Dust pollution will be controlled with water sprinkling and minimizes the risk of adverse impacts of dust on workers and surrounding areas. Water sprinkling will be carried out regularly to minimize dust pollution and avoiding creating slush.
- Barricading: Barricade tape at all the active work sites will be put. Hard barricading (scaffolding pipes) will be used to cover exposed areas where excavation is more than 10 feet.
- Training: Safety training will be delivered by the HSE Manager to achieve its objectives. Trainings will be conducted for capacity building of employees / workers /labour/ sub-contractors to make them well effective to respond in any kind of emergency situation.

Figure 8.3: Mandatory PPEs for Construction Site Workers

The breakup cost for the safety of workers is described in **Table 8.2.**

Table 8.2: Estimated Cost for the Implementation of Environmental Monitoring Plan for SECP Head Office Building Project

Sr No	Item	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Personal Protective Equipment (A)				
1	Dust Masks	15,360	10	153,600
2	Safety Shoes	320	3000	960,000
3	Gloves	3,840	400	1,536,000
4	First Aid Box	2	3000	6,000
5	Ear Plugs	1,920	400	768,000
6	Safety Helmets	320	1500	480,000
7	Safety Jackets (Hi-Vis)	320	700	224,000
Others (B)				
8	Provision of Dust Bins	15	2000	30,000
9	Warning Tape	5	500	2,500
10	Safety Cones	5	1000	5,000
11	Safety Sign Boards	5	1500	7,500
12	Rain Coat	80	1000	80,000
Total (A + B)				**4,252,600**

Time Required for Construction Period = 48 Months

Number of Labor Required for Construction = 80

Personal Protective Equipment PPEs

- Dust Musk: 1 Dust Mask to be used in a week by each labourer
- Safety Shoes: 1 Safety shoe for twelve months for each labourer
- Gloves: A pair of gloves for each labourer for a month
- First Aid Box: 1 first aid box for every 50 labourers
- Ear Plug: 1 set of the earplug to be used for 2 months for each labourer
- Safety Helmet: 1 safety helmet for each labourer for 12 months
- Safety Jackets: 1 safety Jacket (Hi-Vis) for each labourer for 12 months
- Dust Bin: Rough estimate
- Water Sprinkling: the whole construction period
- Rain Cost: 1 Rain Coat for each labourer

(The calculations are made by considering the average number of workers working at a time)

8.7 Traffic Management and Construction Material Transportation Plan

- All the contractor's construction material will be transported to the project site via Service Road South.

- 5 km speed limited is being maintained at the project site.
- All the light vehicles cars, jeep etc. are being parked in a designated area.
- Speed breakers will be followed properly.
- All the experienced and license holders (drivers & operators) will be hired for transportation.
- All the heavy machinery will be checked properly and inspected on a regular basis.
- Speed limit sign boards should be installed at the project site.
- All the (headlights, backlights, Indicator etc.) will be checked and maintained regularly.
- All the warning light, reverse back alarms will be maintained properly.
- All the routes within the project site will be marked and designated properly.

8.8 Emergency Preparedness, Response and Site Evacuation Plan

- The management will always be ready for response in any kind of emergency at the project site.
- Special assembly points will be established at the project site (offices site).
- The emergency siren will be installed at assembly points.
- Contact numbers of emergency response team will be circulated at the project site.
- Close coordination will be carried out with 1122 in the case of any serious injury/accident.
- Close coordination will be carried out with all law enforcement agencies (police) in case of an aggressive mob of people in the shape of any kind of protest.
- Emergency response drill will be carried out once in a month for provision of awareness to the workforce at the project site.
- First Aid Boxes will be available at the project site around the clock.
- Experienced and qualified paramedic staff will be available at First Aid Post at the site under the command of HSE Manager.
- Fully equipped Ambulance will be available at the project site along with all mandatory items (Oxygen cylinder, Statures First Aid Box)
- All the new entrants will be oriented by the HSE Manager regarding the required awareness towards the hazardous and risky situation and control.
- The entire workforce will be provided with the all mandatory PPEs for the risk-free environment.
- Special in-house training (TBT) will be conducted by the HSE Manager regarding the awareness towards any emergency condition and control.
- Proper water sprinkling will be carried out at service road along within the project site for dust control to avoid any hazardous and risky situation which can be a cause of transport emergency.

Figure 8.4: Typical Sign for Marking Assembly Point

8.9 Fire Fighting Plan

The campsite will be equipped with fire extinguishers as well as communication equipment for contacting the appropriate emergency response teams.

At the campsite, emergency alarms will be installed. Persons will be nominated to ring the emergency alarm in case of an emergency situation or any emergency risk.

All the camp residents will be trained and well communicated how to respond to the emergency alarm and reach at assembly point immediately. Workers will be trained to respond to an emergency alarm, as discussed below:

- If the alarm rings for 20 seconds, only once, then it is a less severe emergency;
- If it rings for 20 seconds thrice after intervals, then it is medium to a severe high emergency, but it can be much severe; and
- If it rings for 60 seconds or more continuously, then the emergency situation is most difficult so, everyone should respond to it immediately, evacuate the workplace and move towards the assembly point.

Proper evacuation routes will be designated, nominated and well communicated to all. All the workers will be trained to follow the particular evacuation routes and reach the assembly point in case of an emergency situation.

8.10 Plantation Plan

The plantation plan recommends planting 5,000 mature plants having 4-5 feet height and 1.0 to 1.5 inches stem diameter within the boundary of the SECP Head Office Building Project as well as in the project area.

The management of SECP Head Office Building Project will ensure the provision of staff and budget for the implementation of the plantation plan.

The plantation of recommended indigenous species will be carried out at a distance 8 feet having a distance of 8-10 feet among rows (in case of multiple rows). The recommendations about the new plantations are based upon the calculations that these will not be less than ten times than the cut trees during the developmental phase.

The plantation plant consists of trees, shrubs and indoor plant which are recommended for SECP Head Office Building Project.

On the completion of construction of the building of SECP Head Office Building Project, plantation will be carried out as directed by CDA. The project site will be made green and beautiful with ornamental, evergreen, and shaddy trees species.

