M/S ONE HILLS (SMC-PRIVATE) LIMITED

ENVIRONMENTAL IMPACT ASSESMENT OF ONE HILLS APARTMENTS TOWER-III PROJECT, BAHRIA HILLS, ZONE IV, ISLAMABAD

JUNE 2025

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Report Disclaimer

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Executive Summary

Title of the Project

This report presents the findings of "Environmental Impact Assessment of One Hills Apartments Tower-III Project, Hill Top Road, Bahria Hills, Islamabad".

Location of the Project

One Hills Apartments Tower-III is on Plot No. 8, Street No. 03, Hill Top Road, Bahria Hills, Zone IV, Islamabad. The Tower III is part of the three towers located on Plot 1 (Tower I), Plot 7, (Tower II) and Plot 8 (Tower III). The Project site is accessible from Street No. 03 and Hill Top Road which are further connected to Angoori Road and then Murree Expressway.

Name of Proponent and Organization preparing the Report

M/s One Hills (SMC-Private) Limited is the proponent of the project.

In order to comply with the regulatory requirement of federal environmental laws of the government of Pakistan, M/s One Hills (SMC-Private) Limited, 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 state-of-the-art residential apartment building to facilitate the population of Islamabad with state-of-the-art housing area with all the required facilities in one place.

The proposed project will comprise of a residential tower with 3 basements, ground floor and eighteen floors. Tower III will accommodate 132 residential apartment units. The Building will have total covered area of 249,414 sq.ft.

Total Plot area of the project is 6.91 Kanal. This will include Apartment buildings, Park/Green/Open Spaces and Roads. 62% area of the total plot area is reserved for open spaces and greenery.

As per parking requirements, basements shall be used for parking. A total of 198 car parking spaces are available in the basement-3 (69 cars), basement-2 (65 cars), basement-1 (64 cars) of One Hills Apartments Tower III. Whereas, car parking requirement for the apartments Tower III is 198 cars for 132 apartments.

The cost of the project is Rs. 2.08 Billion and will be completed in 3 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 on the Northern edge of the track known as Potohar Plateau. The Potohar Plateau has an uneven table and land is gradually rising in elevation from 500 to 600 meters above sea level, and the highest point is 1,600 meters above mean sea level. The Project Site is located in Bahira Hills which is in an undulating land features. The plot site is flat land with slope gradually sloping towards the South.

Geology and Soil: The project site strata mainly consist of silty clay underlain by sand and boulders/rock beds.

Land Use: The project site comprises of barren land with scarce vegetation.

Surface Water: There is Korang river in the project area about 0.35 km Northwest of the project site.

Ground Water: Bahria Town's supply is the main source used in project area for domestic purposes.

A chemical analysis test of the ground water was conducted at the project site in the project area. The samples of ground water were collected on 19th January, 2025 and were received by the Green Cresent Environmental Consultants pvt.Ltd Pakistan on 20th January, 2025 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 6.69, 472 mg/L, 21.68 mg/L, <0.0028 mg/L, <0.0054 mg/L, <0.0045 mg/L, <0.013 mg/L, <0.0016 mg/L , <0.008 mg/L, <0.0033 mg/L, ND, <0.028 mg/L, <0.01 mg/L, <0.1 mg/L, <0.031 mg/L, <0.0008 mg/L, ND, ND, ND, <1.0 Pt/Co, Sweet, Odorless, 0.1 NTU, 360 mg/L, <0.01 mg/L, <0.01 mg/L, 2.0 mg/L, <0.01 mg/L, <0.1 mg/L and <0.01 mg/L respectively at project site.

It was found that all these parameters are within the permissible limit.

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 surrounding areas (especially 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 ºC to 46 ºC. The coldest month is January when the mean maximum temperature is 18.3 ºC, and the mean minimum is 3.8 ºC.

From February to May the temperature rises at the rate of 5.0 ºC per month. The highest temperature reached in May when the mean maximum temperature remains 39.1 ºC.

Air Quality: The ambient air and noise level monitoring was conducted on 17th to 18th January, 2025 for 24 hours at the project site.

The ambient air quality and noise monitoring was carried out by Pak - EPA Certified laboratory, Green Cresent Environmental Consultants.

The average 24-hour CO, SO2, O3, NO, NO2, PM2.5, PM10, and SPM were recorded at project site as 2.0 mg/m3, 17.5 ug/m3, 21.9 ug/m3, 24.0 ug/m3, 29.1 ug/m3, 32.5 ug/m3, 137 ug/m3, 479 ug/m3 repectively, at point-2 as 1.8 mg/m3, 15.6 ug/m3, 19.6 ug/m3, 21.5 ug/m3, 26.1 ug/m3, 31.5 ug/m3, 133 ug/m3, 464 ug/m3 repectively and at point-3 as 2.2 mg/m3, 19.3 ug/m3, 24.1 ug/m3, 26.5 ug/m3, 32.1 ug/m3, 31.8 ug/m3, 134 ug/m3, 468 ug/m3 repectively.

The ambient air quality monitoring results indicate that the parameters for ambient air quality are within the NEQS limits.

Noise and Vibration: 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 46.26 dB at day time and 44.98 dB at night time.

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 very little vegetation and mostly comprises of local grass.

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 Porcupine, 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: Maira Reserved Forest is located at a distance of 2.3 km Southeast of the project site and Kathar Reserved Forest is located at a distance of 4.3 km southeast of the project site.

Socio-Economic and Cultural Environment

The socio-cultural and socio-economic conditions of the project area, namely Bahria Hills and Phulgraan is described in the report. These are the localities, which may get direct positive or negative impacts from the development of One Hills Apartments Tower-III Project.

Public Consultation

During the public & stakeholder consultation, meetings were held with the Project Proponent, NZ Architect (Design Architect Team), IESCO, Acdemia, Environmental Practitioners, Real Estate Dealers, CDA Emergency Disaster Management Directorate and community and workers 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.

Generally, the people of the project area are in favour of the project and stated that this project would develop and create business opportunities.

Major Impacts and Recommended Mitigation Measures

Phases/Activities	Impacts	Mitigation Measures
Construction Phase activities including: • Marterials storage, • 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	Air Quality Deterioration: Construction machinery and project vehicles will release exhaust emissions, containing Carbon Monoxide (CO), Oxides of Sulfur (SOx), Oxides of Nitrogen (NOx), and Particulate Matter (PM). In addition, various burning activities involved in roads construction will also cause air pollution.	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 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	Soil erosion can be minimized by appropriate land clearing, levelling and grading. Use of sediment traps around the erosion prone sites to prevent soil runoff. Excavated slopes will not be left untreated/unattended for long durations, and appropriate slope stabilization measures will be taken as per the design.

Phases/Activities	Impacts	Mitigation Measures
• Disposal of Surplus material, • Storage, handling, and transport of hazardous (oils, paints and chemical stabilizers) 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.	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.	For the domestic sewage from the contractor's camp will be disposed off in the Bahria Hills sewerage network. 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.	Site office to be located away from surface water bodies. Excavation will be done in the supervision of the site engineer so he can decide up to which limit excavation should be done. Washing of vehicles and machinery in the project area will be prohibited. A rainwater harvesting system will be implemented in the project, designed to efficiently capture and utilize rainwater.
	Damage to Flora and Fauna due to site clearing and development works	No Trees will be cut due to this construction phase of the project. Use of local vegetation/wood as fuel by crew personnel will be prohibited. The camp sites will be kept to the minimum area. Record will be maintained for tree felling (if any) with species name and count. Provision of such vegetation native species of trees which help in making similar old habitat will be done. The measures to restore natural vegetation loss in the area will benefit the area's fauna as well. 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 One Hills Apartment Tower Project has been prepared. 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.
	Noise and Vibration due to heavy machinery and vehicles	To mitigate these impacts noise barriers will be constructed in sensitive areas. Construction equipment and vehicles will have exhaust mufflers (silencers) to minimize noise generation. Ensure proper lubrication and maintenance of machines to minimize noise from worn-out parts.

Phases/Activities	Impacts	Mitigation Measures
		Conduct excavation and piling in smaller, controlled sections to minimize vibration spread.
	Safety Hazards, Public Health and Nuisance	There will 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 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.
Operational Phase Activities: Traffic Management Induced vehicular traffic movement, Disposal of Wastewater Solid waste discharge from Tower III.	Improper planning traffic can lead to traffic congestion	The Project is located inside Bahria Hills Project which is approved by CDA and has adequate main roads for easy access to the project site.
	Contamination of Surface and Ground Water	The wastewater generated at the project will be treated in the septic tanks located within the project. The effluent will be discharged into the Bahria Hills sewerage network for further treatment and disposal.
	Solid Waste Management	Source segregation of solid waste will be carried out through the deployment of three bin system. The segregated recyclable waste will be handed to the vendors for further disposal. The non recyclable waste will be handed to Bahria Town management for further disposal at the designated site.
	Erratic climate change can cause the following impacts: ▪ Carbon emissions due to fuel and electricity consumptions ▪ Water scarcity due to droughts ▪ Urban heat island effect can increase the ground temperature	The following mitigation measures shall be carried out: ▪ Solar system to generate renewable energy to reduce scope 2 emissions. ▪ Use of double glazed low e glass windows to insulate the building from outside temperature. ▪ Reduced water consumption due to usage of water effiencient fixtures and dual flush toilets. ▪ Rainwater storage through underground storage tank

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 One Hills

Apartments Tower-III 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.

M/s One Hills (SMC-Private) Limited 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 **49 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 One Hills Apartments Tower-III 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
Nos	Numbers
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]

Rapid urbanization has led to a housing shortage. The State Bank of Pakistan has estimated that across all major cities, urban housing was approximately 4.4 million units short of demand in 2015. If current trends continue, Pakistan's five largest cities will account for 78 percent of the total housing shortage by 2035. When provided, housing is often low quality. Pakistan ranks eighth among the ten countries that collectively hold 60 percent of substandard housing across the world. [3]

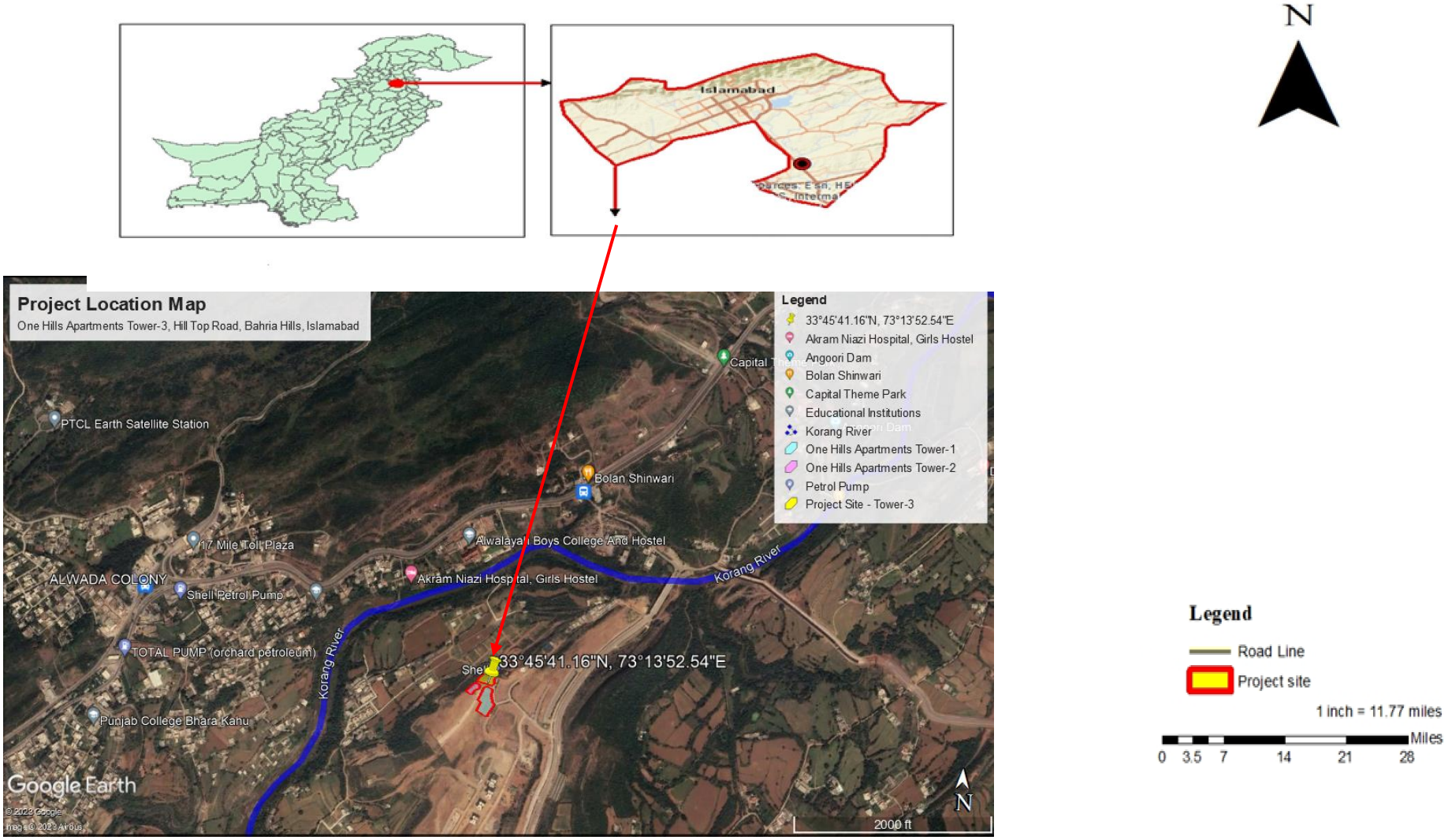
With the cost of land increasing rapidly in cities in Pakistan, high-rise buildings and apartments are becoming more feasible. The **vertical expansion** means cities can **accommodate more** residential/commercial **space per square meter** of the ground floor than single-story buildings that take up 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 when compared to single-story horizontal developments of the same magnitude. High-rise buildings offer much better security to tenants than a ground-level development which provides multiple points of access for intruders. More security is often required for a single-story complex.

1.2 The Project

M/s One Hills (SMC-Private) Limited intends to develop a state of the art residential apartments tower named "One Hills Apartments Tower-III" on Plot No.01, Hill Top Road, Bahria Hills, Islamabad. The keymap of the project location has been shown in **Figure 1.1.**

[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
[3] The National Socio-Economic Registry (NSER), based on the Benazir Income Support Programme's (BISP) Poverty Score Survey (PSS) conducted in 2010

Figure 1.1: Key Location Map of the One Hills Apartments Tower-III Project



1.3 The Proponent

M/s One Hills (SMC-Private) Limited is the proponent of the Project.

M/s One Hills (SMC-Private) Limited is a rapidly growing, prospering, and flourishing name in the construction industry of Pakistan. The strong work ethics of quality, luxury, trust, client's satisfaction, and reliability has earned a good reputation for the M/s One Hills (SMC-Private) Limited.

The aim of the M/s One Hills (SMC-Private) Limited is to offer the highest standards of luxury and reliability in the fast-evolving construction and development industry of Pakistan.

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 One Hills Apartments Tower-III 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 M/s One Hills (SMC-Private) Limited. and PPI is the following:

M/s One Hills (SMC-Private) Limited.	**Environmental Consultant**
Mr. Noor Ul Hassan Lodhi Head-Project Control M/s One Hills (SMC-Private) Limited 4th Floor, One homes Office, Rashid Plaza, Blue Area, Islamabad, Pakistan. Mob: 0336-4384756	**Mr. Ali Abdullah,** Environmental Engineer Project Procurement International 26, Second Floor, Silver City Plaza, G 11 Markaz, Islamabad Tel: +051 2363624 Cel: 0300 9110245 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 Provincial 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 M/s One Hills (SMC-Private) Limited to obtain environmental approval of the construction of One Hills Two Apartments Tower-III 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

One Hills Apartments Tower-III Project will be a residential development spread over 6.91 kanals on Hill Top Road.

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 28th December 2023 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. 01, Hill Top Road, Bahria Hills, Islamabad. The Project site is located in an urban area. The Tower III is part of the three towers located on Plot 1 (Tower I), Plot 7, (Tower II) and Plot 8 (Tower III). 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:

- The EMP cost should be propotionate to the total cost of the project
- Shadow Analysis and Carbon Footprint
- Effectiveness of Construction Material and Transportation Management Plan
- Wastewater Treatment Plant
- 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 One Hills Apartments Tower-III Project.

Checklist of Screening of Potential Environmental Impacts			
Screening Questions	**Yes**	**No**	**Remarks**
Project Siting Impacts			
Densely populated?		✓	The Project site is located in Bahria Hills
Heavy with development activities?	✓		Bahria Hills have a number of development projects under construction phase
Adjacent to or within any Environmentally sensitive areas?		✓	No 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 main boulevard of the Bahria Hills is 60 ft wide dual carriage way.
Surface and Groundwater Contamination		✓	The wastewater will be disposed of in sewerage network of Bahria Hills after treatment.
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.

Checklist of Screening of Potential Environmental Impacts			
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.
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 implemented 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 project of M/s One Hills (SMC-Private) Limited.

The scope of EIA of One Hills Apartments Tower-III 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 One Hills Apartments Tower-III 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 Project Coordinator of One Hills Apartments Tower-III 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 and 2 nearest points were 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 One Hills Apartments Tower-III 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, Architect of the Project, 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 developing to monitor the achievement of the Environmental Management Plan during pre-construction, 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 shows the summary of methodologies and activities to conduct EIA.

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 One Hills Apartments Tower-III 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 National Environmental Policy, 2005

The National Environment Policy (NEP) aims to protect, conserve and restore Pakistan's environment in order to improve the quality of life of the citizens through sustainable development. In NEP, the further sectorial guidelines, Energy Efficiency and Renewable directly related to building energy code for newly constructed buildings were introduced.

2.3 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.

2.3.1 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.

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

Pakistan Environmental Protection Agency (Review of *IEE and EIA* Regulations), 2000 (the Regulations) 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*.
- The submittal is to be accompanied by an application in prescribed format included as schedule IV of the Regulations.
- The EPA is bound to conduct preliminary scrutiny and reply within 10 days of submittal of the report a) confirming completeness, b) asking for additional information, or c) requiring additional studies.
- The EPA is required to make every effort to complete the review process for IEE within 45 days and of the EIA within 90 days, of the issue of the confirmation of completeness.
- EPAs accord their approval subject to the following conditions:
- Before 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 One Hills Apartments Tower-III Project falls in schedule-II of the regulations. Hence, this type of project needs an EIA to be conducted.

2.4 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.

2.4.1 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

Parameters	Into Inland Waters	Into Sewage Treatment	Into Sea
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
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*

2.4.2 NEQS for Gaseous Emission

The National Environmental Quality Standards (NEQS) for permissible limits of gaseous emission from industry are presented in **Table 2.2**.