Table 8.3: Recommended Plants for SECP Head Office Building Project

No.	Scientific Name	Common Name	Description
1	*Pinus rxburghii*	Cheer	Highly recommended for Islamabad regions, grows very well in
2	*Cedrus deodora*	Deodar/Diyar	Highly recommended for Islamabad regions
3	*Platanus orientalis*	Chinaar	Highly recommended for Islamabad regions
4	*Pongamia glabra*	Sukh Chain	Evergreen and historical shade tree
5	*Ficus spp.*	Ficus Spp.	Different varieties all evergreen for shade as well as beautification
6	*Cupressus sempervirens*	Saroo	Tall, hardy tree
7	*Cassia fistula*	Amaltas	The beautiful flowering tree grew in this region
8	*Cassia gulaca*	Small amaltas	Beautiful yellow flowers almost all the year
9	*Thevetia peruviana*	Peeli Kanair	Thick foliage shrub with yellow leaves
10	*Juniper Spp.*	Junipers	Different varieties, do very well in high landscape areas
11	*Vinca difformis*	Periwinkle	An evergreen, flowering subshrub
12	*Lavandula spica*	Lavenderle ft)shrubs	ornamental plants for garden and landscape use
13	*Gulphinum*	Gulphinium	Nice small shrub with a lot of flowers in season
14	*Epipremnum aureum*	Jade plant or money plant	An evergreen flowering vine
15	*Asparagus aethiopicus*	Asparagus Fern	A indoor ornamental plant
16	*Saintpaulia*	African violet	Indoor plant for decorative purposes
17	*Ficus elastica*	Rubber tree	An ornamental indoor plant
18	*Spathiphyllum*	Spath/ peace lilies	Evergreen herbaceous perennial plants with large leaves
19	*Aglaonema hybrids*	Chinese evergreen plant	An adaptable plant, and grow in low light and dry air
20	*Phoenix roebelenii*	Pygmy Date Palm	Medium size, slow-growing shady plant
21	*Aphelandra squarrosa*	Zebra Plant	Exotic, emerald green leaves with dramatic white veins

Indoor Plants: A total of 8 indoor plants has positive psychological effects, indoor air purification purpose has been recommended at SECP Head Office Building Project.

Table 8.4: Recommended indoor plants for SECP Head Office Building Project

No.	Scientific Name	Common Name	Description
1	*Epipremnum aureum*	jade plant or money plant	An evergreen flowering vine
2	*Asparagus aethiopicus*	Asparagus Fern	An indoor ornamental plant

3	*Saintpaulia*	African violet	Indoor plant for decorative purposes
4	*Ficus elastica*	Rubber tree	An ornamental indoor plant
5	*Spathiphyllum*	Spath/ peace lilies	Evergreen herbaceous perennial plants with large leaves
6	*Aglaonema hybrids*	Chinese evergreen plant	An adaptable plant, and grow in low light and dry air
7	*Phoenix roebelenii*	Pygmy Date Palm	Medium size, slow-growing shady plant
8	*Aphelandra squarrosa*	Zebra Plant	Exotic, emerald green leaves with dramatic white veins

8.11 Plantation Plan Cost

A total number of 5000 trees will be planted. The cost of plantation includes the cost of equipment, initial planting (including restocking during the first 3 years) and maintenance cost for the first four years of plantation. The total estimated cost of implementation of the plantation plan is Rs. 3.4 million. The cost of raising one plant and its maintenance for 4 years is Rs. 687.

The tentative cost of equipment for is given below in **Table 8.5.**

Table 8.5: Tentative Cost of Equipment

Sr.	Equipment	Numbers	Cost in PKR
1	Grub hoe (earth digging tool) and others	Lump sum	150,000
		Total cost of equipment	**150,000**

The cost break-up of plantation and maintenance for a period of four years is mentioned in **Table 8.6** to **Table 8.11.**

Table 8.6: Estimated Cost of Unit Plantation (5,000 Plants) for 1st Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
1	Clearance of Site (5,000 plants)	5,000	5/plant	25,000
2	Layout/ unit	5,000	2/plant	10,000
3	Digging of Pits	5,000	50/pit	250,000
4	Average cost per unit plant	5,000 plants	215/plant	1,075,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	5,000 plants	10/plant	50,000
6	Plantation of plants with ball of earth/unit	5,000	30/plant	150,000
7	Addition of Manure 1 cft. / pit	5,000 cft.	Lump Sum	50,000
8	Hand watering 100 times Approx. x5,000=500,000	500,000	1/watering	500,000
9	Weeding 4 times 5,000x4=20,000	20,000	5/plant	100,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	50,000
	Total			**2,260,000**

Table 8.7: Estimated Unit Cost of Plantation of (1,000 Plants) & Maintenance for 2nd Year in case of 20% Mortality

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
3	Re-Digging of Pits	1,000	50/pit	50,000
4	Average cost per unit plant	1,000 plants	215/plant	215,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	1,000 plants	10/plant	10,000
6	Plantation of plants with ball of earth/unit	1,000	30/plant	30,000
7	Addition of Manure 1 cft. / pit	1,000 cft.	Lump Sum	25,000
8	Hand watering 100 times Approx. x1,000=100,000	100,000	1/watering	100,000
9	Weeding 4 times 1,000x4=4,000	4,000	5/plant	20,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	50,000
Total				**500,000**

Table 8.8: Estimated Cost of Plantation Unit (400 Plants) & Maintenance for 3rd Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
3	Re-Digging of Pits	400	50/pit	20,000
4	Average cost per unit plant	400 plants	215/plant	86,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	400 plants	15/plant	6,000
6	Plantation of plants with ball of earth/unit	400	30/plant	12,000
7	Addition of Manure 1 cft. / pit	1,000 cft.	Lump Sum	25,000
8	Hand watering 50 times Approx. x400=20,000	20,000	1/watering	20,000
9	Weeding 3 times 400x3=1200	1,200	5/plant	6,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	50,000
Total				**225,000**

Table 8.9: Estimated Cost of Maintaining 5,000 plants for 4th Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
1	Hand watering 50 times 5,000x50=250,000	250,000	1/time	250,000
2	Weeding	5,000	5/unit	25,000
3	Trimming/pruning of plants	5,000	5/unit	25,000
4	Miscellaneous			50,000
			Total	**350,000**

Table 8.10: Total Cost of Plantation Plan for Four years

Activity	Amount (PKR)
Estimated Cost of Unit Plantation (5,000 Plants) for 1st Year	2,260,000
Estimated Unit Cost of Plantation of (1,000 Plants) & Maintenance for 2nd Year in case of 20% Mortality	500,000
Estimated Cost of Plantation Unit (400 Plants) & Maintenance for 3rd Year	225,000
Estimated Cost of Maintaining 5,000 plants for 4th Year	350,000
Total	**3,335,000**

Table 8.11: Final Cost per Tree Planted

Activity	Amount (PKR)
Cost for maintenance of cultivated plants for 4 years	3,335,000
Cost of equipment	150,000
Total cost	3,485,000
Cost for raising one plant and its maintenance for 4 years	**687**

8.12 Restoration and Rehabilitation Plan

Restoration of the project site and associated facilities including access tracks and campsite after construction activities is of utmost importance. Improper disposal of the waste left at the end of the construction activities would lead to extensive disturbance to the environment.