Table 2.2: NEQS for Gaseous Emission

Parameter	Source of Emission	Standard
Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale or equivalent smoke number
Particulate Matter	Boilers & Furnaces: Oil Fired, Coal-Fired, Cement Kilns	300
	Grinding, crushing, clinker coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500
		300
		500
Hydrogen Chloride	Any	400
Chlorine	Any	150
Hydrogen Fluoride	Any	150
Hydrogen Sulphide	Any	10

Parameter	Source of Emission	Standard
Sulphur Oxides	Sulfuric Acid/sulphonic Acid Plants	5000
	Other Plants except power plants operating on oil and coal	1700
Carbon Monoxide	Any	800
Lead	Any	50
Mercury	Any	10
Cadmium	Any	20
Arsenic	Any	20
Copper	Any	50
Antimony	Any	20
Zinc	Any	200
Oxides of Nitrogen	Nitric Acid Manufacturing Unit	3000
	Other plants except for power plants operating on oil or coal:	
	Gas-fired	400
	Oil fired	600
	Coal-fired	1200

Source: *NEQS Pakistan Environmental Protection Agency*

2.4.3 NEQS for Vehicular Emission

The National Environmental Quality Standards (NEQS) for permissible limits of exhaust emissions from vehicles are presented in **Table 2.3.**

Table 2.3: 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*

2.4.4 NEQS for Drinking Water, 2010

The National Environmental Quality Standards (NEQS) for drinking water quality, 2010 are presented in **Table 2.4**.

Table 2.4: 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.

Parameter	Standard values	WHO guidelines
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.
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

Parameter	Standard values	WHO guidelines
Zinc	5	3
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*

2.4.5 NEQS for Ambient Air and Noise

The National Environmental Quality Standards (NEQS) for Ambient Air and Noise, 2010 are presented in **Table 2.5** and **2.6.**

Table 2.5: 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 2.6: 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

2.5 The Capital Development Authority Ordinance 1960

The objective of Ordinance, Firstly, planning and development of Capital (Islamabad), secondly completing or authorizing Capital Development Authority to perform functions of a Municipal Committee and to provide for cleanliness, health, education of inhabitants, the supply of goods, articles of food and mild, to promote the interest of different sections of the public. All provisions are for advancing interest and the public good. Such statutes are not repugnant to Sharia (PLD 1985 FSC 221).

Capital Development Authority is a statutory body is expected to deal with citizens fairly, and honestly and conduct it's all actions transparently (2003 CLC1684). Whereas it is expedient to establish a Capital Development Authority for making all arrangements for the planning and development of Islamabad within the framework of a regional development plan.

This Ordinance may be called the Capital Development Authority Ordinance, 1960. The Ordinance has 8 chapters.

2.6 National Drinking Water Supply 2009

In September 2009, the government approved the National Drinking Water Policy that provides a framework for addressing the key issues and challenges facing Pakistan in the provision of safe drinking water to the people by 2025.

Drinking water is the constitutional responsibility of the provincial governments, and the specific provision function has been devolved to specially created agencies in cities and Towns and Tehsil Municipal Administrations under the Local Government Ordinance 2001.

Therefore, this policy framework is intending to guide and support the provincial and district governments in discharging their responsibility in this regard. The overall goal of the national drinking water policy is the following:

- To ensure safe drinking water to the entire population at an affordable cost in an equitable, efficient and sustainable manner.
- To ensure a reduction in the incidence of mortality and morbidity caused by water-borne diseases.

The policy is expected to be reviewed and updated every five years to examine its implementation and efficacy and to adapt it to the changing situation in the country.

2.7 Land Acquisition Act, 1894

The Land Acquisition Act (LAA) of 1894 amended from time to time has been the de-facto policy governing land acquisition and compensation in the country. The LAA is the most commonly used law for acquisition of land and other properties for development projects. It comprises of 55 sections pertaining to area notifications and surveys, acquisition, compensation and apportionment awards and disputes resolution, penalties and exemptions.

2.8 Building Code of Pakistan- Fire Safety Provisions – 2016

The Building Code of Pakistan-Fire Safety Provisions-2016 provide rules for fire prevention, life safety in relation to fire and fire protection of building and structures as prescribed. Building Code of Pakistan-Fire Safety Provisions-2016 shall be adopted by the federal vi and provincial governments, organizations, authorities, both public and private, as notified.

- This Byelaw shall apply to both new and existing buildings.
- Any person who fails to comply with this Byelaw or fails to carry out an order made pursuant to these provisions, or violates any condition attached to a permit, approval, or certificate shall be subject to the penalties in accordance with the regulations

2.9 Pakistan Occupational Health and Safety Act, 2018

An act to ensure safe and healthy working conditions for the people at work; by authorizing enforcement of the rules and regulations developed under the Act; by assisting and encouraging the organizations, institutions and geographic areas governed by the federal government in their efforts to ensure healthy and safe working conditions; by providing for research, information, education, and training in the field of occupational health and safety.

The Pakistan Occupational Health and Safety Act, 2018 is available at the following link:

https://www.pec.org.pk/Downloadables/buildingCode/Draft%20Modle%20OHS%20Act%202018.pdf

2.10 Institutional Set-Up

The apex environmental body in the country is the Pakistan Environmental Protection Council (PEPC), presided over by the Chief Executive of the Country. Other bodies include the Pakistan Environmental Protection Agency (Pak-EPA), provincial EPAs (for four provinces, AJK and Gilgit Baltistan) and environmental tribunals.

The EPAs were first established under the 1983 Environmental Protection Ordinance; the PEPA 1997 further strengthened their powers. The EPAs have been empowered to receive and review the environmental assessment reports (IEEs and EIAs) of the proposed projects and provide their approval (or otherwise).

The Project is located at Plot No. 08, Hill Top Road, Bahria Hills, Islamabad. Therefore, the EIA report will be submitted to the Pakistan Environmental Protection Agency, Islamabad for obtaining environmental approval for the project.

2.10.1 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.

2.10.2 Obligation under International Treaties

Pakistan is a signatory to various international treaties and conventions on the conservation of the environment and wildlife protection. The country is obliged to adhere to the commitments specified in these treaties. The Convention on Biological Diversity (CBD) was adopted during the Earth Summit of 1992 in Rio de Janeiro. The Convention requires parties to develop national plans for the conservation and sustainable use of biodiversity and to integrate these plans into national development programs and policies.

Parties are also required to identify components of biodiversity that are important for conservation and to develop systems to monitor the use of such components with a view to promoting their sustainable use.

The Convention on the Conservation of Migratory Species of Wild Animals, 1979 requires countries to take action to avoid endangering migratory species, where the term migratory species refers to species of wild animals of which significant proportions cyclically and predictably cross one or more national jurisdictional boundaries.

The parties are also required to promote or cooperate with research into migratory species. Under the international plant protection convention, 1951, Pakistan is required to take steps to ensure the protection of certain plant species that face the extinction threat. Pakistan signed and ratified on a number of international agreements and Convention and bound to implement them in its territory.

2.11 Implication of Legislations to the Project

The implication of the above-mentioned legislation to the pre-construction, construction and operational phase of the One Hills Apartments Tower-III Project would be as follows:

M/s One Hills (SMC-Private) Limited., 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 One Hills Apartments Tower-III 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 project is to develop state-of-the-art residential apartments to facilitate the population of Rawalpindi and Islamabad with state-of-the-art housing and commercial area with all the required facilities in one place.

3.4 Project Location and Accessibility

The project site is located on Plot No. 1, Street No. 03, Hill Top Road, Bahria Hills, Islamabad.

The project site is accessible from Street No. 03 and Hill Top Road which are further connected to Angoori Road and then Murree Expressway.

The GPS coordinates of the project site are 33°45’39.78”N and 73°13’52.18”E.

The surrounding areas near the project are as follows:

North: Street - 3

South: Hill Top Road

East: Plot - 8

West: Plot – 2

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

Figure 3.1: Location and Accessibility of One Hills Apartments Tower-III Project

3.5 Description of the Project

The proposed project will comprise of a residential tower with 3 basements, ground floor and eighteen floors. Tower will accommodate 132 residential apartment units. The apartment tower will have total covered area of 249,414 sq.ft. Total Plot area of the project is 6.91 Kanal.

This will include Apartment buildings, Park/Green/Open Spaces and Roads. 62% area of the total plot area is reserved for open spaces and greenery.

The approved floor plans, of the One Hills Apartments Tower-III Project are shown in **Figure 3.2** to **Figure 3.14.**

3.6 Schedule of Areas

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

Table 3.1: Area Schedule of One Hills Apartments Tower-III

Sr #	Floor	Covered Area (SFT)
01	Basement Level 3	23,684
02	Basement Level 2	23,684
03	Basement Level 1	23,684
04	Ground Floor	8,614
05	1st Floor	10,549
06	2nd Floor	13,008
08	3rd Floor	13,008
09	4th Floor	13,008
10	5th Floor	13,008
11	6thFloor	13,008
12	7th Floor	13,008
13	8th Floor	13,008
14	9th Floor	13,008
15	10th Floor	6,480
16	11th Floor	6,474
17	12th Floor	6,474
18	13th Floor	6,474
19	14th Floor	6,474
20	15th Floor	6,474
21	16th Floor	6,474
22	17th Floor	5,624
23	18th Floor	5,827
24	**Total**	**249,414**