Following measures will be adopted for site restoration and rehabilitation:

- All equipment and machinery at the project site will be de-mobilized.
- All waste at the project site will be disposed of according to the requirement of EIA.
- Septic tank with soakage pit will be properly dismantled.
- All temporary concrete structures at the project site will be dismantled, and construction and demolition material will be properly disposed of.
- All the un-necessary pits at the project site will be backfilled.

8.13 Grievance Redressal Mechanism

An attempt has been made during the present EIA to identify all potential impacts of the proposed project, to provide mitigation measures to address the potential impacts, and to chart out a mechanism to implement these mitigation measures.

Although this project does not involve any voluntary land acquisition, some social and environmental issues/grievances/disputes are likely to arise during the construction and operational phase of the project.

There will be a complain box to address any complaints or conflict arise during construction, and operational phase of the project and the quarrels will be sorted out by the project manager of the project as a part of the redressal committee. If the issue could not be resolved at a lower level, then it will be addressed by the management of the Securities and Exchange Commission of Pakistan.

The proposed GRM will help to achieve the objectives of sustainability by dealing with the environmental and social issues of the Project in a timely manner.

8.14 Project Monitoring

Securities and Exchange Commission of Pakistan will make necessary arrangements to monitor the key environmental data during the operational phases at intervals. These will include a record of waste produced, a record of waste disposal, and vehicular traffic.

The Project Manager, SECP Head Office Building Project shall monitor project impacts during the operation. He will keep a record of all non-conformance observed and report these along with actions to Securities and Exchange Commission of Pakistan management for further action. He will also have to report any impacts anticipated, along with his recommendations for further action.

8.15 Environmental Monitoring Plan

Environmental Monitoring is normally undertaken during both the construction and operational phases of the project to ensure the effectiveness of the proposed mitigation measures.

In order to respond to unanticipated environmental concerns at an early stage and to determine the accuracy of impact, predictions are also required. Specific monitoring programs are outlined below as well as responsibilities for the collection and analysis of data and the reporting requirements.

The various purposes of the environmental monitoring plan are:

- To evaluate the effectiveness of mitigation measures.
- To respond to the unanticipated environmental impacts when the project is under implementation.
- To make regulations and improve management and environmental controls based on the monitoring data.

An Environmental Monitoring Plan for SECP Head Office Building Project has been provided in **Table 8.12**. The plan will be used as a management and monitoring tool for the implementation of the mitigation measures required by the EIA. The plan entails the required mitigation measures recommended in the EIA.

Table 8.12: Environmental Monitoring Plan for SECP Head Office Building Project

Environmental Component	Project Phase	Parameters	Locations	Frequency	Standards	Implementing	Supervision
Construction Phase							
Air Quality	Construction	SO_2, NO, NO_2, O_3, SPM, PM_{10}, $PM_{2.5}$, and CO	At one location in SECP Head Office Building Project site	PM_{10}, for continuous 8 hours, on a quarterly basis	WHO/USEPA guidelines, NEQS	Project Manager	Securities and Exchange Commission of Pakistan
Roadside Plantation	Construction	Visual inspection of plant species survival rate and status of maintenance	At sites where the plantation was carried out	(1) One month after plantation (2) One year after plantation 1 month, 3 months, 6 months, and 12 months after planting	75 % survival rate	Project Manager	Securities and Exchange Commission of Pakistan
Noise Levels	Construction	dB (A)	At a central location in SECP Head Office Building Project site	Twice in 8 hours at a selected site on a quarterly basis	EPA Ambient Noise standards	Project Manager	Securities and Exchange Commission of Pakistan
Water Quality	Construction	pH, BOD, COD, TDS, TSS, DO, coliforms, hardness, nitrate, chloride, sulphate, hydrocarbon,	At one location, i.e., start and end of the Project site	Quarterly	WHO and NEQS	Project Manager	Securities and Exchange Commission of Pakistan
Land clearing	Construction	Record of all cutting of trees	Throughout SECP Head Office Building Project	When a decision for a tree cutting is made.	-	Project Manager	Securities and Exchange Commission of Pakistan
Operational Phase							
Plantation	Operation	Visual inspection of plant species survival rate and status of maintenance	At sites where the plantation was carried out	(1) 2.5 years after plantation	75% survival rate	Project Manager	Securities and Exchange Commission of Pakistan
Safety and Traffic Rules Compliance	Operation	(1) Faulty, overloaded and speeding vehicles	All along with the SECP Head Office Building Project	Quarterly basis, for 4 years	To be determined	Project Manager	Securities and Exchange Commission of Pakistan

Environmental Component	Project Phase	Parameters	Locations	Frequency	Standards	Implementing	Supervision
		(2) Inspection of signage					
Sewerage Effluent	Operation	NEQS parameters for liquid effluents	Sewerage outfall in Sewerage Line	Once in a month by the in-house laboratory	NEQS	Project Manager	Securities and Exchange Commission of Pakistan

Key:

dBA = decibels (measured in the audible range)

EPA = Environmental Protection Authority,

NEQS = National Environmental Quality Standards

PM10 = Particulate Matter smaller than about 10 micrometers,

ROW = Right-of-Way

SPM = Suspended Particulate Matter

TSS = Total Suspended Solids

USEPA = United States Environmental Protection Agency

Table 8.13: Cost Estimates for Environmental Monitoring during the construction phase