Source: *M/s One Hills (SMC-Private) Limited.*

Figure 3.2: Basement-3 Plan of One Hills Apartments Tower III Project

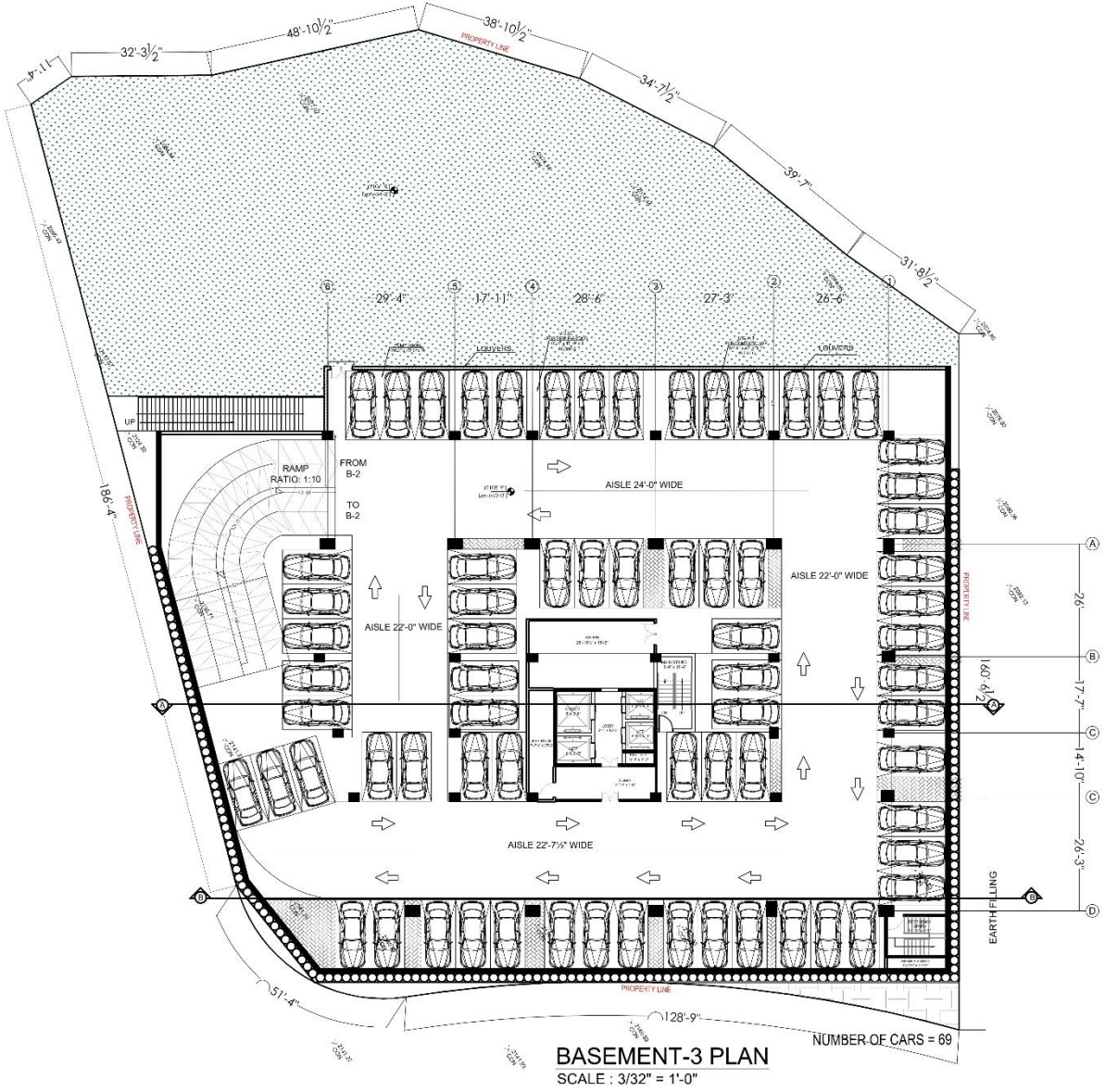


Figure 3.3: Basement-2 Plan of One Hills Apartments Tower III Project

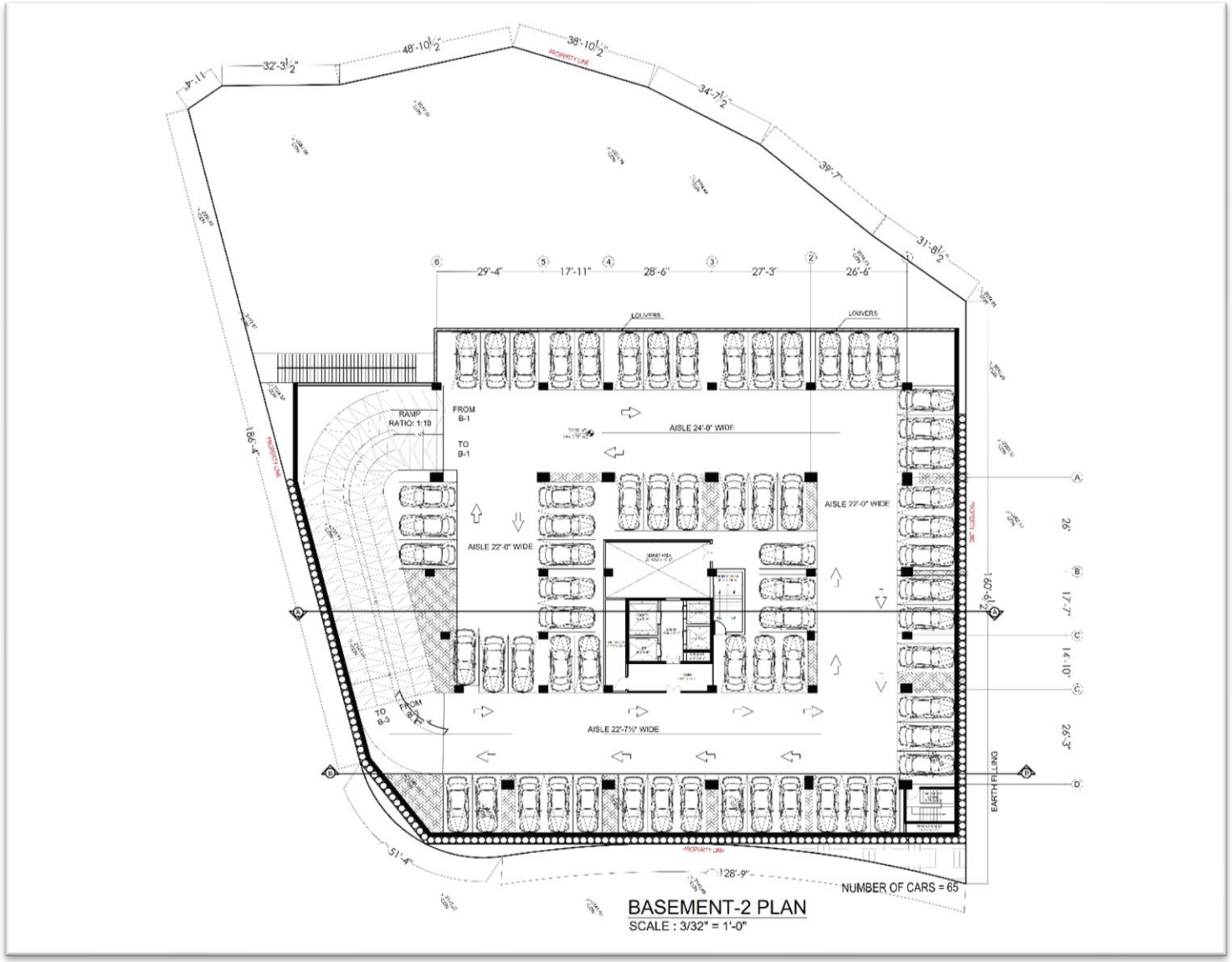


Figure 3.4: Basement-1 Plan of One Hills Apartments Tower III Project

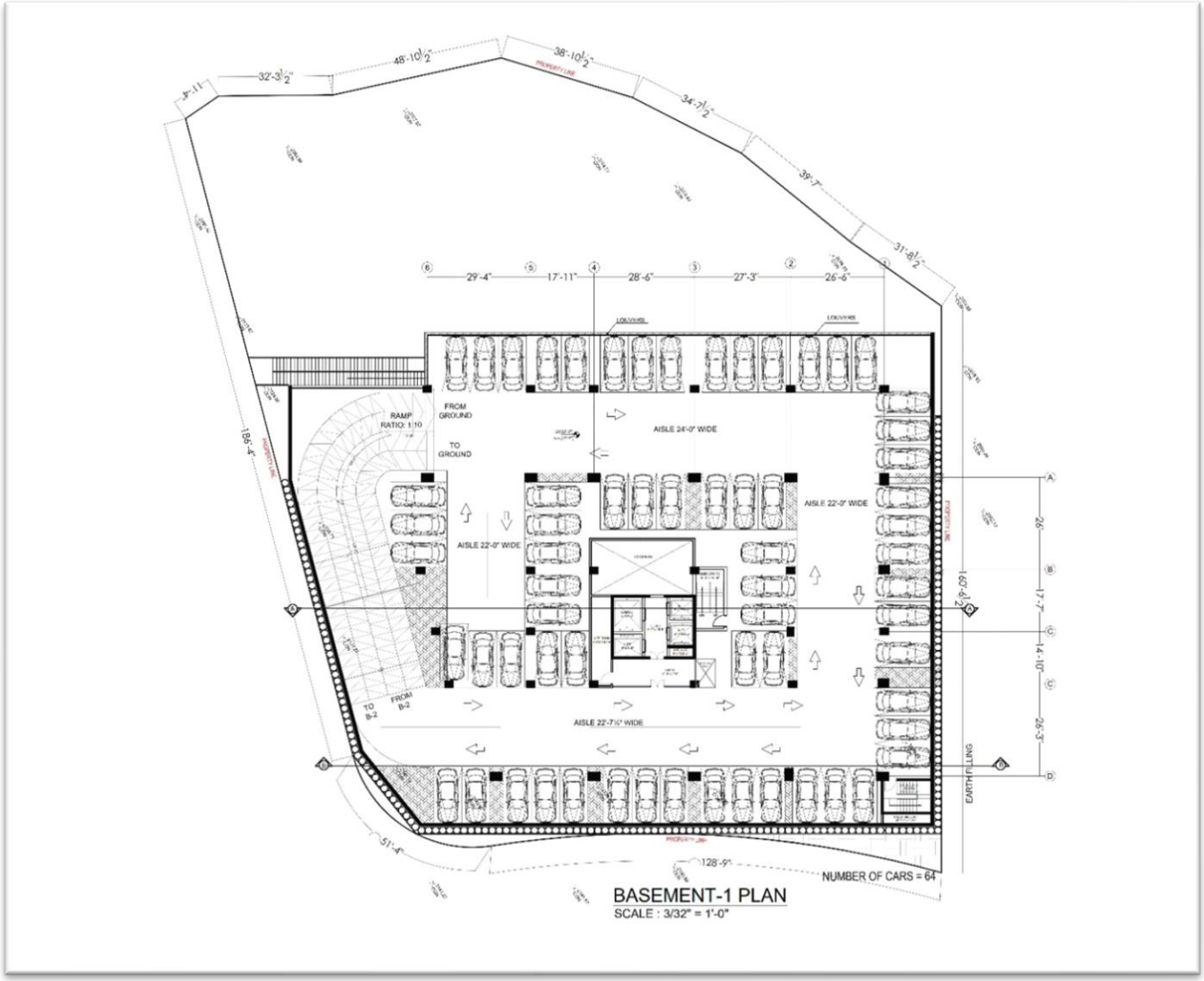


Figure 3.5: Ground Floor Plan of One Hills Apartments Tower III Project

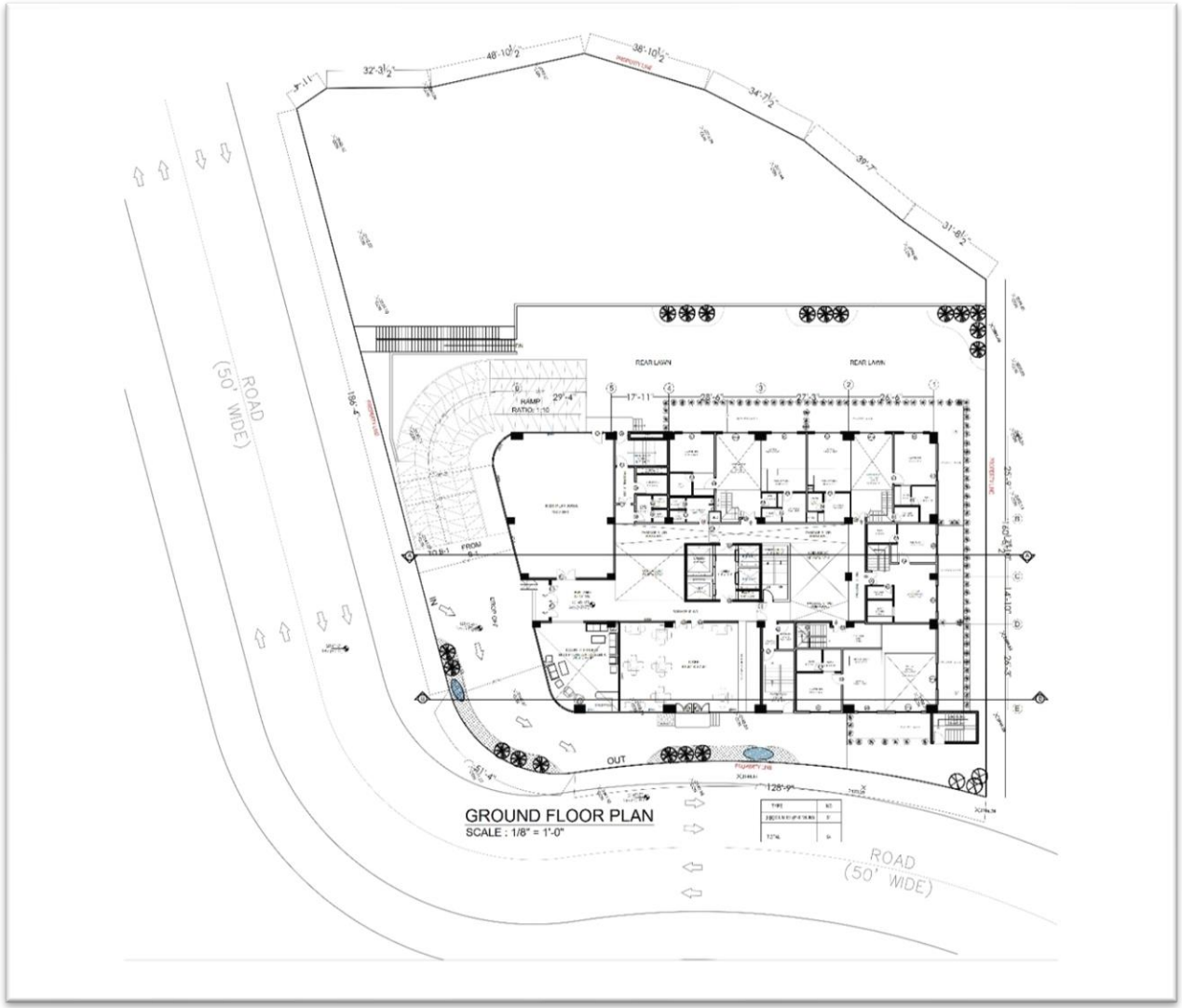


Figure 3.6: First Floor Plan of One Hills Apartments Tower III Project

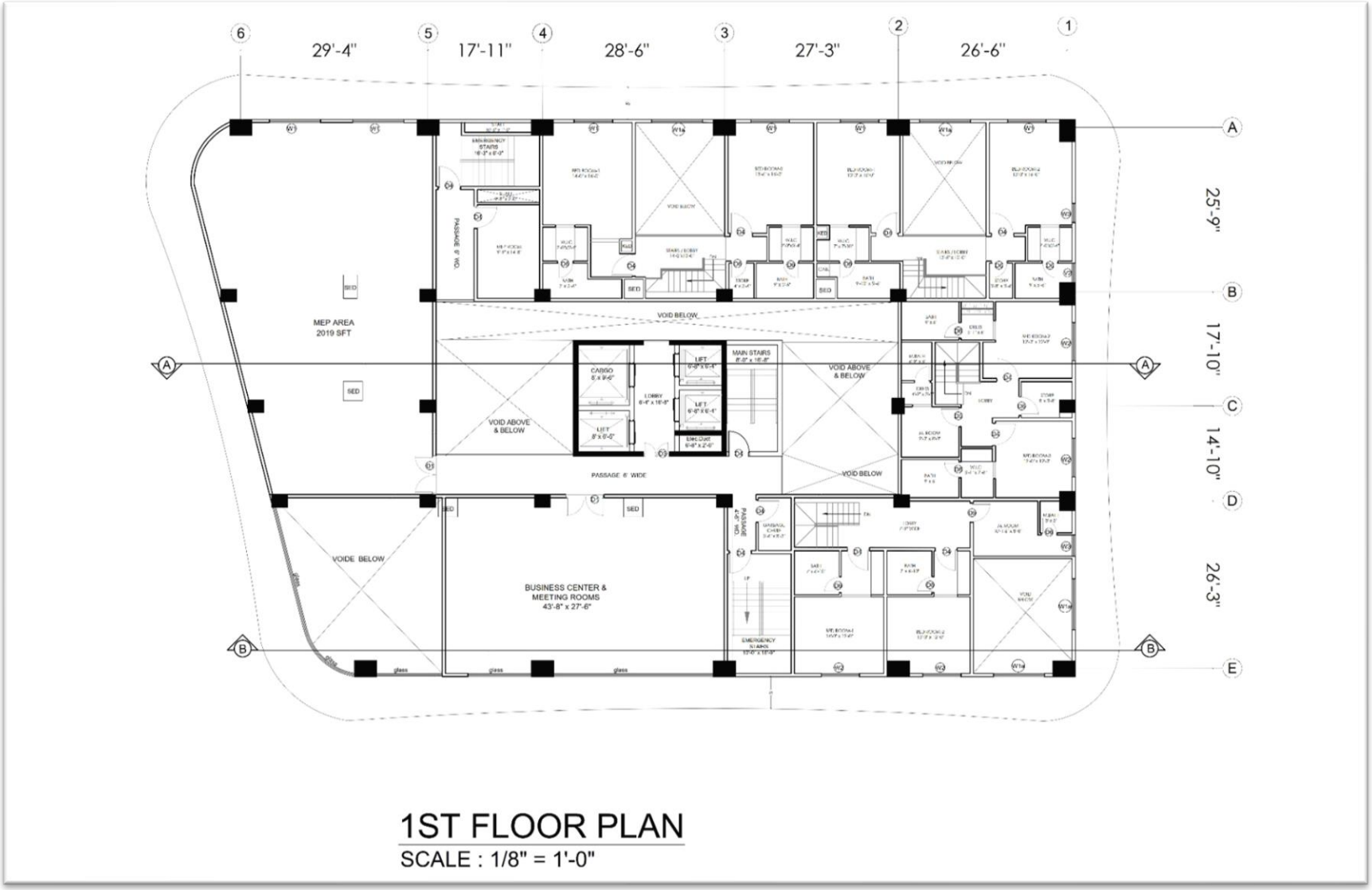


Figure 3.7: 2nd to 9th Floor Plan of One Hills Apartments Tower III Project

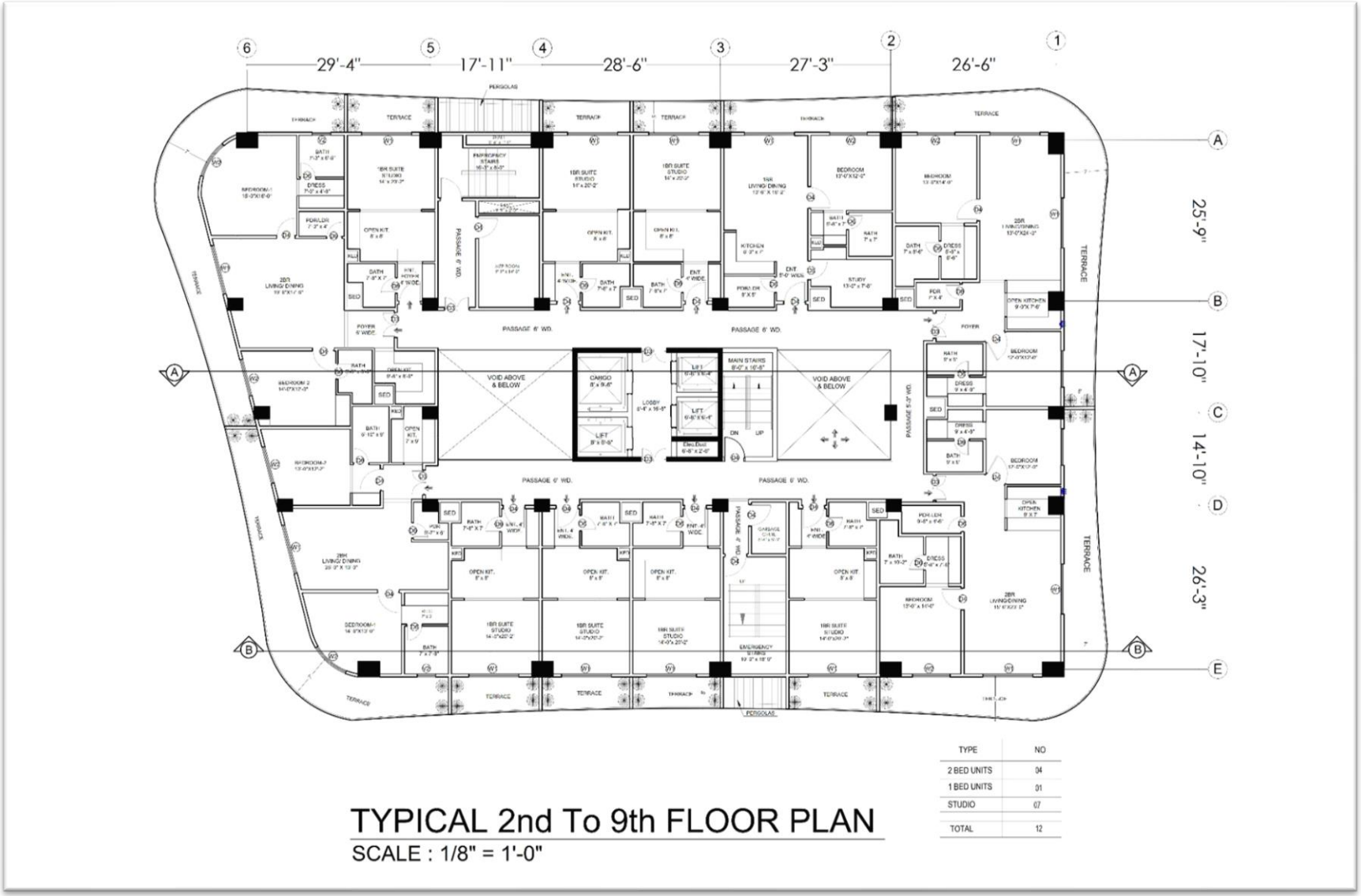