Environmental Monitoring Activities	No. of Samples	Unit Cost specification	Cost (Rs)
Construction phase			
Ambient air quality monitoring Quarterly basis	16	@ 50,000 per sample for 24 hr monitoring.	800,000
Ambient water quality monitoring Quarterly basis	16	@ 20,000 per sample	320,000
Noise levels monitoring on Quarterly basis	16	@ 5,000 per sample	80,000
	Total (a–c)		1,200,000
Environment, Health & Safety Officer (Environmental Scientist/ Environmental Engineer)	48 months	@ 100,000	4,800,000
G Total			6,000,000

Source: *PPI Estimates, 2024*

8.16 Training Program

Training programs are a necessary agenda that has to be implemented to implement Environmental Management Monitoring Plan effectively. The Environment, Health Safety Officer, will impart training to the staff. The key objective of the training program is to ensure that the requirement of EMP is clearly understood and followed throughout the project. The training shall cover the following areas:

- Environmental sensitivity of the project area.
- EMP communication and documentation requirement.
- Vegetation and community issues and their mitigation measures.
- Safe construction practices
- Use of personal protective equipment's (PPEs)
- Environmentally sound construction practices
- Vehicular safety.
- Site restoration requirement.
- Solid Waste Disposal

Securities and Exchange Commission of Pakistan will be primarily responsible for providing training to all project personnel. A lump sum fee of Rs. 1,000,000/- should be kept for the training management plan. Framework for the environmental and social training program is being provided in **Figure 8.14.**

Table 8.14: Framework for Environmental Social Training Program of SECP Head Office Building Project

Type of Training	Training Description	Period	Duration	Training By	Trainee
Occupational Health and Safety for staff	Training should be provided to aware staff to conform to safety codes	Commencement of Project Activities	Full day	External Sources	EHS Manager
Environment Social Laws, Regulations, procedure and guidelines of the government	The training should detail the laws and regulation concerning the environment, labour laws and compliance to government regulation.	Commencement of Project Activities	Full day	External Sources	EHS Staff, Site Supervisors, Site Engineers.
Occupational Health Safety for workers	Health, Safety and Hygiene. Proper usage of Personal Protective Equipment (PPE's), Precautions to be taken for working in confined areas.	Commencement of Project Activities	Full Day	EHS Manager	Workers
Solid Waste Management	Waste Segregation, identification of hazardous waste, Use of PPEs and waste handling	Commencement of Project Activities	Full Day	External Sources	Relevant workers and staff
Vehicular safety	Safe operation and maintenance of all vehicles, insurance in accordance with the applicable local and federal laws	Commencement of Project Activities	Full Day	EHS Manager	Relevant workers and staff
Vegetation and community issues and their mitigation measures	To analyze the community problems and how to cater to serious issues relevant to vegetation and agricultural land of the community	Commencement of Project Activities	Full Day	EHS Manager	Relevant workers and staff
Safe construction practices	To upgrade local craftsmen's skill in quality construction and develop skilful working human resources in hazard-resistant construction	Commencement of Project Activities	Full Day	EHS Manager	Relevant workers and staff
Health Safety and Environmental Auditing	Health Safety and Environmental Audits, Reporting Requirements	Commencement of Project Activities	Full Day	External Sources	Relevant Department
Implementation of environmental management and monitoring plan	Explanation of Environment Management and Monitoring Program	Quarterly. As soon as the project activities start	Full Day	External Sources	EHS Staff

8.17 Environmental Monitoring & Mitigation Cost

The cost required to implement the mitigation measures effectively is important for the sustainability of the project both in the construction and operational phases of the project.

The summary of the cost of monitoring environment and mitigation cost is shown in **Table 8.15**.

Table 8.15: Summary of Environmental Mitigation & Monitoring Cost

Activity	Basis	Cost (Rs)
Environmental Monitoring Cost	Ambient Air, Noise and Water Quality Monitoring & Cost of Hiring Environmental Engineer for 48 Months	6,000,000
Plantation Plan	Implementation of plantation plan	3,485,000
Health & Safety of Workers	For 80 employees for the provision of dust masks, safety shoes, gloves, first aid box, ear plugs, safety helmets and safety jackets (Hi-Vis) And Provision of dustbins, warning tap, safety cones, safety sign boards and water sprinkling	4,252,600
Estimated Cost of energy efficiency	water faucet, energy-efficient LEDs.	17,500,000
Cost of Environmental Training	For the whole construction period	1,000,000
Grand Total		**32,237,600**

8.18 Communication and Documentation

An effective program for storing and communicating environmental information during the project is an essential requirement of an EMP. This activity will be done by an independent monitoring consultant. The key features of such a mechanism are:

- Precise recording and maintenance of all information generated during the monitoring in a predetermined format.
- Communicating the information to a central location
- Storing the raw information in a central database
- Processing the information to produce periodic reports

Data recording and maintenance: All forms will be numbered, and a tracking system will be developed for each. Whenever a form is released for use in the field, its number will be recorded. The monitors will be required to account for each form after completion. In this manner, it will be ensured that all forms are returned to the office, be they filled, unused or discarded.

Storage of information: A database for information collected during the project will be prepared. The database may include information on training programs, staff deployment, non-compliance, corrective actions, water resources, results of effecting monitoring.

Meeting: For effective monitoring, management, and documentation, of the environmental performance during the operation, environmental matters will be discussed during a daily meeting held on-site. Environmental concerns raised during the meetings will be mitigated after discussions with the higher management.

Reporting: Monitoring body will produce daily, weekly, monthly and another periodic report, as well as a final report of the project based on the information collected. The site representative and the Securities and Exchange Commission of Pakistan management will prepare a weekly environmental report.

8.19 Change Management Plan

The EIA for SECP Head Office Building Project recognizes that changes in the EMP may be required and therefore provides a Change Management Plan to manage such changes.

The overall responsibility for the preparation of change management statements will lay with the project Manager, SECP Head Office Building Project. However, if major changes are envisaged, then the environmental consultant will review the entire process and formulate the Change Management Plan to be implemented by the Project Manager, SECP Head Office Building Project.

8.20 Post Project Monitoring

Securities and Exchange Commission of Pakistan shall prepare a brief post-project report describing the conduct of the actual operation, any changes from the operation for which approval was obtained, the degree to which the recommendations of the EIA were adhered to, any damages to the environment and the mitigation or compensation provided, and monitoring information of scientific or environmental interest that is not propriety in nature. This report should be submitted to the Pakistan Environmental Protection Agency.

9 Conclusion and Recommendations

9.1 Introduction

This Chapter presents the assessment of the possible environmental impacts of SECP Head Office Building Project. The study presents the purpose of the EIA as to the description of the site, the impact of the project during and after implementation, the mitigation measures, and residual impacts.
The EIA also includes the justification and detailed description of the project, with an evaluation of the potential impacts and effects on the environment, including economic and social consequences. This Chapter describes the conclusion and recommendation of the EIA study of the project.

9.2 Conclusions

The major conclusions of the EIA are herein:

- Securities and Exchange Commission of Pakistan intends to develop a state of the art Head office building for Securities and Exchange Commission Pakistan departments and employees, providing comprehensive facilities within a singular, centralized location.
- The project site is located on Plot No. 25, Mauve Area, Sector G-11, Islamabad. The project site is accessible through Service Road South and Street No. 8. The GPS coordinates of the project site are **33°39'38.50"N and 72°59'56.22"E**.
- The proposed project will house staff offices, amenities, services floor and meeting halls in 28 floor building (4B + GF + 23F). Total plot area of the project is 45,000 SFT and total covered area is 432,183 SFT (including basements).
- The building will consist of 19 floors dedicated to office spaces, while 2 floors will be allocated for MEP (Mechanical, Electrical, and Plumbing) and Plant facilities. Other floors will accommodate Prayer Hall, Cafeteria and Amenities etc.
- This project will include Main office building, Underground and Overhead water tank and Rainwater harvesting tank.
- The car parking spaces in the four basements is 342 units.
- The cost of the project is Rs. 7.89 Billion will be completed in 4 years.

9.3 Recommendations

- A plantation plan has been proposed in the EIA report, which will be developed and implemented by Securities and Exchange Commission of Pakistan for SECP Head Office Building Project.
- Carpooling and Public Tranport will be encouraged for the transportation of workers of the SECP Head Office Building to avoide traffic congestion issues.
- The provision for rainwater harvesting will be made, which will adequately replenish the local aquifer. Hence, no further measures are needed other than proper and regular maintenance of such facilities.

On the basis of the overall impact assessment, more specifically, nature and magnitude of the residual environmental impacts identified during present EIA, it is concluded that SECP Head Office Building Project, is likely to cause environmental impacts mainly during its construction phase. However, these impacts can be mitigated by the implementation of proposed mitigation measures. Securities and Exchange Commission of Pakistan will ensure the effective implementation of mitigation measures.

There are no remaining issues that warrant further investigation. This EIA is considered adequate for the environmental and social justification of the project.

Annexure-1: List of Names, Qualification and Roles of EIA Team Members

Name	Project Position	Qualification and Experience	Tasks Assigned
Mr Saadat Ali	Team Leader/ Environmental Engineer	Postgraduate Diploma in Sanitary Engineering, International Institute for Hydraulic and Environmental Engineering, the Delft, Netherlands, 1984 B. Sc. Civil Engineering, Engineering College, University of Peshawar, 1978	▪ Overall management of the project (Supervision, site visits, guidance, inputs and suggestion, recommendation and discussion and report presentations). ▪ To review overall environmental issues and mitigation measures. ▪ To review draft and final study reports.
Mr Ali Abdullah	Environmental Engineer	M. Sc. Environmental Engineering, Newcastle University (2016) B. Sc. Civil Engineering, The University of Lahore, Lahore (2010-2014)	▪ Suggest mitigation measures for impacts that affect the environment. ▪ Identification of site for baseline data collection for water, wastewater, noise, soil, traffic, and ambient air quality ▪ Review Draft Report of the Project
Ms. Amna Saeed	Environmental Engineer	B. Sc. Environmental Engineering, UET Lahore (2018-2022)	▪ Preparation of draft report ▪ Field work for baseline data collection in the area under study ▪ Secondary data collection for desk review ▪ Draft Environmental management plan for successful management of expected environmental impacts from the Project. ▪ Public and Stakeholder Consultation
Ms. Gulshan Sikandar	Environmental Engineer	M. Sc. Environmental Engineering, NUST Islamabad B. Sc. Environmental Engineering, UET Taxila (2017-2021)	▪ Public Consultation

Annexure-2: Terms of References

- An EIA will be carried out with the following objectives:
- Establishing the environmental baseline in the study area and identifying any significant environmental issue.
- Assessing these impacts and providing for the requisite avoidance, mitigation and compensation measures.
- Integrating the identified environmental issues in project planning and design.
- Developing appropriate management plans for implementing, monitoring and reporting of the environmental mitigation and enhancement measures suggested.
- Respond to queries generated by Pak EPA until issuance of the NOC.

Annexure-3: References

- ***ADB, 2003.***Environmental Assessment Guidelines. *Asian Development Bank.*
- **MOE,** *Environmental Legislation in Pakistan*, Ministry of Environment, Government of Pakistan.
- **MOE, 2005**, *Pakistan Strategic Country Environment Assessment*, The World Bank/ Ministry of Environment, Government of Pakistan.
- **Nasir, E. & Ali, S. I., 1973**. *Mimosaceae* Flora of Pakistan no.1-210, Department of Botany, University of Karachi.
- **Roberts, T.J.1997.***Mammals of Pakistan*, Oxford University Press, Oxford

Annexure-4: Glossary

Air pollution	Air is made up of a number of gases, mostly nitrogen and oxygen and, in smaller amounts, water vapour, carbon dioxide and argon and other trace gases. Air pollution occurs when harmful chemicals and particles are emitted to the air – due to human activity or natural forces – at a concentration that interferes with human health or welfare or that harms the environment in other ways.
Ambient air quality	Ambient air quality refers to the quality of outdoor air in our surrounding environment. It is typically measured near ground level, away from direct sources of pollution.
Archaeology	The study of human history and prehistory through the excavation of sites and the analysis of artefacts and other physical remains.
Biodiversity	The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable.
Bye-law	A rule made by a local authority to govern activities within the area it controls. Examples include bye-laws covering waste disposal, traffic or public events or signs.
Carbon dioxide (CO_2)	A colourless gas that is naturally produced from animals and people in exhaled air and the decay of plants.
Carbon monoxide	A highly poisonous, odourless, tasteless and colourless gas that is formed when carbon material burns without enough oxygen.
Climate	The pattern of weather in a particular region over a set period of time, usually 30 years.
Compost	A rich soil-like material produced from decayed plants and other organic matter, such as food and animal waste, that decomposes (breaks down) naturally.
Composting	The process of deliberately allowing food, garden and other suitable organic wastes to break down naturally over time to produce compost.
Conservation	Preserving or protecting animals and resources such as minerals, water and plants through planned action (such as breeding endangered species) or non-action (such as not letting taps run unnecessarily).
Deforestation	The reduction of trees in a wood or forest due to natural forces or human activity such as burning or logging.
Effluent	Liquid wastes such as sewage and liquid waste from industries.
Energy efficiency	Actions to save fuels, for example, better building design, changing production processes, developing better transport policies, using better road vehicles and using insulation and double glazing in homes.
EIA	An environmental impact assessment (EIA) is an analytical process that systematically examines the possible environmental consequences of the implementation of projects, programs and policies.
EMP	An environmental management plan (EMP) is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation.
Fauna	The animals of a particular region, habitat, or geological period.
Flora	The plants of a particular region, habitat, or geological period.
Floor Area Ratio	Floor area ratio (FAR) is the ratio of a building's total floor area (gross floor area) to the size of the piece of land upon which it is built.