Figure 3.8: 10th Floor Plan of One Hills Apartments Tower III Project

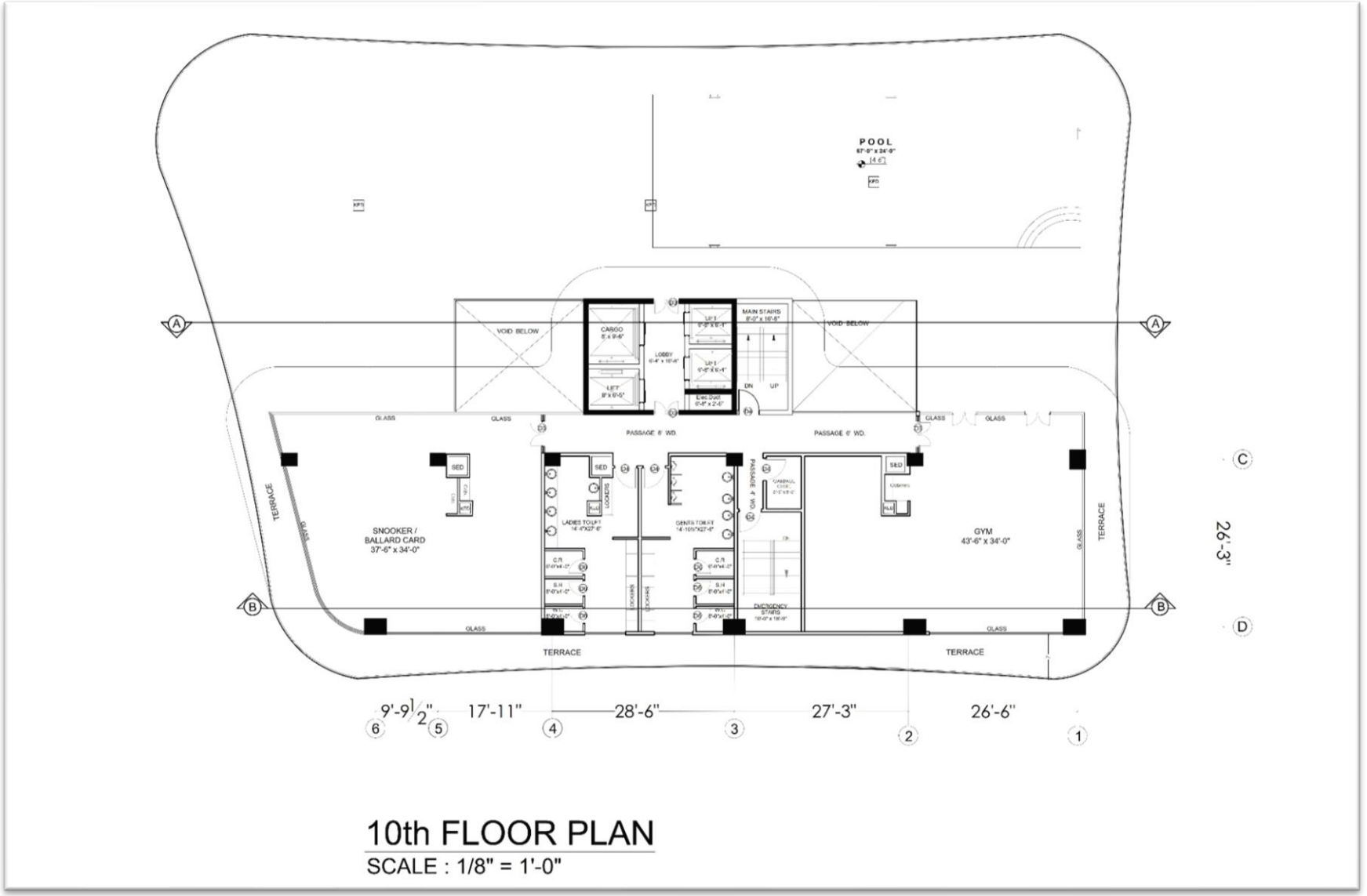


Figure 3.9: 11th to 13th Floor Plan of One Hills Apartments Tower III Project

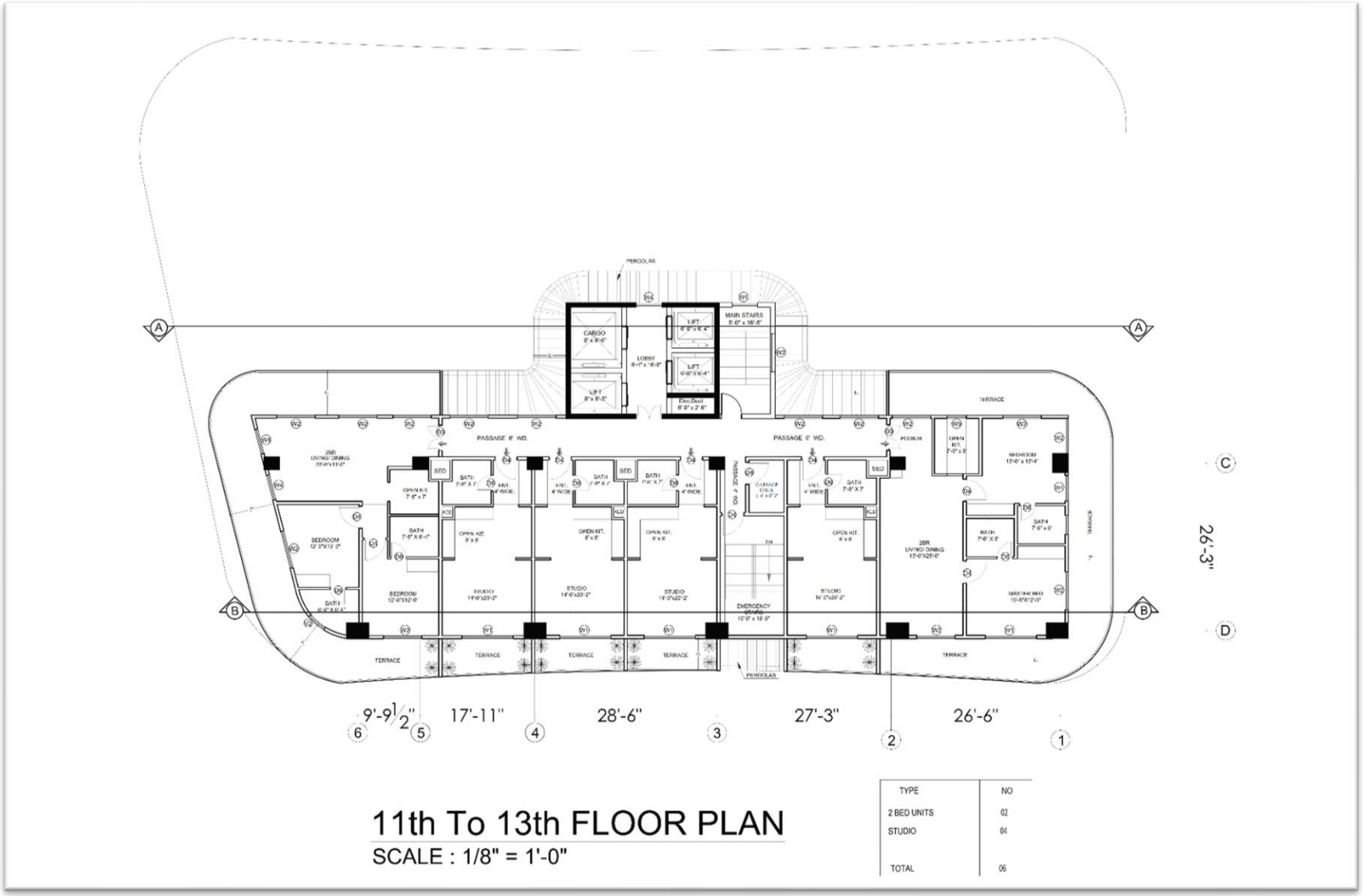


Figure 3.10: 14th Floor Plan of One Hills Apartments Tower III Project

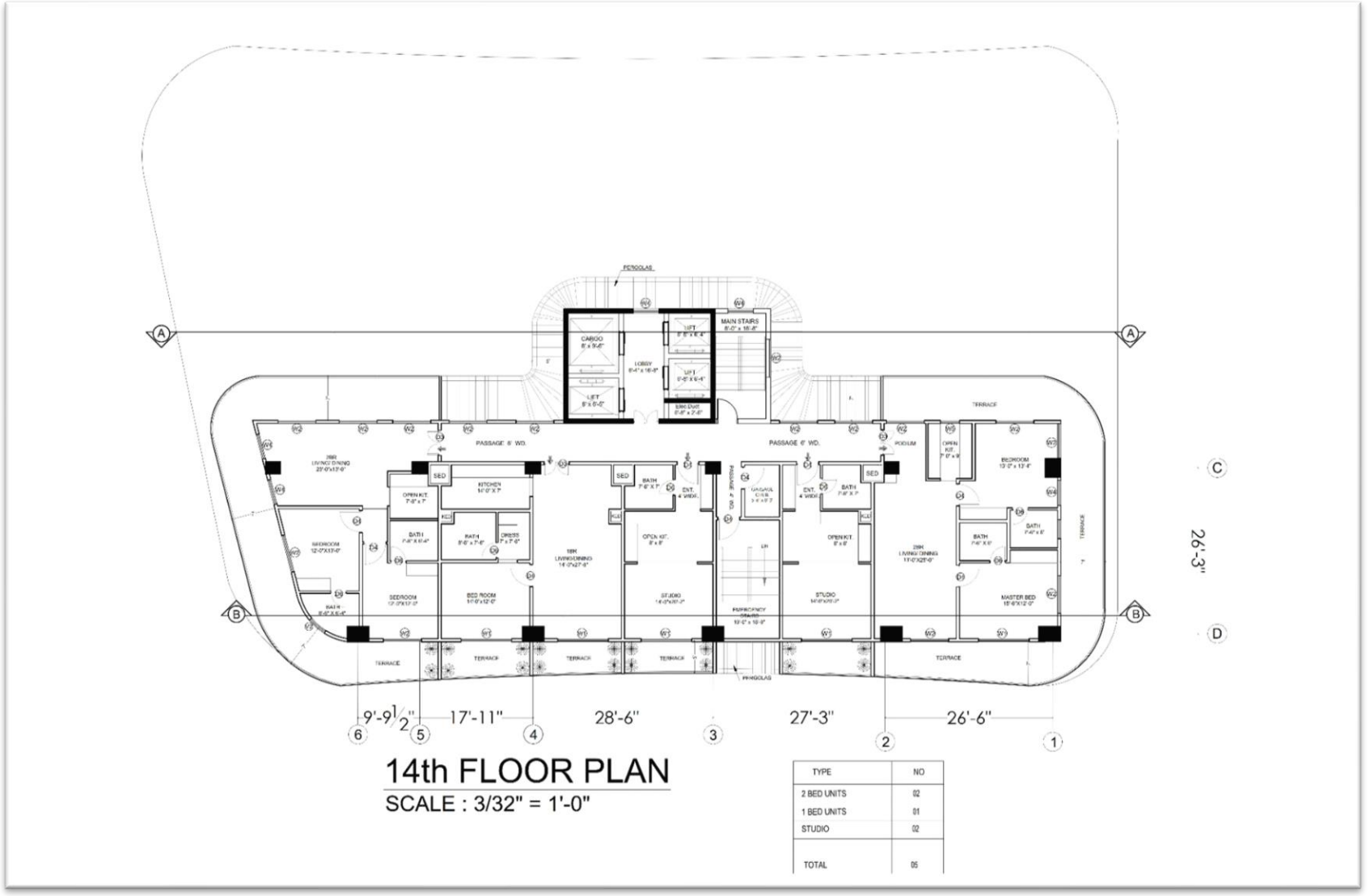


Figure 3.11: 15th to 16th Floor Plan of One Hills Apartments Tower III Project

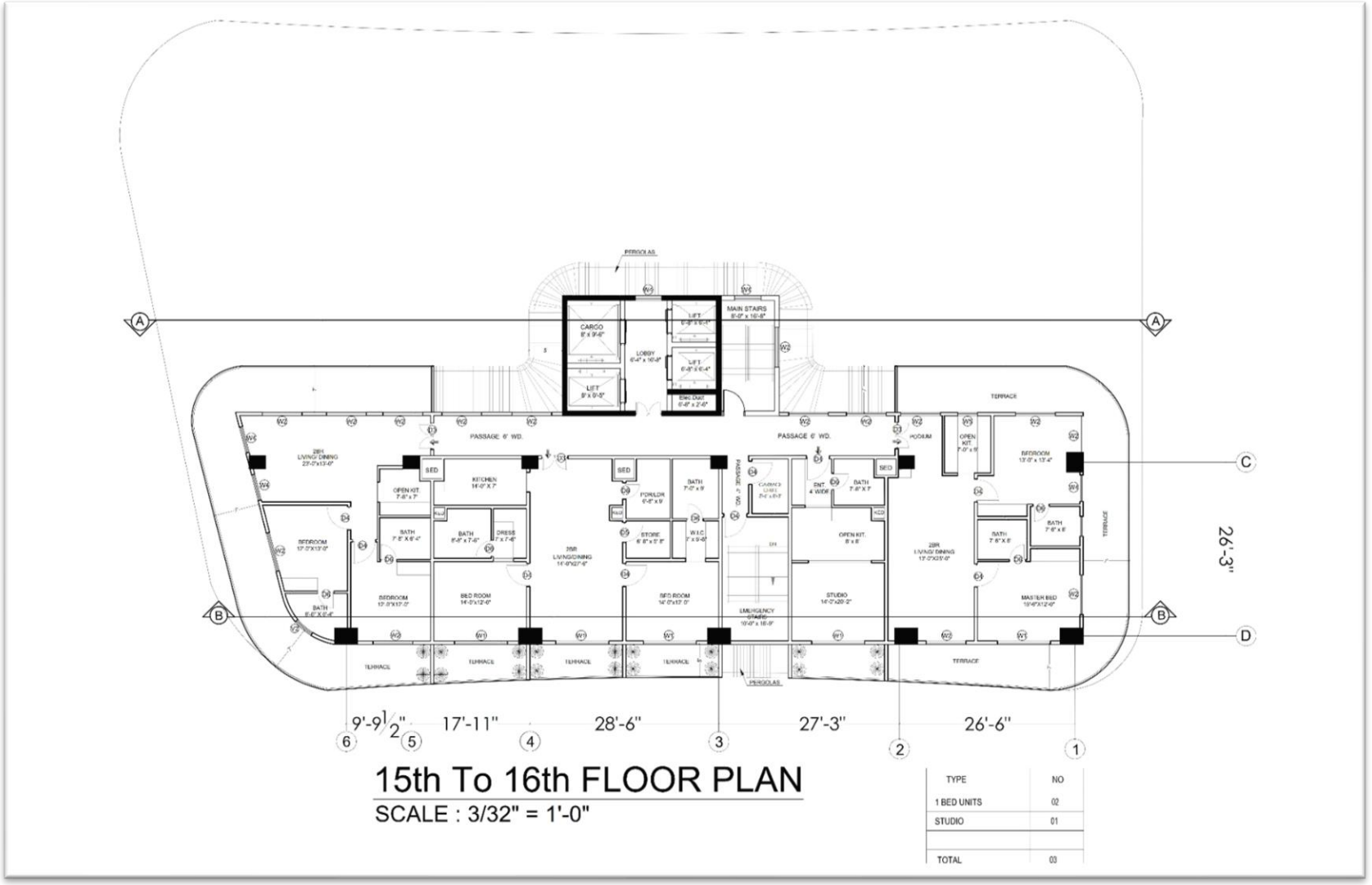


Figure 3.12: 17th Floor Plan of One Hills Apartments Tower III Project

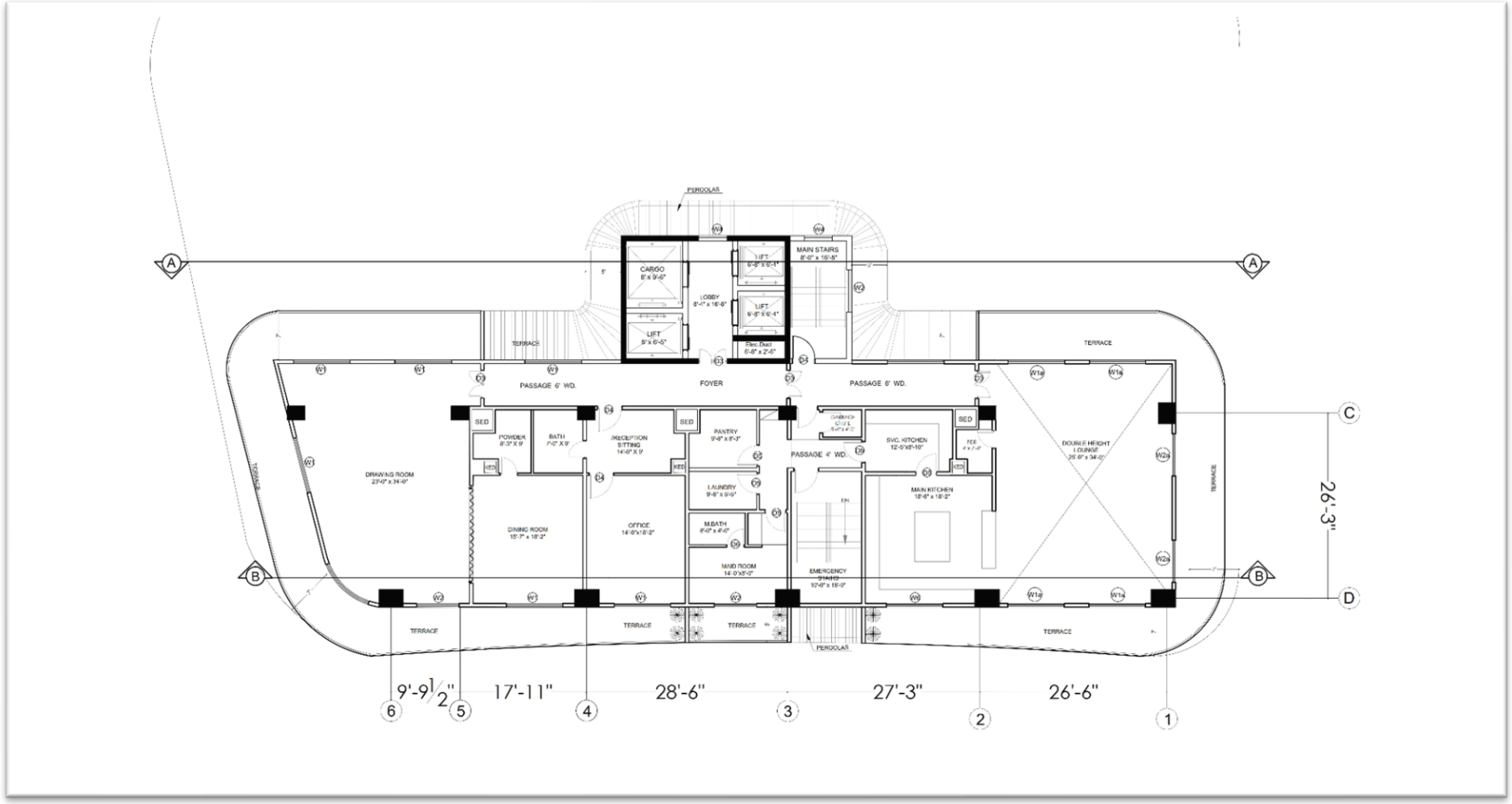


Figure 3.13: 18th Floor Plan of One Hills Apartments Tower III Project

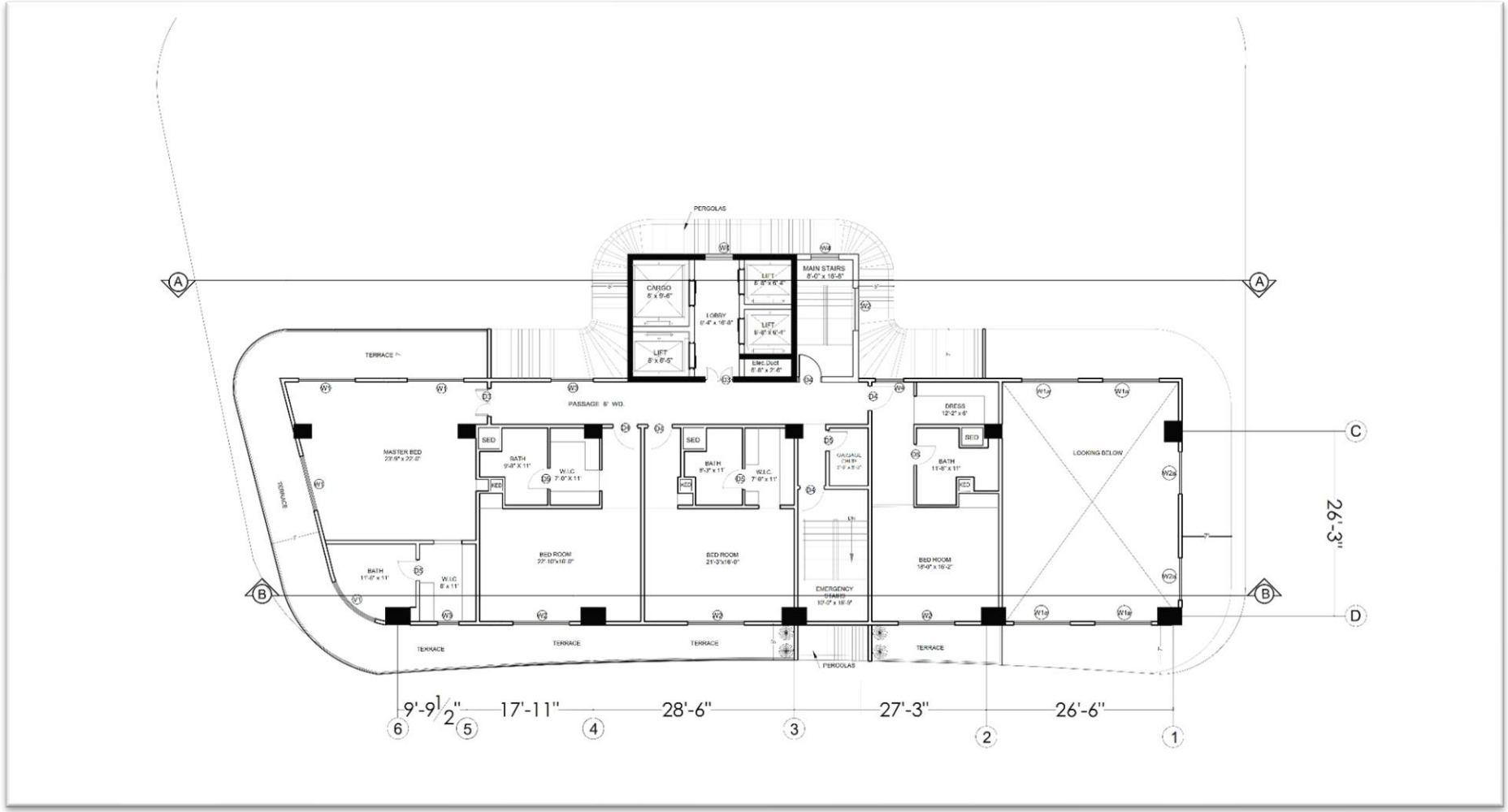
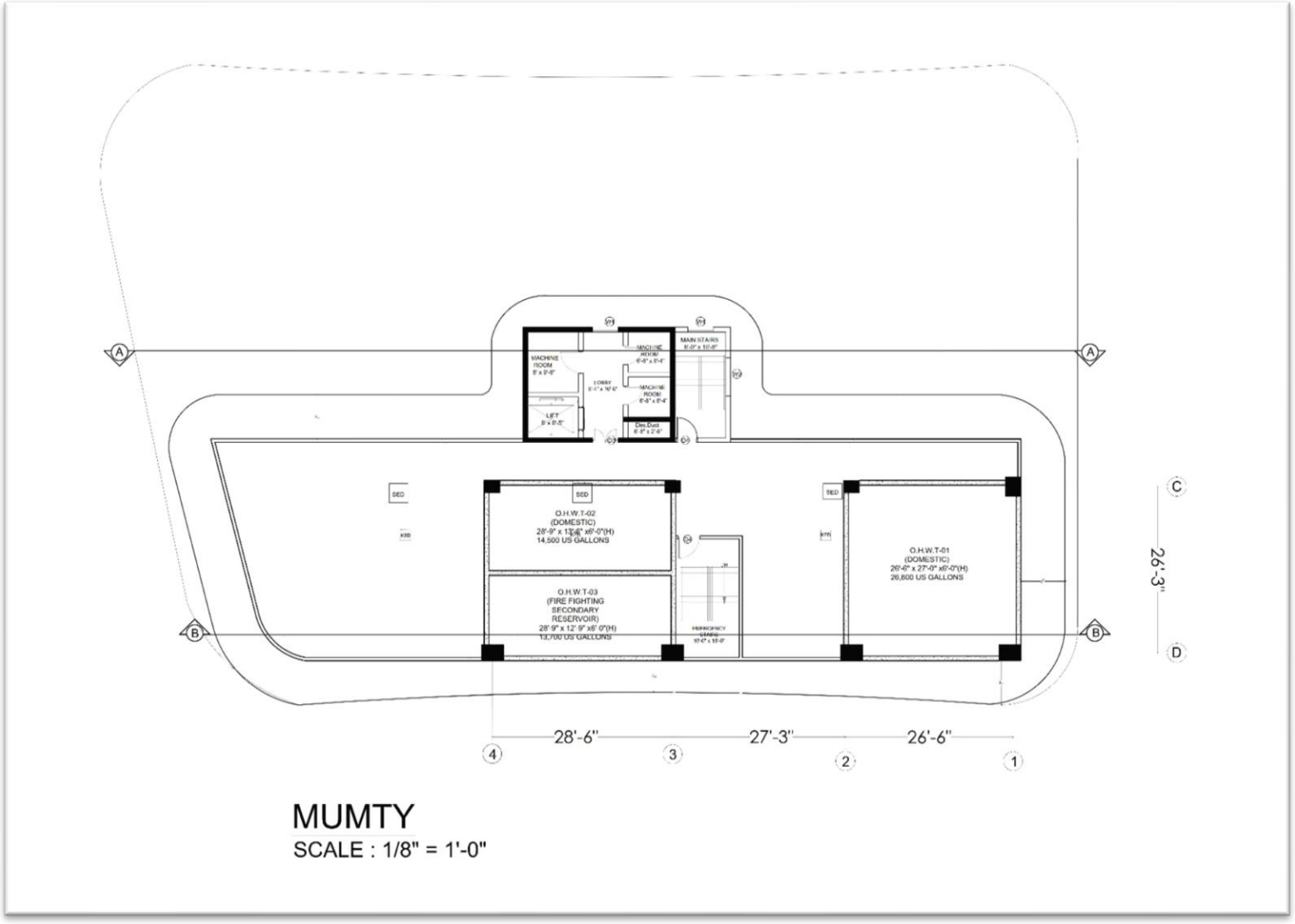