Habitat	The area occupied by a community or species (a group of animals or plants), such as a forest floor, desert or seashore.
Environmental Impact Assessment	Environmental Impact Assessments describe the environmental condition of a project, including potential impact, formulation of mitigation measures, and preparation of institutional requirements and environmental monitoring.
Landfill	A site that is specially designed to dispose of waste and operates with a license granted by the Environmental Protection Agency (EPA).
NEQS	The National Environmental Quality Standards (NEQs) are quality standards to regulate the air emissions and effluents of industry and other big polluters.
Noise Pollution	Noises that disturb the environment and people's ability to enjoy it, for example, continually sounding house alarms, loud music, air conditioning or other electrical units and aircraft or motor engines.
CDA	Capital Development Authority (CDA) is a government sector corporation and authority responsible for providing Municipal and Town Services in Islamabad.
Seismology	The branch of science concerned with earthquakes and related phenomena.
Topography	The arrangement of the natural and artificial physical features of an area.

Annexure-5: List of People Met During Consultation

No.	Name of Person	Designation
1	Mr. Anwar Ghani	Head Project Management Unit, SECP Head Office Building Project
2	Mr. Immad-ud-din	Additional Director, Emergency & Disaster Management Directorate
3	Mr. Sher Afzal	Deputy Manager, E & SS, IESCO
4	Dr. Musharib Ali	Assistant Professor, NUST
5	Mr. Farhan Lodhi	CEO, Environmental and Waste Management Solutions
6	Mr. Faisal Khan	Real Estate Dealer

No	Name of Respondent	Age	Gender	Education Qualification	Occupation
7	Saeed Kamran	33	Male	Matric	Worker
8	Muhammad Ehsan	49	Male	Bachelors	Business Owner
9	Akram Khan	30	Male	Intermediate	Real State Dealer
10	Majid Mehmood	50	Male	Masters	Govt. Employee
11	Affan-ul-Hadi	32	Male	Bachelors	Business Owner
12	Arfat Khan	30	Male	Bachelors	Student
13	Mir Kamil Khan	35	Male	Intermediate	Private Job
14	Ms. Farzana Akhter	50	Female	Masters	Teacher
15	Maria Ahmad	25	Female	Bachelors	Private Job
16	Ahmad Raza	32	Male	Intermediate	Local Shop Owner

Annexure-6: Ambient Air Quality, Noise Level Monitoring and Water Testing Report

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ENVIRONMENTAL SERVICES PAKISTAN

CHEMICAL ANALYSIS TEST REPORT (AMBIENT AIR)

Reference Number: ESPAK/00099I/24/AA/03281/00382 **Date:** 23/05/2024
Name of Industry/Client: Project Procurement International
Address: Office #26, 2nd Floor, Silver City Plaza, G11 Markaz, Islamabad
Monitoring Location: Mid-Point of Site at G 11/1 G -11, Islamabad -(SECP) (GPS: 33.660494°N,72.999362°E)

Date of Sample Collection: 17/05/2024 **Nature of Sample:** Ambient Air
Sample Collected/Sent By: Irtaza Ahmad, Analyst (Field), ESPAK **Grab / Composite:** Continuous - 24 Hours
Date of Completion of Analysis: 18/05/2024

S. No	Parameters	Limit Values (NEQS-24 Hours)	Concentration	Method / Equipment Used	Remarks
1	Carbon Monoxide (CO)	5 mg/m³ (8 Hours)	2.1 mg/m³	Non Dispersive Infrared Absorption (NDIR)	Within Prescribed Limits
2	Sulfur Dioxide (SO_2)	120 µg/m³	1.6 µg/m³	UV Fluorescence (UVF)	Within Prescribed Limits
3	Ozone (O_3)	130 µg/m³ (1 Hour)	20.1 µg/m³	Non Dispersive UV Absorption	Within Prescribed Limits
4	Oxides of Nitrogen as NO	40 µg/m³	0.7 µg/m³	Chemiluminescence Detection	Within Prescribed Limits
5	Oxides of Nitrogen as NO_2	80 µg/m³	3.1 µg/m³	Chemiluminescence Detection	Within Prescribed Limits
6	Particulate Matter $PM_{2.5}$	35 µg/m³	31.6 µg/m³	Particulate Sensor	Within Prescribed Limits
7	Particulate Matter PM_{10}	150 µg/m³	131 µg/m³	Particulate Sensor	Within Prescribed Limits
8	Suspended Particulate Matter (SPM)	500 µg/m³	388 µg/m³	High Volume Sampler (HVS)	Within Prescribed Limits

NEQS: National Environmental Quality Standards for Ambient Air, 2010
• Uncertainty of Measurement (UoM) data will be provided on request, where available. The statement of conformity, if provided in the report, is based on the decision rule of simple acceptance or rejection with equal shared risk due to measurement uncertainty.