Figure 3.14: Top Floor Plan of One Hills Apartments Tower III Project



3.7 Occupancy of One Hills Apartments Tower-III Project

There will be 132 apartments in the One Hills Apartments Tower-III Project. The estimated population of One Hills Apartments Tower-III Project will be 660 assuming the household size of 5. The apartments summary and expected population is shown in **Table 3.2 & Table 3.3.**

Table 3.2: Apartments Summary

Floors	3-Bed	2-Bed	1-Bed	Studio	Total
1st Floor	4	-	-	-	4
2nd Floor	-	-	-	-	-
3rd Floor	-	4	1	7	12
4th Floor	-	4	1	7	12
5th Floor	-	4	1	7	12
6th Floor	-	4	1	7	12
7thFloor	-	4	1	7	12
8th Floor	-	4	1	7	12
9th Floor	-	4	1	7	12
10th Floor	-	4	1	7	12
11th Floor	-	-	-	-	-
12th Floor	-	2	-	4	6
13th Floor	-	2	-	4	6
14th Floor	-	2	-	4	6
15th Floor	-	2	1	2	5
16th Floor	-	3	-	1	4
17th Floor	-	3	-	1	4
18th Floor	1	-	-	-	1
19th Floor	-	-	-	-	
Total	**5**	**46**	**09**	**72**	**132**

Source: *M/s One Hills (SMC-Private) Limited*

Table 3.3: Expected Population of One Hills Apartments Tower-III Project

Description	Units	Population
Residential Units	132	660

Source: *M/s One Hills (SMC-Private) Limited*

3.8 Facilities to be provided at One Hills Apartments Tower-III Project

One Hills Apartments Tower-III Project will have state of the art facilities as follows:

3.8.1 Water Demand and Storage

The average water demand for One Hills Apartments Tower III Project is 56,000 gallons per day. Water will be stored in underground and overhead water storage tanks. There are 2 overhead water storage tanks for Fire Fighting and Domestic use having capacity of 15,000

gallons and 40,000 gallons respectively. Also, there are 2 underground water storage tanks for Fire Fighting and Domestic use having capacity of 30,000 gallons and 45,000 gallons respectively. Hence, enough water storage will be provided.

The main source of water supply for the residents of One Hills Apartments Tower III will be Bahria Supply. The water requirements and provisions calculated for One Hills Apartments Tower III Project is given in **Table 3.4**.

Table 3.4: Water Balance Sheet for One Hills Apartments Tower-III Project

Proposed no. of Residential apartments		132	
Estimated no. of person per unit		5	
Total Population			660 persons
	Domestic Water Demand (Residential)		
	Proposed no. of Person	660	-
	Average water demand g/c/d	56	-
	Sub Total for Residential water demand		36,960 g/d
For Peak Hour Water Demand		@ plus 50% on average	
E.	Extra 50% of average water demand	18,480 g/d	
Total Water Demand for One Hills Apartments Tower III			55,440 g/d or 56,000 g/d

3.8.2 Sewerage System

The total wastewater generation is estimated to be 80 percent of the average water demand of One Hills Apartments Tower-III Project. The average water demand of the proposed project is 56,000 g/d so the wastewater generation will be 44,800 g/d. An STP will be constructed to treat the wastewater generated from One Hills Apartments Tower-III Project.

The wastewater will be treated in the septic tank and after treatment, it will be released in the Bahria sewerage line.

3.8.3 Solid Waste Management

M/s One Hills (SMC-Private) Limited will have a proper solid waste management plan for One Hills Apartments Tower III Project. Approximately 0.5 tons of solid waste per day will be generated at One Hills Apartments Tower III Project based on the assumption of waste generation rate of 1 kg/c/day.

The solid waste collection system would consist of residents in apartments using garbage chutes to dispose of their solid waste. The solid waste from the garbage chute system would be collected in garbage rooms in the apartment buildings. 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.

3.8.4 Fire Suppression System

A proper and detailed fire suppression system, including water storage reserve for firefighting, will be provided at the time of designing.

M/s One Hills (SMC-Private) Limited 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 One Hills Apartments Tower-III Project will be provided by Islamabad Electric Supply Corporation (IESCO). 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 One Hills Apartments Tower-III 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 One Hills Apartments Tower-III Project. M/s One Hills (SMC-Private) Limited 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, basements shall be used for parking. A total of 198 car parking spaces are available in the basement-3 (69 cars), basement-2 (65 cars), basement-1 (64 cars) of One Hills Apartments Tower III. Whereas, car parking requirement for the Apartments Tower III is 198 cars for 132 apartments.

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

3.8.7 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.

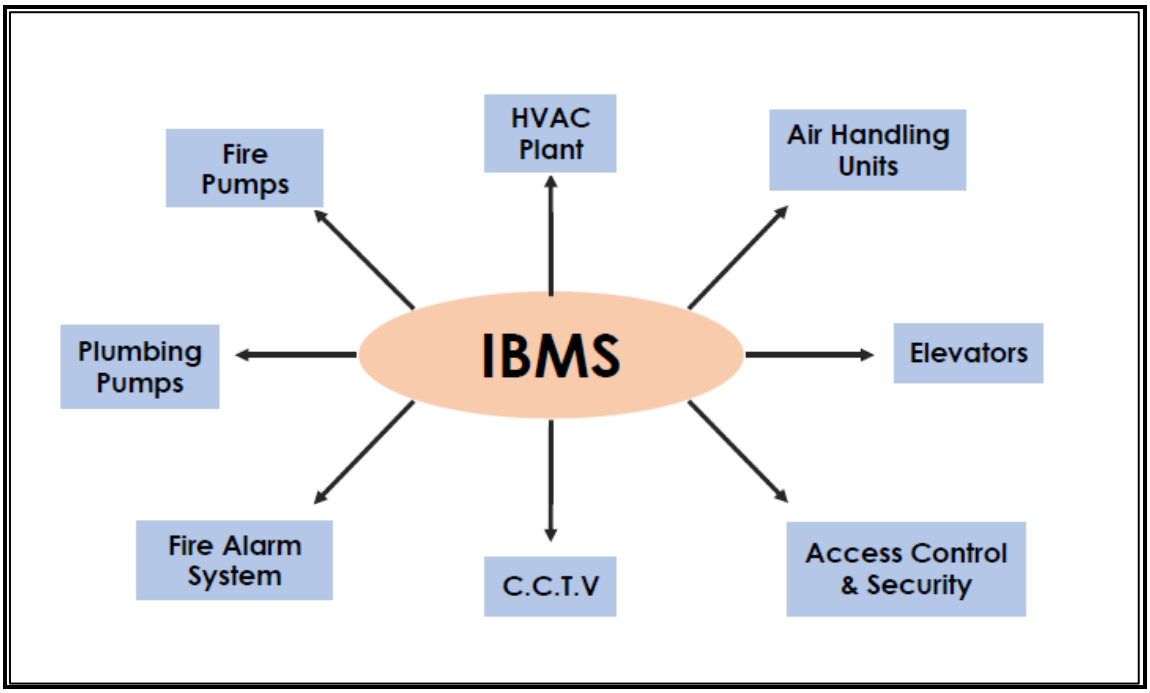
The essential functions of the system will be as follows:

- 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 3.15: Building Management System (BMS) of One Hills Tower - III



3.9 Sustainable Features of the Project

M/s One Hills (SMC-Private) Limited is committed to develop its project in a sustainable way. The following sustainable features have been provided in this project:

- The planning & design of One Hills Apartments Tower-III Project will be carried out, keeping in mind the natural topography, sun and wind direction.
- M/s One Hills (SMC-Private) Limited has allocated 63% (4.26 kanal) for Park/Green spaces.
- Energy efficient LED Lights will be installed in the Towers. Similarly, the buidling has an atrium for allowing natural sunlight and wind to penetrate the towers.
- Trees such as Amaltas, Jaman and other fruit bearing plants will be planted in the project areas.
- M/s One Hills (SMC-Private) Limited 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. 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 apartment. These fire alarms will be accompanied by showers that will spray water when the temperature exceeds a particular limit.
- A 10 feet walking track will be developed along the building to encourage the residents to have a healthy life.

3.10 Vegetation features of the site

There only a few shrubs present near the project site; therefore, no trees will be cut during the construction phase of the project.

3.11 Land acquisition

The land for One Hills Apartments Tower-III Project has been acquired by M/s One Hills (SMC-Private) Limited and its legal possession has been taken.

3.12 Current Land Use of the Project Site

Presently, the project site is lying vacant.

3.13 Current Status of the Project

There is no construction activity at the project site. The construction of Tower-III will start once environmental approval is granted by the Pakistan Environmental Protection Agency, Government of Pakistan.

3.14 Embodied Carbonfootprint of the Building

It is important to estimate the embodied 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 CO2E/sq.ft[4] is contributed. The carbon footprint of One Hills Apartments Tower III project is estimated to be 6.977431 kTons CO2E.

3.15 Cost of the Project

The estimated cost of infrastructure development of One Hills Apartments Tower-III Project is Rs 2.08 Billion, as shown in **Table 3.5.**

Table 3.5: Estimated Cost of One Hills Apartments Tower-III Project

No.	Description	Total Estimated Cost (Rs. In Billions)
1	Apartment Building	**2.08**
2	Roads and Earthwork	
3	Walkways	
4	Drainage System	
5	Water Supply System	
6	Sewerage	
7	Electrification	
8	Landscaping	
	Total	**2.08**

3.16 Government Approvals

M/s One Hills (SMC-Private) Limited has obtained Approval in DVC meeting 13th September 2024, However its final approval from the Capital Development Authority is under progress. The Minutes of DVC meeting have been attached in **Annexure-6**.

[4] *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*

3.17 Time Schedule

The development works for One Hills Apartments Tower-III Project will be completed in a period of 3 years.

Table 3.6: Time Schedule/Flow Chart One Hills Apartments Tower-III Project

Activity/Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Detailed design and specialized studies																																				
Mobilization																																				
Construction of structure																																				
External Facade works																																				
Interior Design																																				
Demobilization																																				

3.18 Project Phases

The construction of One Hills Apartments Tower-III Project will be implemented in three phases, i.e., Pre-construction/ Design, Construction, and Operation.

3.18.1 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 will be worked out, and working drawings, specifications for equipment and material will be prepared.

3.18.2 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 will be 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 will be carried out using the conventional methodology and sequence of work. The activities will include excavation, masonry work, carpentry, wiring, piping, and plumbing, flooring, painting and installation of fixtures. Other activities will 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 One Hills Apartments Tower-III Project management and the consultant.

Staffing: Construction crews will have 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 3.7** details the staffing requirement during the construction phase of the project.

Table 3.7: 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, 2025*

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.
- M/s One Hills (SMC-Private) Limited 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.

3.18.3 Operational Phase

The Project Manager, One Hills Apartments Tower-III will be responsible for the operation and maintenance of the One Hills Apartments Tower-III Project during the operational phase of the apartment.

Figure 3.16: Pictorial presentation of Project area of One Hills Apartments Tower-III

Exhibit 1: View of the project site

Exhibit 2: View of the Project Site

Exhibit 3: A view of the Hill Top Road

Exhibit 4: View of the Angoori Road

Exhibit 05: View of the Streets in Bahria Hills

Exhibit 06: View of the 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. Islamabad and Rawalpindi would lose the possibility of having state-of-the-art residential apartments. The housing shortage in Islamabad and Rawalpindi would further exacerbate. The employment generated during design, construction and operation of the project would be lost, leading to unemployment. Similarly, to cater to the high demand for housing scheme if this project is not considered, people would go for unplanned and unapproved housing projects which will be harmful to the environment.

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

The proposed project is the construction of One Hills Apartments Tower-III Project. The project will help to decrease the shortage of modern housing facilities in Islamabad and Rawalpindi as well as helping in decrease of land consumption for residential societies. This project will create employment during both construction and operational phases which will benefit the local economy. As it will involve apartment buildings, it would urge other property developers to go for vertical expansion rather than horizontal expansion, leading to the increasing demand for apartments rather than large land consuming housing societies. This project is also in line with the current government's policy regarding the vertical expansion of cities rather horizontal expansion.

The negative impacts due to the project's construction and operational phases can be minimized, controlled, or eliminated if the mitigation measures, as suggested in the EIA report, are implemented.

4.4 Site Alternative

The project site falls in Bahria Hills, located near Murree Expressway, Islamabad. The developers of the land have purchased this land for this project. Therefore, no alternative site has been considered for the project.

4.5 Conclusion

No alternative site has been identified. If the project is not implemented, then all positive impacts related to the apartment 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.

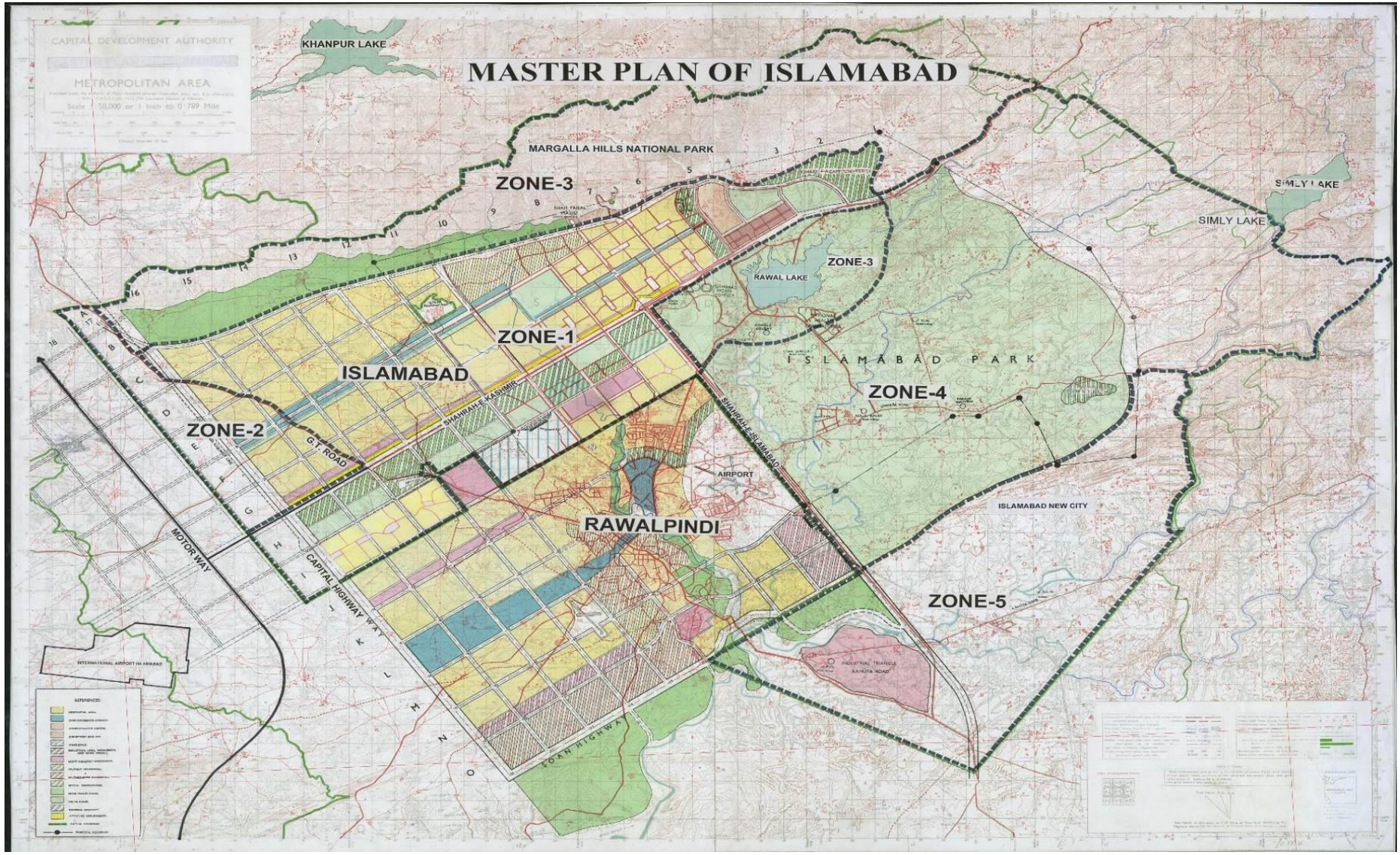
Islamabad is located at 33.43°N 73.04°E at the northern edge of the Potohar Plateau and at the foot of the Margalla Hills in Islamabad Capital Territory. Its elevation is 540 meters (1,770 ft.). The modern capital and the ancient Gakhar city of Rawalpindi stand side by side and are commonly referred 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.

The project site comprises of barren land with some natural vegetation in the project area and is situated along Angoori Road. Surrounding the project site is Sky Hills and Kazani Heights 4 which has similar land use.

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.

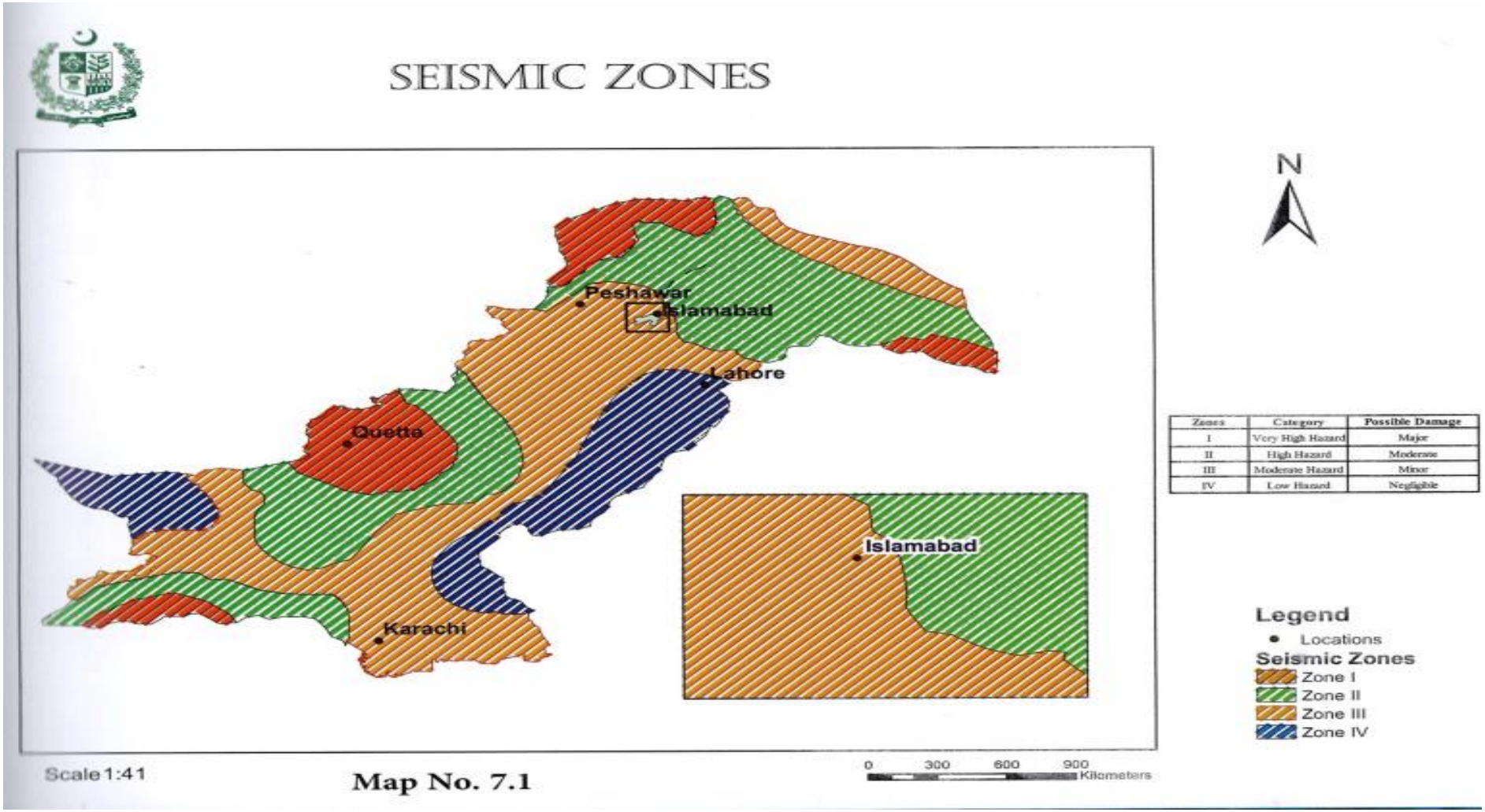
The Seismic Map of Islamabad is given in **Figure 5.2.**

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. [5]

[5] *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

There is Korang river in the project area about 0.35 km Northwest of the project site.

5.3.7 Ground Water

Ground Water is available at a depth of 200 – 250 ft in the project area. Bahria Supply is the main source used in project area for domestic purposes.

A chemical analysis test of the ground water grab sample was conducted at the project site. The samples of ground water were collected on 19th January, 2025 and were received by the Green Cresent Environmental Consultants. Pvt. Ltd. Pakistan on 20th January, 2025 for analysis.

Table 5.1: Analysis of Ground water at the project site

Parameters	Analysis Method	Unit	LOR	Result 03	NEQS
pH	APHA-4500H+ B	-	0.01	6.69	6.5-8.5
Odor	In-house	-	-	Odorless	Non-Objectionable
Taste	In-house	-	-	Sweet	Non-Objectionable
Color	APHA-2120 B/C	Pt/Co	1.0	<1.0	≤15 TCU
Turbidity	APHA-2130 B	NTU	0.1	<0.1	<5 NTU
Total Hardness	APHA-2340 B & C	mg/l	0.1	360.0	<500 mg/l
Total Dissolved Solids (TDS)	APHA-2540 C	mg/l	1.0	472.0	<1000
Ammonia	APHA-4500-NH_3 B	mg/l	0.002	<0.002	-
Chloride	APHA-4500Cl- B	mg/l	0.24	21.68	<250
Cyanide (CN)	APHA-4500CN E	mg/l	0.01	<0.01	<0.05
Fluoride (F)	APHA-4500F D	mg/l	0.01	<0.01	≤1.5
Nitrite	APHA-4500NO_2 B	mg/l	0.01	<0.01	≤3 (P)
Nitrate	APHA-4500NO_3 C	mg/l	0.1	2.0	≤50
Phenolic Compound	APHA-5530 D	mg/l	0.01	<0.01	-
Residual Chlorine	APHA-4500Cl G	mg/l	0.1	<0.1	0.2-0.5

Aluminum (Al)	APHA-3111Al B	mg/l	0.028	<0.028	≤0.2
Cadmium	APHA-3111Cd B	mg/l	0.0028	<0.0028	0.01
Copper	APHA-3111Cu B	mg/l	0.0045	<0.0045	2.0
Chromium	APHA-3111 Cr B	mg/l	0.0054	<0.0054	≤0.05 (P)
Mercury	APHA-3112Hg B	mg/l	0.0008	<0.0008	≤0.001
Antimony (Sb)	APHA-3111Sb B	mg/l	-	ND	≤0.005 (P)
Nickel	APHA-3111Ni C	mg/l	0.008	<0.008	≤0.02
Zinc	APHA-3111Zn B	mg/l	0.0033	<0.0033	5.0
Arsenic	APHA-3114B	mg/l	0.01	<0.01	≤0.05 (P)
Barium	APHA-3111Ba B	mg/l	0.013	<0.013	0.7
Manganese	APHA-3111Mn B	mg/l	0.0016	<0.0016	≤0.5
Iron	APHA-3111Fe B	mg/l	0.1	<0.1	-
Boron	APHA-4500-B (C)	mg/l	0.01	<0.01	0.3
Lead	APHA-3111Pb B	mg/l	0.013	<0.013	≤0.05 (P)
Selenium	APHA-3111Se B	mg/l	-	ND	0.01 (P)
Total Coliforms	APHA-9222 B	CFU/100 ml		Absent	0/100 ml
Fecal Coliforms (Ecoli)	APHA-9222 B	CFU/100 ml		Absent	0/100 ml

Abbreviations:

ND: Not Detected

LOR: Limit of Reporting

NEQS: National Environmental Quality Standards

Fecal Coliforms Bacteria and E.Coli values are exceeding the limits. Proponent will carry out chlorination before the supply of water to the residents of One Hills Apartments Tower-III.

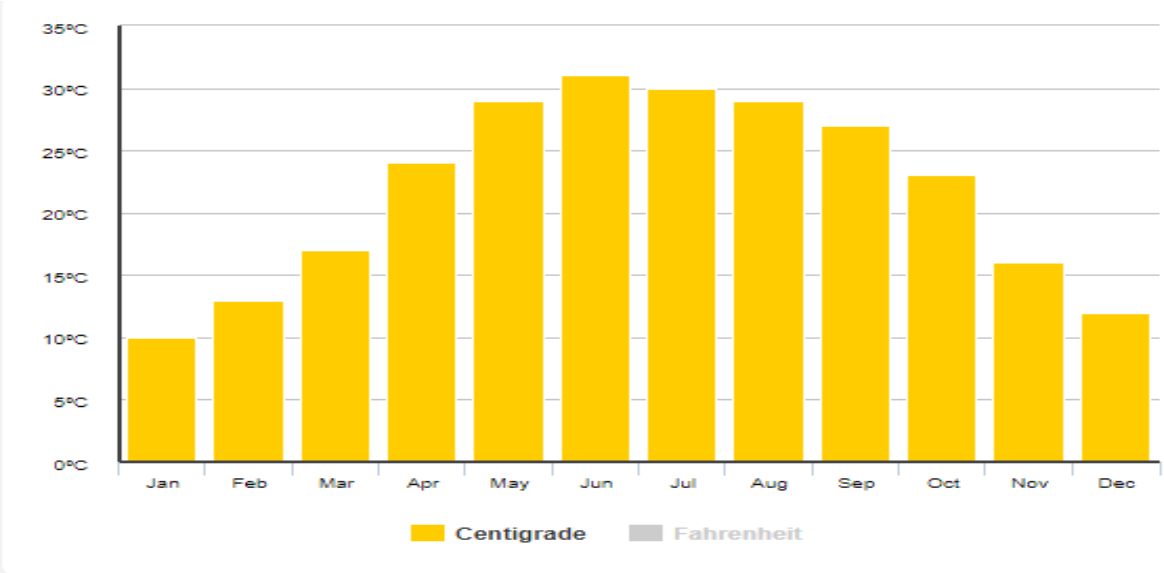
5.3.8 Climate

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.

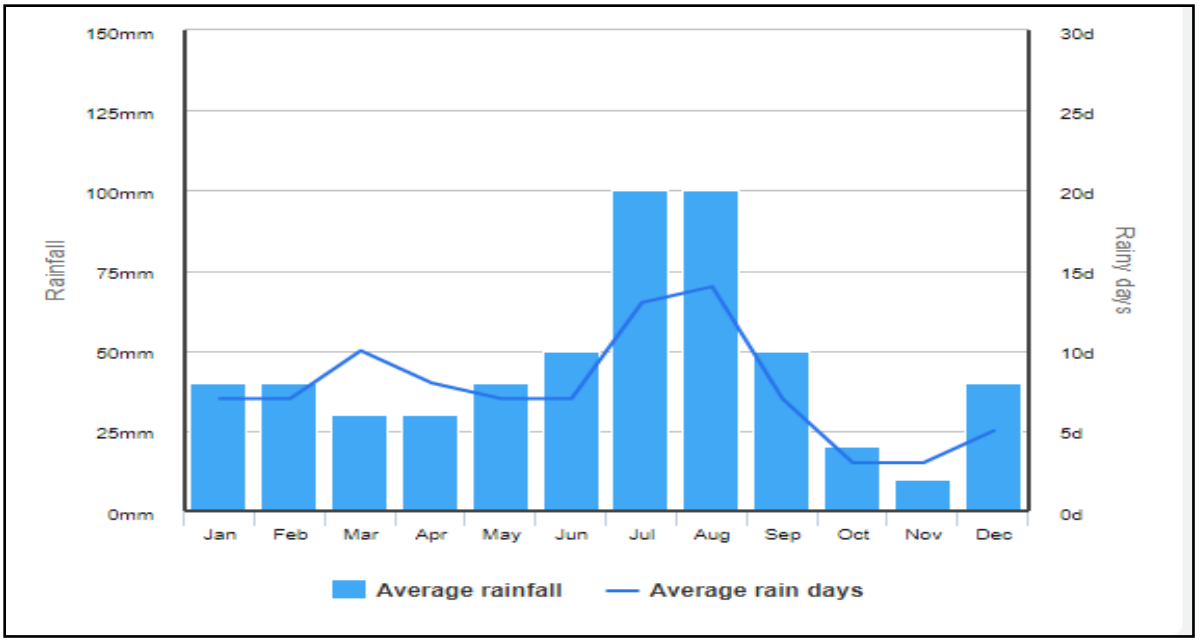
Metrological Data of Islamabad, including rainfall and mean minimum and the maximum temperature is shown in **Figure 5.3**.

Figure 5.3: Mean Monthly Meteorological Data of Islamabad[6]



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

Figure 5.4: Mean Monthly Precipitation Data of Islamabad[6]



5.3.9 Air Quality and Noise Level Monitoring

The vehicular traffic on Angoori Road and Murree Expressway is high during peak hours which contributes to air and noise pollution in the project area.

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 16th to 17th January 2025 for 24 hours at the project site.

The ambient air quality and noise monitoring was carried out by EPA Certified laboratory, Green Cresent Environmental Consultants Pvt. Ltd.

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.

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 46.26 dB at day time and 44.98 dB at night time.

5.3.11 The conclusion of ambient air quality and noise level monitoring

The ambient air and noise level monitoring was conducted on 17th to 18th January 2025 for 24 hours at the project site.

The average 24-hour CO, SO_2, O_3, NO, NO_2, $PM_{2.5}$, PM_{10}, TSP and Lead Airborne Particles were recorded as 3.37 mg/m^3, 8.57 ug/m^3, 12.70 ug/m^3, 12.48 ug/m^3, 12.37 ug/m^3, 77.16 ug/m^3, 93.14 ug/m^3 210.24 ug/m^3 and 0.13 ug/m^3 respectively at project site. All the obtained values for the air quality parametes are within the permissible limit except $PM_{2.5}$.

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-8.**

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: 24-hour Ambient Air Quality at Project Site

Sr. #	Time	CO (mg/m^3)	NO (µg/m^3)	NO_2 (µg/m^3)	NO_x (µg/m^3)	SO_2 (µg/m^3)	$PM_{2.5}$ (µg/m^3)	PM_{10} (µg/m^3)
1.	16:00	4.72	13.50	12.32	25.82	8.48	70.03	94.83
2.	17:00	4.83	11.96	11.50	23.46	7.50	78.26	87.39
3.	18:00	4.87	14.77	10.75	25.51	7.81	75.05	89.75
4.	19:00	3.29	12.63	10.90	23.53	7.39	76.52	97.70
5.	20:00	3.23	10.88	12.99	23.88	7.91	76.90	107.79
6.	21:00	3.28	11.03	14.36	25.39	8.63	74.31	81.06

7.	22:00	3.22	13.54	12.52	26.06	7.55	78.20	100.57
8.	23:00	2.94	14.58	11.21	25.78	7.81	74.85	77.53
9.	0:00	2.83	11.41	10.92	22.33	8.38	78.32	86.66
10.	1:00	2.60	11.78	12.18	23.96	7.60	79.97	92.55
11.	2:00	2.66	15.11	11.40	26.51	7.81	86.61	105.21
12.	3:00	2.92	10.88	12.89	23.78	8.74	74.57	87.54
13.	4:00	2.77	11.52	12.44	23.97	9.10	76.74	107.79
14.	5:00	2.69	13.52	10.96	24.48	9.00	79.54	102.49
15.	6:00	2.46	12.82	12.76	25.58	9.67	79.59	95.57
16.	7:00	2.63	11.20	13.90	25.10	9.46	74.59	89.75
17.	8:00	2.74	13.11	11.99	25.10	10.03	74.37	84.46
18.	9:00	3.32	12.01	13.43	25.43	8.94	78.32	89.75
19.	10:00	4.53	11.12	14.04	25.16	9.05	77.51	98.44
20.	11:00	4.75	12.36	13.07	25.43	7.91	77.99	95.57
21.	12:00	3.32	14.69	12.85	27.54	9.51	78.77	93.87
22.	13:00	3.23	13.05	11.13	24.18	9.01	76.93	89.75
23.	14:00	3.13	11.28	12.04	23.32	8.59	76.47	83.34
24.	15:00	3.90	10.77	14.26	25.03	9.77	77.40	96.08
Average Concentration		**3.37**	**12.48**	**12.37**	**24.85**	**8.57**	**77.16**	**93.14**

Table 5.3: Average 24-hour Ambient Air Quality at the Project Site

Parameter	Unit	Monitoring Duration	LDL	Average Obtained Concentration	NEQS
Nitrogen Dioxide (NO_2)	µg/m³	24 Hours	1.00	12.37	80.0
Nitrogen Oxide (NO)	µg/m³	24 Hours	1.00	12.48	40.0
NO_x	µg/m³	24 Hours	1.00	24.85	120.0
Sulphur Dioxide (SO_2)	µg/m³	24 Hours	1.00	8.57	120.0
Carbon Monoxide (CO)	mg/m³	08 Hours	0.01	3.37	5.0*
Ozone (O_3)	µg/m³	1 Hour	-	12.70	130.0**
Particulate Matter (PM_{10})	µg/m³	24 Hours	1.00	93.14	150.0
Particulate Matter ($PM_{2.5}$)	µg/m³	24 Hours	1.00	77.16	35.0
Total Particulate Matter (TSP)	µg/m³	24 Hours	1.00	210.24	500.0
Lead Airborne Particles	µg/m³	24 Hours	-	0.13	1.5

- **LDL** = Lowest Detection Limit
- **NEQS** = National Environmental Quality Standards
- *8-hour standard for CO
- **1-hour standard for O_3**
- **µg/m³** = Micrograms per Cubic Meter
- **mg/m³** = Milligrams per Cubic Meter

Table 5.4: 24 hours Noise Levels Monitoring at Project Site

Sr. #	Time	Method/Technique	Unit	Results (LAavg)	NEQS (Residential)
Night Time					
1	23:00	Noise Meter	dB	43.4	45.0
2	00:00	Noise Meter	dB	46.3	
3	01:00	Noise Meter	dB	41.7	
4	02:00	Noise Meter	dB	46.4	
5	03:00	Noise Meter	dB	44.4	
6	04:00	Noise Meter	dB	43.8	
7	05:00	Noise Meter	dB	47.1	
8	06:00	Noise Meter	dB	46.7	

Night Time Average			**dB**	**44.98**	**45.0**
Day Time					
9	07:00	Noise Meter	dB	46.1	55.0
10	08:00	Noise Meter	dB	49.4	
11	09:00	Noise Meter	dB	44.8	
12	10:00	Noise Meter	dB	50.9	
13	11:00	Noise Meter	dB	46.9	
14	12:00	Noise Meter	dB	42.0	
15	13:00	Noise Meter	dB	48.5	
16	14:00	Noise Meter	dB	42.1	
17	15:00	Noise Meter	dB	50.6	
18	16:00	Noise Meter	dB	47.4	
19	17:00	Noise Meter	dB	43.9	
20	18:00	Noise Meter	dB	45.1	
21	19:00	Noise Meter	dB	45.7	
22	20:00	Noise Meter	dB	48.3	
23	21:00	Noise Meter	dB	44.8	
24	22:00	Noise Meter	dB	43.6	
Day Time Average			**dB**	**46.26**	**55.0**

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.