Note:
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- **The responsibility of the ethical use of this report lies with the client.**
- **The values represent sample conditions when monitoring/testing was carried out.**
- **The report data is not intended to be used legally by the client.**

1. **Sample Analyzed By:** Irtaza Ahmad, Analyst (Field)
2. **Name of Chief Analyst with Seal:** Muhammad Arfan
3. **Signature of Incharge of the Environmental Laboratory:**
   Name: Imran Malik
   General Manager
   Date: 23/05/2024

End of Report

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Reference Number	ESPAK/00099I/24/AA/03281/00382
Name of Industry/ Client	Project Procurement International
Address	Office #26, 2nd Floor, Silver City Plaza, G11 Markaz, Islamabad
Monitoring Location	Mid-Point of Site at G 11/1 G -11, Islamabad -(SECP)
GPS Coordinates	33.660494°N,72.999362°E
Monitoring Date	17/05/2024 to 18/05/2024

Date - Time	CO	SO_2	O_3	NO	NO_2	$PM_{2.5}$	PM_{10}	TSP	Temp.	RH	Wind Speed	Wind Direction
	mg/m³	ug/m³	ug/m³	ug/m³	ug/m³	ug/m³	ug/m³	ug/m³	°C	%	m/s	
17-05-24 13:00	2.5	1.4	20.1	0.6	3.0	30.7	126		20	23	3.68	NE
17-05-24 14:00	2.8	1.4		0.6	3.0	33.7	127		24	17	3.68	NE
17-05-24 15:00	3.1	1.6		0.9	2.6	31.7	126		26	14	4.21	NE
17-05-24 16:00	3.2	2.1		1.0	3.8	27.7	128		30	12	4.07	NNE
17-05-24 17:00	2.3	1.6		1.0	4.4	26.7	125		30	10	4.26	NNE
17-05-24 18:00	1.3	1.7		0.6	3.4	22.7	121		31	10	4.2	NNE
17-05-24 19:00	0.7	2.1		0.6	4.1	24.7	120		33	11	3.6	NNE
17-05-24 20:00	0.9	1.8		0.8	2.9	22.7	124		31	11	4.31	NNE
17-05-24 21:00		1.4		0.5	2.5	19.7	118		32	10	4.26	NNE
17-05-24 22:00		2.0		0.7	3.7	20.7	122		23	11	4.72	NNE
17-05-24 23:00		1.9		1.0	2.7	23.7	125		23	35	4.53	NNE
18-05-24 0:00		1.6		0.9	3.6	31.3	128	388	21	37	3.87	NNE
18-05-24 1:00		1.8		0.9	2.6	33.3	129		20	43	3.66	NNE
18-05-24 2:00		1.6		0.6	3.7	38.3	135		18	49	3.8	NNE
18-05-24 3:00		2.0		1.0	3.3	39.3	132		18	52	4.1	NNE
18-05-24 4:00		2.0		0.6	3.5	38.3	136		17	56	3.14	NNE
18-05-24 5:00		1.9		0.9	3.9	39.0	137		16	56	3.6	NNE
18-05-24 6:00		1.6		0.8	2.3	37.0	141		16	59	3.45	NNE
18-05-24 7:00		0.1		0.0	0.1	38.0	142		15	60	0.16	N
18-05-24 8:00		1.6		0.9	3.7	35.0	141		14	62	2.34	N
18-05-24 9:00		1.4		0.7	2.5	36.0	139		14	61	2.17	N
18-05-24 10:00		1.5		0.6	2.1	35.0	137		15	59	2.3	N
18-05-24 11:00		1.9		0.9	2.9	35.0	135		17	52	2.5	N
18-05-24 12:00		1.4		0.6	3.4	39.0	136		17	47	1.73	N
Average	2.1	1.6	20.1	0.7	3.1	31.6	131	388				
Maximum	3.2	2.1	20.1	1.0	4.4	39.3	142	388				
Minimum	0.7	0.1	20.1	0.0	0.1	19.7	118	388				
Monitored By:	Irtaza Ahmad											

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PAK EPA & PUNJAB EPD CERTIFIED

NOISE MONITORING REPORT

Reference Number: ESPAK/00099I/24/N/03282/00192 **Date:** 23/05/2024
Name of Industry/Client: Project Procurement International
Address: Office #26, 2nd Floor, Silver City Plaza, G11 Markaz, Islamabad
Telephone No.: ----
Nature of Sample: Noise
Date of Sample Collection: 17/05/2024 **Grab / Composite:** Continuous 24-Hours
Sample Collected/Sent By: Irtaza Ahmad, Analyst (Field), ESPAK
Date of Completion of Analysis: 18/05/2024
Method/Equipment Used: Sound Level Meter

S. No	Measurement Point	Limit Values (NEQS)	Noise Level in dB(A) Leq	Remarks
1	Mid-Point of Site at G 11/1 G -11, Islamabad - (SECP) (GPS: 33.660494°N,72.999362°E) - Day time	65 dB(A)	63 dB(A)	Within Prescribed Limits
2	Mid-Point of Site at G 11/1 G -11, Islamabad - (SECP) (GPS: 33.660494°N,72.999362°E) - Night time	55 dB(A)	59 dB(A)	Exceeding Prescribed Limits

NEQS: National Environmental Quality Standards for Noise in Commercial Area, 2010 Day Time Hours (6:00 am to 10:00 pm) Night Time Hours (10:00 pm to 6:00 am).
- Uncertainty of Measurement (UoM) data will be provided on request, where available. The statement of conformity, if provided in the report, is based on the decision rule of simple acceptance or rejection with equal shared risk due to measurement uncertainty.

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- **The report data is not intended to be used legally by the client.**

1. **Sample Analyzed By:** Irtaza Ahmad, Analyst (Field)
2. **Name of Chief Analyst with Seal:** Muhammad Arfan
3. **Signature of Incharge of the Environmental Laboratory:**
   Name: Imran Malik
   General Manager
   Date: 23/05/2024

---------- End of Report ----------

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Report Referance		**ESPAK/00099I/24/N/03282/00192**
Client Name		**Project Procurement International**
Address		**Office #26, 2nd Floor, Silver City Plaza, G11 Markaz, Islamabad**
Monitoring Location		**Mid-Point of Site at G 11/1 G -11, Islamabad -(SECP)**
GPS Coordinates		**33.660494°N,72.999362°E**
Monitoring Date		**17/05/2024 to 18/05/2024**
Day/Night	**Date & Ending Hour**	**Noise**
		dB (A) Leq
Day Time	17-05-24 13:00	62.0
	17-05-24 14:00	60.0
	17-05-24 15:00	63.1
	17-05-24 16:00	58.0
	17-05-24 17:00	68.2
	17-05-24 18:00	54.0
	17-05-24 19:00	65.9
	17-05-24 20:00	63.2
	17-05-24 21:00	62.2
	17-05-24 22:00	61.2
	18-05-24 7:00	55.6
	18-05-24 8:00	62.2
	18-05-24 9:00	64.8
	18-05-24 10:00	69.1
	18-05-24 11:00	71.5
	18-05-24 12:00	74.7
Average Day time		**63**
Night Time	17-05-24 23:00	57.3
	18-05-24 0:00	55.0
	18-05-24 1:00	56.2
	18-05-24 2:00	57.0
	18-05-24 3:00	61.0
	18-05-24 4:00	62.4
	18-05-24 5:00	60.7
	18-05-24 6:00	58.6
Average Night time		**59**
Monitored By:		**Irtaza Ahmad**