The project site does not have trees except for scarce natural vegetation. However, few shrubs and tree species, include ber, bhang, shisham, ack, kikar and behkarh were found within the project area.

Figure 5.5: Flora at the Project site

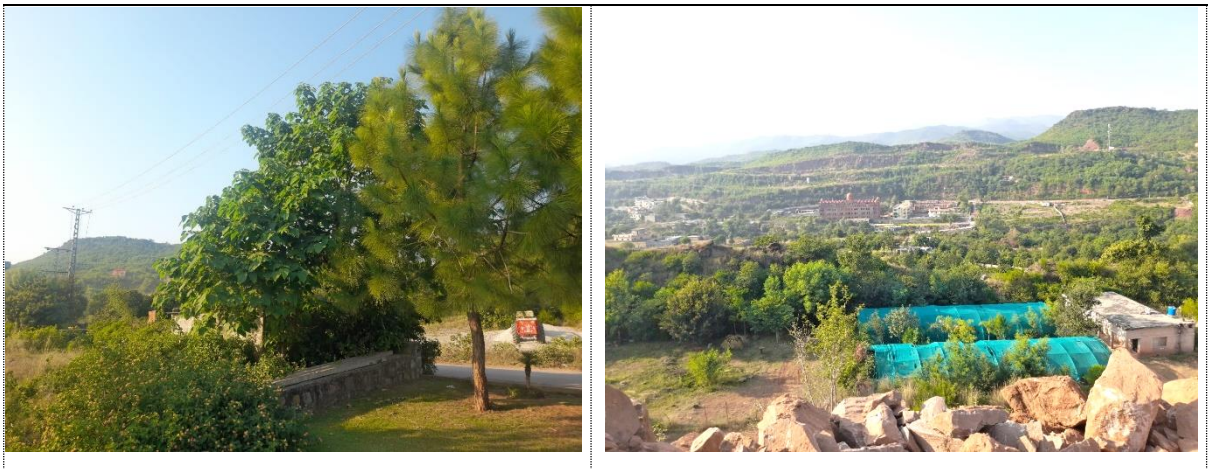


Exhibit 1: View of Flora in the project area

	
Exhibit 2: Trees in the project area	**Exhibit 2**: Trees on the roadside in the project area

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.

The species found in the Islamabad are:

Mammals

- *Canis aureus* (Asian Jackal)
- *Rattus rattus* (Rat)
- *Herpestes javanicus* (Grey Mangoos)
- *Felis chaus* (Jungle Cat)
- *Lepus negricollis* (Indian Hare)
- *Hystrix indica* (Porcupine)
- *Sus scrofa* (Wild Boar)

Reptiles

- *Calotes Versicolor* (Garden Lizard)
- *Eschis carinatus* (Saw scaled viper)
- *Passer domesticus* (House Sparrow)
- *Spalerosophis diadema* (Diadem Snake),
- *Uromastix hardwicki* (Spiny Tailed Lizard),

Birds

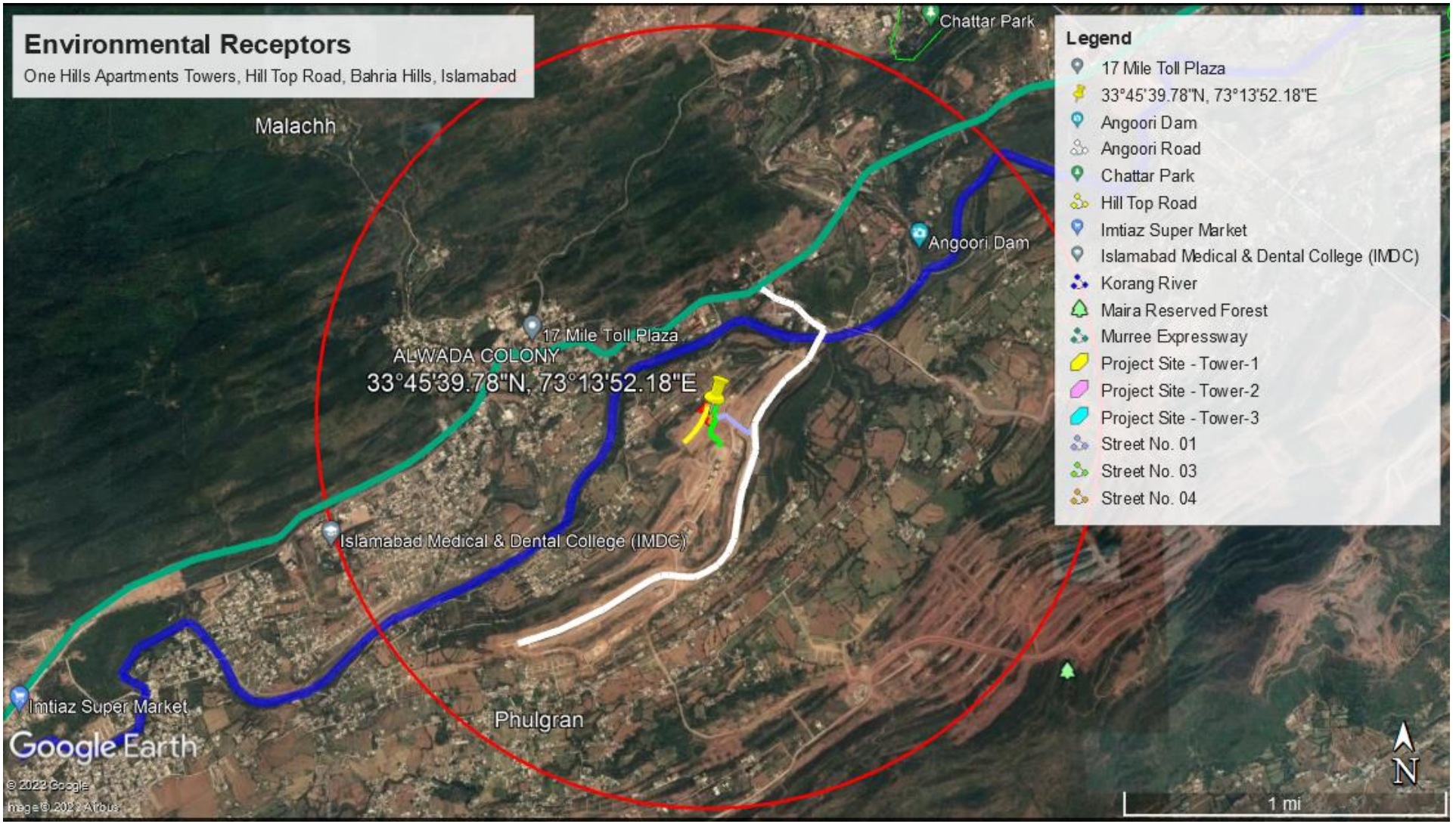
- *Coturnix coturnix* (Quail)
- *Centropus sinensis* (Common Crow)

- *Alcedo atthis* (Kingfisher)
- *Passer domesticus* (House Sparrow)
- *Corvus splendons* (House Crow)

5.4.3 Protected Areas/National Sanctuaries

Maira Reserved Forest is located at a distance of 2.3 km Southeast of the project site and Kathar Reserved Forest is located at a distance of 4.3 km southeast of the project site.

Figure 5.6: Project Area Map of One Hills Apartments Tower-III Project



5.5 Socio-economic and Cultural Environment

This section describes the socio-economic and cultural environment of the project area. There are residential housing societies and their commercial area, hospitals, petrol pump, mosques and educational institutions in the vicinity of the project site.

The residential area know as “Bahria Hills” in the project area is under development. The project is the part of Bahria Hills development.

5.5.1 Bahria Hills

Bahria Hills Islamabad is a CDA-approved residential area located at Angoori Road with direct access from Murree Expressway in Zone-IV Islamabad opposite the Bahri Golf City. It is a project developing by Bahria Town Pvt. Ltd.

This project is part of Bahria Enclave Phase-II, which is approved by the development authority of Islamabad. The No Objection Certificate (NOC) of Bahria Hills Islamabad is approved by the Capital Development Authority (CDA). The project is expected to be completed in just a few years by the owners & developers. As this residential area lies in Bahria Enclave-II so, the project has all the approvals from CDA.

Bahria Hills will have all the essential amenities for its residents including, clean water, health facilities, schools, mosques and commercial areas.

5.5.2 Bahria Enclave

It is located near Jinnah Avenue in Zone IV of Islamabad Capital Territory near Chak Shahzad, the Park Road & the Kuri Road. It is one of the most convenient and accessible locations of Islamabad exposing many ways to and from the Bahria Enclave.

The Phase-I of Bahria Enclave falls near Mouza Molat while the Phase-II is situated near Mouza Phulgraan.

Bahria Enclave is divided into two phases i.e., Phase 1 and Phase 2. Phase 1 is spread on 836 Kanal; Phase 2 comprises of 400 residential plots covering 1180 Kanal of land.

The society has a total of 15 sectors along with their respective sub-sectors. They are named alphabetically from A to P. All of the sectors contain residential plots having options of 5, 8, 10 Marla, 1 Kanal, and 2 Kanal plots and 4, 5, 8 Marla commercial plots.

5.5.3 Phulgran

Phulgran is a village and union council situated in the Islamabad Capital Territory of Pakistan. Its geographical coordinates are 33°44'49.31"N and 73°13'17.96"E. It is one of the largest and most affluent villages in Islamabad, surrounded by several small villages, locally called dhok, including Sakreela, Dawala, Chattor (Chanam), Dadiha (Satra Meel), Dhok Badhaam, Shahpur, Bobri, Petha, and Malach Syedan

It is known for its mix of various ethnicities. In the past, Phulgran was the main village and economic hub of the area, where people from far-flung areas came for commercial purposes, and particularly, it was of immense importance in the everyday life of the residents of nearby villages who relied on its market.

Population: The present population of Phulgran is about 30,000 individuals. The approximate number of houses is 4,280. Most of the houses are Semi-pacca and Pacca. The average household size is 7.0.

Ethnic Structure: Main ethnic groups are Dhamial, Abbasi, Rajput, and Kyani. Common language is Potohari.

Agriculture: More than 63% of the land is productive having agricultural fields. The land is rain-fed and the agricultural production is medium. Crops include wheat, maize, millet, and oats. Several vegetables are also cultivated in the area. Orchards are not common.

Irrigation: There is neither irrigation system in the area nor any Government or private tube well or bore well, as the installation of a tube well is very expensive. Farmers rely on the rain water for their fields to be productive.

Livestock and Poultry Development: Buffalos, Cows and goats are among the livestock people of Phulgran, are keeping. There is a veterinary hospital near Bhara Kahu. Fodder is provided from the agricultural fields. Poultry is present with households also a number of poultry forms are present in the area.

Transportation: The private transport runs from Islamabad to Phulgran and the adjacent areas. The road connecting Phulgran village to other cities is Murree Express way.

Education: Education level in Phulgran village is very high. There are separate schools and colleges in Phulgran Village but for higher education children use to go Rawalpindi and Islamabad.

Public Health: There are some private clinics in Phulgran village but Basic Health Unit is in Malata. A lady health visitor visits the area twice a year for polio vaccination or some other activity.

Drinking water supply: There are three dug wells as well as domestic wells in the village. Water depth ranges from 80-100 ft. (25-30 m).

Employment: More than 75% of the population is engaged with agriculture. Few people are either serving in Government, having own businesses, working in private jobs or are employed abroad.

Religious and Archaeological Sites: The population of the Phulgran is Muslim, mainly belong to Sunni sect while there are a very few families of the Shiya sect. Sparse graveyards can be seen at different locations in the village.

There exist no documented or known sites of archeological, historical, cultural or religious significance at or in the immediate vicinity of the proposed site. By its nature, the project will not have any adverse impacts on existing archeological sites, shrines, and religious sites in the surrounding areas.

Other Facilities: Electricity is available in the village. There is no supply of natural gas. People use fuel-wood as fuel. Use of oil-burning stoves has reduced by the availability of the LPG cylinders. There are markets bank, post office, and a police post in the area.

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.

A series of roadside discussions were carried out with the local community. During the roadside discussion, the community was informed about the salient features of the project, its location, and activities.

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, household women, college/university students, 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 One Hills Apartments Tower-III 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 28th December 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 One Hills Apartments Tower-III 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. Noor Ul Hassan Lodhi, Head Project Control, One Hills Two (SMC-Private) Limited and Mr. Zamir Ul Hassan, Architect of One Hills Apartments Tower-III	Site Office, One Homes, Blue Area	▪ One Hills Apartments Tower-III is being built in an area where number of highrise building projects are in development stage. ▪ M/s One Hills (SMC-Private) Limited has the required team and manpower to deliver such mega project. ▪ A number of environment friendly features have been added in the building such as energy efficient electrical fixtures, green spaces and use of low flow plumbing fixtures for water conservations. ▪ Tower-III allow natural sunlight and wind to penetrate the building. This will reduce the energy requirements of the buildings. ▪ Moreover, proper water treatment and storage facilities will be provided to the residents.
Mr. Sher Afzal, Deputy Manager Environment, IESCO	E&SS, PMU, IESCO	▪ The project must incorporate sustainable technology in the design to make it more environment friendly. ▪ Efficient use of solar energy by installing solar panels will be beneficial for the developer and environment, making the project environmentally and economically sustainable. ▪ The increased population and demand for urban housing, the vertical expansion is necessary.This kind of building provides more accommodation by occupying less space. We actually need to shift towards high rise buildings due to the reason that the population of the country is dramatically increasing and available space in urban areas is already very less. ▪ The electrical wiring system must be done carefully to avoid any short circuit, and fire safety with emergency exit must be part of the building layout plan duly approved by the concerned departments. Any incident within the building can cause the loss of many lives. ▪ Water and electricity should be used responsibly. ▪ The proponent should ensure appropriate Environmental, Occupational Health and Safety measures during construction phase of the project.
Mr. Zafar Iqbal Director, Emergency and Disaster Management Directorate (EDMD) Islamabad	EDMD Islamabad	▪ He said Directorate operates within the Islamabad Capital Territory boundary. ▪ Each housing society should have its own emergency plans, including provisions for graveyards. ▪ EDMD focuses on safety-related activities and serves as the first responder in emergencies. ▪ Islamabad Fire Prevention and Life Safety Regulations 2010 governs safety regulations in Islamabad. ▪ EDMD consists of four key sectors: Fire Service, Urban Search and Rescue, Ambulance Service (CDA Care) and Earthquake Response.

Name and Designation	Location	Opinions/Concerns/Issues/Suggestions
		▪ EDMD's primary mission is to protect lives and property. ▪ CDA enforces these regulations, with PEC and NDMA establishing relevant regulations. ▪ The project should have adequate fire fighting reserve. Similalrly, all highrise buildings are required to get approval.
Dr. Musharib, Assistant Professor, NUST	Islamabad	▪ It is suggested to incorporate principles of environmental and social protection throughout all the phases of the project, e.g., design, construction, and operational phase. ▪ Potential environmental impacts, e.g., air quality deterioration, water pollution, littering and solid waste, noise, dust, soil and land deterioration to be duly identified, predicted, and assessed in relation to the baseline scenario, along with corresponding mitigatory measures, if needed, to duly ensure environmental protection. ▪ Ecosystem and biodiversity of the site without the project and with the project to be studied and reported in the EIA/ESIA report ensure their protection. ▪ Measures to conserve energy and natural resources, e.g., water-efficient faucets, energy-efficient appliances, renewable energy, water metering, wastewater reclamation for horticulture, etc., should be put in place. ▪ Mitigation by avoidance, reduction, remediation, compensation, and enhancement is suggested to be implemented wherever applicable.
Mr. Ihsanullah Marwat, Energy and Environment Specialist	Islamabad	▪ The project is a vertical development which is a very good sign. To make the project more sustainable there is need for installation of efficient VRF system, sensor LED lights and low use water efficient fixtures.
Mr. Kamran Shafqat, Real Estate Dealer	Islamabad	▪ Vertical housing projects can certainly reduce the high prices that are prevailing these days. ▪ The proponent should incorporate IT infrastructure in the project design so that future needs of the residents can be easily catered. ▪ Considering the easy access to the project site and the developement in the area, this surrounding area real estate price will increase.

6.8 Consultation with the Communities

A series of roadside discussions were carried out with the local community. During the roadside discussion, the community was informed about the salient features of the project, its location, and activities. Exhibits of roadside 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.

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.

Accommodation facility: Respondents agreed that accommodation facilities are required and high in demand in Rawalpindi and Islamabad. The proposed project will provide accommodation facilities plus promote vertical expansion. People cited that in the project area developers should move towards vertical expansion rather than horizontal expansion.

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

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 at Bahria Hills

Exhibit 1: Consultation with the Resident of Project Area

Exhibit 2: View of consultation with an Engineer in Project Area

Exhibit 3: Consultation with Workers working on a project near project site

Exhibit 4: Consultation with the contractor of highrise building project in project area

Exhibit 5: Consultation with the Labours

Exhibit 6: View of Roadside Consultation

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 One Hills Apartments Tower-III 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
Pre-construction Phase Impacts								
Site Selection	Encroachment on historical/cultural values	1	3	3	Site selection has been made in a way to ensure no historical site in the Project site.	1	2	2
	Waste disposal relating to sitting	2	4	8	The project site comes under the jurisdiction of Bahria Town Limited. Bahria Town will be responsible for the collection of solid waste.	1	3	3
	Resettlement	1	5	5	No resettlement shall be caused by the Project.	1	2	2
	Historical or Archaeological or religious Site	1	3	3	No Historical and Archeological site present at the project site.	1	2	2
	Disruption of Surface Water	2	4	8	There will be little to no impact on surface water in the Project area.	1	3	2
Site Preparation	Noise	5	3	15	Noise barriers around the construction site, along with mufflers (silencers) for vehicles and construction equipment to minimize noise.	4	2	8
	Dust generation	5	3	15	Additional water is to be applied for dust suppression during dry weather. Masks will be provided to all workers to reduce the health impacts caused by the inhalation of dust.	3	2	6
	Damage to natural vegetation	4	3	12	No tree will be cut due to the project.	2	2	4
Positive Impacts	Increase in population density	3	3	9	The proposed project provides residential space near commercial area. This will decrease vehicle trip generation and promote population density.	4	4	16

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
	Increase in green cover	4	3	12	More than 4000 trees shall be planted in the project area.	5	4	20
Construction Phase Impacts								
Construction Works	Land Acquisition	2	3	6	The designated land of the proposed project already belongs to the proponent (M/s One Hills (SMC-Private) Limited). 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
	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

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
	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 after treatment into the Bahria Hills 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
Positive impact	Job opportunities	4	4	16	Training shall be arranged to hire a local crew for the Project.	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
Operational Phase Impacts								
Operation of the Tower-III	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 Tower-III Building, 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.	3	2	6
	Traffic congestion	3	3	9	Defensive and best driving practices shall be inculcated.	2	2	4
	Monitoring	5	3	15	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
	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

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
	Business opportunities	4	3	12	Tower-III shall 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 One Hills Apartments Tower-III 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.
- 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 One Hills Apartments Tower-III 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 One Hills Apartments Tower-III 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
Reversibility of impact	Reversible: When a receptor resumes its pre-project condition.