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CHEMICAL ANALYSIS TEST REPORT (GROUND WATER)

Reference Number: ESPAK/00099I/24/GW/03283/00362 **Date:** 27/05/2024
Name of Industry / Client: Project Procurement International
Address: Office #26, 2nd Floor, Silver City Plaza, G11 Markaz, Islamabad
Telephone No: ---
Nature of Sample: Groundwater from Motor Pump at SECP
Date Sample Received: 18/05/2024 **Grab / Composite:** Grab
Date of Sample Collection: 17/05/2024
Sample Collected / Sent By: Irtaza Ahmad, Analyst (Field), ESPAK
Date of Completion of Analysis: 24/05/2024

S. No	Parameters	Limit Values (NSDWQ)	Concentration	Method / Equipment Used	Remarks
1	Total Coliforms	---	ND	SMWW 9222 B	---
2	Fecal Coliform Bacteria	Must not be detectable in any 100 mL sample	ND	SMWW 9222 H	Within Limits
3	E. Coli	Must not be detectable in any 100 mL Sample	ND	SMWW 9222 H	Within Limits
4	Taste	Non Objectionable / Acceptable	**Unacceptable**	Organoleptic	Exceeding Limits
5	Odor	Non Objectionable / Acceptable	Acceptable	Organoleptic	Within Limits
6	pH*	6.5-8.5	7.0	SMWW 4500H*B	Within Limits
7	Turbidity	<5 NTU	**73 NTU**	SMWW 2130B	Exceeding Limits
8	Color	≤15 TCU	ND	SMWW 2120 C	Within Limits
9	Total Dissolved Solids (TDS)*	<1000 mg/L	619 mg/L	SMWW 2540C	Within Limits
10	Total Hardness as $CaCO_3$*	<500 mg/L	400 mg/L	SMWW 2340C	Within Limits
11	Residual Chlorine	0.2-0.5 mg/L	ND	SMWW 4500-Cl B	---
12	Chloride (as Cl^-)*	<250 mg/L	29 mg/L	SMWW 4500Cl-B	Within Limits
13	Fluoride (F^-)*	≤1.5 mg/L	0.3 mg/L	U.S. EPA 9214	Within Limits
14	Cyanide (CN^-)	≤0.05 mg/L	ND	SMWW 4500 CN^- F	Within Limits
15	Nitrate (NO_3^-)	≤50 mg/L	41 mg/L	SMWW 4500NO_3^-B	Within Limits
16	Nitrite (NO_2^-)	≤3 mg/L	ND	SMWW 4500NO_2^-B	Within Limits
17	Phenolic Compounds (as Phenols)	NGVS	ND	SMWW 5530 C	---
18	Aluminum (Al)	≤0.2 mg/L	ND	U.S. EPA-200.7	Within Limits
19	Antimony (Sb)	≤0.005 mg/L	ND	U.S. EPA-200.7	Within Limits
20	Arsenic (As)	≤0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
21	Barium (Ba)	0.7 mg/L	ND	U.S. EPA-200.7	Within Limits
22	Boron (B)	0.3 mg/L	ND	U.S. EPA-200.7	Within Limits

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CHEMICAL ANALYSIS TEST REPORT (GROUND WATER)

Reference Number: ESPAK/00099I/24/GW/03283/00362 **Date:** 27/05/2024

Name of Industry / Client: Securities and Exchange Commission of Pakistan

S. No	Parameters	Limit Values (NSDWQ)	Concentration	Method / Equipment Used	Remarks
23	Cadmium (Cd)	0.01 mg/L	ND	U.S. EPA-200.7	Within Limits
24	Chromium (Cr)	≤0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
25	Copper (Cu)	2.0 mg/L	ND	U.S. EPA-200.7	Within Limits
26	Lead (Pb)	≤0.05 mg/L	ND	U.S. EPA-200.7	Within Limits
27	Manganese (Mn)	≤0.5 mg/L	ND	U.S. EPA-200.7	Within Limits
28	Mercury (Hg)	≤0.001 mg/L	ND	U.S. EPA-200.7	Within Limits
29	Nickel (Ni)	≤0.02 mg/L	ND	U.S. EPA-200.7	Within Limits
30	Selenium (Se)	0.01 mg/L	ND	U.S. EPA-200.7	Within Limits
31	Zinc (Zn)	5.0 mg/L	0.3 mg/L	U.S. EPA-200.7	Within Limits

NSDWQ: National Environmental Quality Standards for Drinking Water Quality, 2010
SMWW: Standard Methods for the Examination of Water and Waste Water 23rd Edition, American Public Health Association, American Water Works Association, Water Environment Federation USA (2017)
USEPA: United States Environmental Protection Agency
NGVS: No Guideline Value Set
ND: Not Detected

- Laboratory tests and measurements were carried out at 25 ± 5 °C and 50 ± 20 % Relative Humidity conditions unless required otherwise.
- Uncertainty of Measurement (UoM) data will be provided on request, where available. The statement of conformity, if provided in the report, is based on the decision rule of simple acceptance or rejection with equal shared risk due to measurement uncertainty.

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- **The report data is not intended to be used legally by the client.**
- **Only parameters marked with asterisk (*) are ISO 17025:2017 accredited.**

1. **Sample Analyzed By:** Riaz Ahmad (Analyst (Chemical)), Abdul Aziz (Analyst (Chemical)), Muhammad Shahid (Analyst (Chemical)), Khizra Bano (Analyst (Microbiology)), Samahir Khalid (Analyst (Chemical))
2. **Name of Chief Analyst with Seal:** Muhammad Arfan
3. **Signature of Incharge of the Environmental Laboratory:**

Name: Imran Malik
General Manager
Date: 27/05/2024

---------- End of Report ----------

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