Categories	Characteristics
	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 Project Siting Impacts

The impacts associated with the project sitting are those which relate to its location at the designated site. These impacts are different from those which are associated with the project's construction and operational phases. The construction and operational impacts are associated with the activities such as land clearing, waste disposal, whereas the sitting impacts relate to the mere presence of a facility at the given location.

For the proposed project, the following two aspects of the project sitting were considered:

- The project site, land use and design
- Visual Impacts (aesthetic value)

7.5.2 Project Site, Land Use, and Design

The project site is located in seismic Zone II, where II represents a high hazard with moderate damage zone. An earthquake can cause damages to the One Hills Apartments Tower-III Project. The project site is a barren land with scarce natural vegetation.

The unmitigated impacts associated with the above issues are characterized as follows:

Nature:	Direct and Indirect
Duration:	Long term
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Possibly
Consequence:	Severe
Impact significance:	Medium

Mitigation Measures

Project Site: One Hills Apartments Tower-III Project is being developed in an area which is accessible by Murree Expressway.

Land Use: The land use and design of One Hills Apartments Tower-III Project will be in line with the existing Capital Development Authority's building bye-laws. The project area also houses various multistory buildings, and the area has mixed residential and commercial land uses. Sky Hills and Kazani Heights 4 have similar land use.

Design: One Hills Apartments Tower-III Project has been designed on a sustainable basis with all utilities like water, drainage and electrical system.

In order to avoid the negative impact of earthquake on the building the design of the building is made earthquake proof. The building will be piled upto 45 foot deep and sheer walls will be used to increase elasticity of the buildng.

In order to reduce soil erosion, rainwater harvesting will be used. Rainwater harvesting mechanism has been incorporated in the design to conserve rainwater, and that can be used for horticulture purpose, thus reducing the pressure on already existing water shortage problem.

Residual Impacts

As a result of the above mitigation measures, the project sitting impact of the proposed project will be greatly reduced. There will be some residual impact; however, its significance is expected to be low.

Visual Impacts

One Hills Apartments Tower-III Project is being developed in an urban area. The natural landscape has an aesthetic value, although not very significant, indeed is a valuable asset of the area. It is thus likely that an impact of low negative will occur, as a result of the project.

The unmitigated impact associated with the aesthetic value of the area is characterized as follows:

Nature:	Direct
Duration:	Long term
Geo extent:	Local
Reversibility:	Irreversible
Likelihood:	Possibly

Consequence: Severe

Impact significance: High

Timing: Design Phase

Mitigation Measures

- The design of the proposed project would be adopted in a manner that minimizes the changes in the topography, landscape and damage to the natural vegetation.
- A plantation plan has been proposed for One Hills Apartments Tower-III Project, which will be implemented.

Residual Impacts

- As a result of the above mitigation measures, the visual impact of the project will be greatly reduced. There will be some residual impact; however, its significance is expected to be low.

7.5.3 Climate Change Impact Assessment

High-rise buildings face unique climate-related challenges due to their design, vertical exposure, and high energy demand for heating, cooling, and ventilation. The urban heat island effect is particularly pronounced in densely built environments, increasing the cooling loads of high-rise structures and impacting indoor comfort levels. Integrating green roofs, vertical gardens, and reflective façade materials can help reduce surface temperatures and enhance thermal performance.

Climate change is intensifying the frequency of extreme weather events, such as high winds, heatwaves, and unpredictable rainfall, which can compromise the structural integrity and operational efficiency of tall buildings. Advanced climate-resilient design measures, such as aerodynamic building shapes, wind-resistant structural systems, and reinforced façades, are essential for mitigating these risks and ensuring occupant safety.

High-rise developments located in flood-prone or low-lying urban areas are increasingly susceptible to stormwater runoff and waterlogging. To safeguard infrastructure and maintain functionality during heavy rainfall, it is critical to incorporate elevated entryways, waterproof basement designs, and advanced drainage systems that facilitate quick water discharge and reuse.

Provisions for enhancing the project's climate resilience and reducing its environmental footprint are detailed in Chapter 3. Additional mitigation measures are outlined below. The impact characterization of the predicted impacts, mitigation measures and residual impacts are discussed below:

Mitigation Measures

- Solar System will be installed at the rooftop and sun-exposed façades to generate clean energy and reduce the building's scope 2 emissions.
- The vertical buildings itself promote use of limited land footprint, thereby increasing the productivity of surrounding land
- Green terraces on balconies and a rooftop garden will be developed to enhance biodiversity, sequester carbon, and reduce thermal loads.
- Water-efficient plumbing fixtures and a greywater recycling system will be implemented to conserve water, especially during dry spells.
- Rainwater harvesting tank will be constructed at the basement to reuse water.
- The surrounding site will be equipped with permeable paving and bioswales to manage stormwater, reduce runoff, and minimize surface flooding risks.
- Smart building management systems will monitor real-time energy and water consumption, enabling efficient resource use and timely interventions.

7.5.4 Shadow Analysis

Need for the Shadow Analysis: The proposed project would result in a new building reaching approximately 216 feet in height, including rooftop in the Bahria Hills. 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,[7] 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 components of the public realm. The proposed building is planned to be 18 stories above ground level.

Therefore, it is 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, 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 to 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 the 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).

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 sidewalls of adjacent low rise (one to four stories) residential buildings including townhouses, detached and semi-detached dwellings. This criterion is met if there is shadow impact for no more than two consecutive hourly test times in the "No Impact

[7] Standards for shadow studies

Zone," i.e. the space between the front, rear and exterior sidewalls of the adjacent low-rise residential buildings and the respective lines of impact assessment.

Figure 7.1: Shadow angle and Length for June 21, 2025

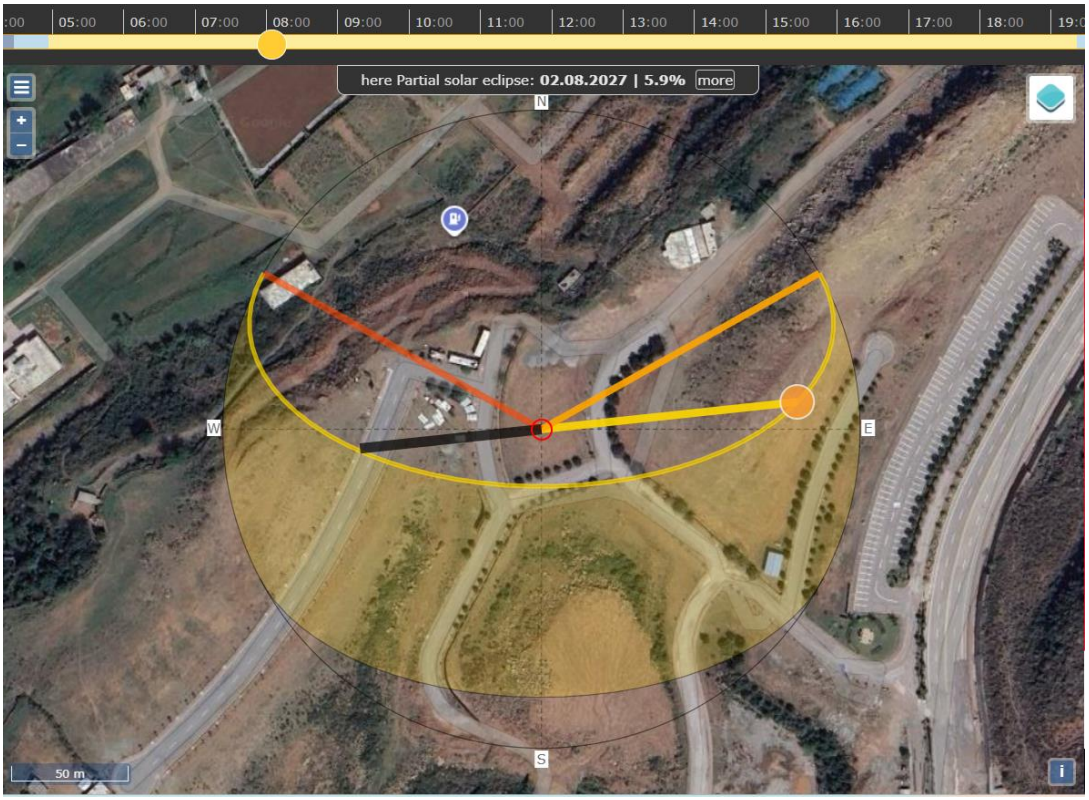
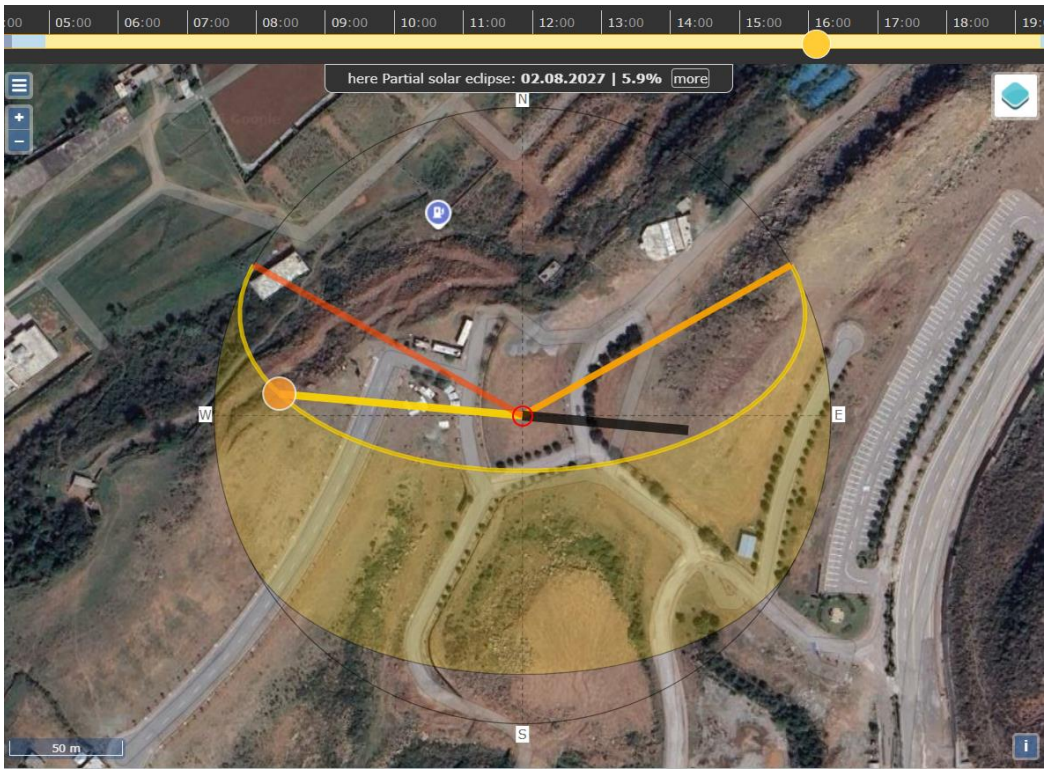


Figure 7.2: Sun angle for December 21, December 2025



Assessment Findings and Mitigation Measures for Shadow

Assessment Findings: Shadows are resulting from One Hills Apartments Tower-III Project to be considered because of its height. The project is 18 storeys above the ground level, 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.
Mitigation Measures: In order to compensate for the impacts due to the shadow effect of One Hills Apartments Tower-III Project, the following mitigation measures have been proposed:

- In the Street No 3 Road which lies under the continuous effect of the shadow from One Hills Apartments Tower-III Project, shade-loving plants shall be planted to reduce the impacts of the shadows on the plants.
- Compensation shall be paid to the impacted residents if their solar energy harvesting potential is compromised equally to the capacity of their area of the impact having the capacity to install solar panels. However, there are no such issues in the present study.

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. Soil erosion may affect road stability, increase flooding risk due to rapid and higher levels of runoff, siltation in the nearby water bodies and safety issues.

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 spoil, 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’.

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.

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.

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 One Hills Apartments Tower-III 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 planted under the plantation plan will take some time to grow and mature and once grown the planted trees and vegetation will be compensated.

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 an urban area of Islamabad which provides limited 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.

Impacts on wildlife may arise from the following project activities:

- Noise generated from project activities;
- Movement of personnel and vehicles;
- Lights used at the project facilities;
- Clearing of vegetation; and
- Improper disposal of wastes

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

Likelihood Certain

Consequence Moderate

Significance of Impact: Significant Impact

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.
- 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.
- Appropriate diffusers will be used to restrict the illumination within the project site.

- Nighttime construction works will not be undertaken.
- Appropriate diffusers should be used to restrict the illumination within the project site.
- Blasting should not be undertaken at the site for excavation purposes.

Residual Impact

Despite the above mitigation measures, there will be some residual impacts of the project on the fauna 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.

The vehicle traffic during the construction phase of the project is expected to be 6-7 round trips for construction material supplies and movement of construction crew during the peak construction period, per day.

The unmitigated impacts associated with vehicular traffic are characterized below:

Nature:	Direct
Duration:	Short Term
Geo extent:	Local
Reversibility:	Reversible
Likelihood	Certain

Consequence Mild

Significance of Impact: Medium

Mitigation Measures

- The number of trips from One Hills Apartments Tower-III Project will be minimized through astute planning.
- The project vehicles will avoid the peak vehicular traffic time (morning and evening).
- The project vehicles will comply with Islamabad Traffic Police rules and follow the timings set for the movement of heavy vehicular traffic.
- Movement of vehicles carrying construction materials will be restricted during the nighttime to reduce traffic load and inconvenience to the local residents.
- There will also be a provision of caution signs on the access road to alert users on construction activities in progress in order to prevent the occurrence of incidents.
- Project vehicles shall not be fitted with pressure horns.
- The speed of vehicles will be regulated during the construction phase.
- Designated parking areas will be provided for the different type of project vehicles within and around the project sites.
- Traffic Management Plan will be introduced to manage the smooth flow of vehicular traffic and to avoid traffic jam and long queues.

Residual Impacts

With the implementation of the above-mentioned mitigation measures, the residual impacts of the project related vehicular traffic on Murree Expressway will be negligible.

7.6.9 Safety Hazards, Public Health and Nuisance

The project may pose some safety hazards to the local population 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 may face of dust and pollen allergy.

Eye and Respiratory Diseases: Construction workers may be susceptible to the eye and respiratory diseases due to their routine exposure to dust and exhaust emissions on the project site.

Accidents: During the construction phase, as the traffic will increase, it may cause accidents and become a safety problem.

Physical Injuries: Injuries could happen primarily by occupational-related accidents, etc. Activities such as land clearing, earthworks, and construction of buildings present various occupational hazards to the workers on site.

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.

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 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 project 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.
- Appropriate light diffusers and reflectors will be used, if required, to minimize the public nuisance caused by light pollution.
- Personnel injuries risks can be mitigated through the provision of appropriate training and emergency response procedures.
- Better working conditions for the employees would be ensured.
- 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 for firefighting training.
- The construction camps and site offices will have first-aid kits.
- The construction crew will be provided awareness for 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.

Residual Impacts

There will be a moderate level of the 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 is no such archaeological and historical site in the vicinity of the project area. In case any other, artifact of some significance is found during the construction activities, the Archeology 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 wood polymer composites 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 One Hills Apartments Tower-III 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

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 the operational phase has been estimated to be 0.6 tons per day. If not properly managed, it can create a nuisance for the public and contaminate the soil.

The unmitigated impacts related to 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 the One Hills Apartments Tower-III Project.

- Solid waste segregation facility shall be established along with garbage chute system so that segregation on site can take place.
- 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.

Residual Impacts

The residual impacts of the implementation of the above measures will be low if Solid Waste is collected, segregated, 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 larger, owing to a larger population living in the residential complex.

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

Mitigation Measures

- The wastewater will be treated in Septic Tank. The treated wastewater will be discharged into Bahria Hills sewerage line for further treatment and then disposal.
- A separate sewerage line will be constructed for the storm water and wastewater.
- The storm water will be stored and used for watering lawns.
- The mitigation measures against soil contamination discussed above for the operation activities will forestall any possible water contamination as well.

Residual Impacts

The residual impacts after the implementation of the above mentioned mitigation measures will be negligible.

7.7.3 Traffic Management

During the operational phase of the One Hills Apartments Tower-III Project, the movement of vehicles may increase traffic congestion at Murree Expressway and Angoori Road.

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 Murree Expressway and Angoori Road.
- M/s One Hills (SMC-Private) Limited 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 One Hills Apartments Tower-III 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.

Limited Access to Essential Service: The absence of nearby grocery stores and cafes within the building's vicinity may lead occupants to travel longer distances for daily necessities,like vegetables and other grocery items contributing to increased greenhouse gas emissions from their vehicles.

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: Designing 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.

Enhancing Sustainability: On-Site Integration and Community-Centric Solutions:Small grocery stores and cafes will be integrated within the building premises through on-site commercial spaces offers convenient access, diminishing the need for long-distance travel and subsequently lowering individual carbon footprints. Additionally,It will be preferred to implement mixed-use development with diverse amenities fosters a self-contained community, reducing reliance on external sources for daily needs and decreasing overall transportation-related emissionsThese measures collectively aim to create a sustainable and accessible living environment, minimizing the carbon footprint associated with occupant travel.

Residual Impacts

By the implementation of the mitigation measures, the Carbon footprint impacts of One Hills Apartments Tower-III Project during operational phase can be minimized.

7.8 Positive Impacts

The positive impacts of the One Hills Apartments Tower-III Project are as follows:

7.8.1 Residential Facility

The One Hills Apartments Tower-III Project is a residential building that will provide residential facility to the residents of Islamabad and Rawalpindi. The apartment buildings will occupy a low land footprint with vertical expansion.

In a rapidly changing and urbanizing era, the provision of adequate and affordable housing remains a key priority of the present government. Therefore, the vertical expansion will save

space and accommodate more residents as compared to other development of housing scheme, which has a very large footprint.

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

- Provide sustainable development
- Provide more accommodation 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 One Hills Apartments Tower-III Project business opportunities in the area will be enhanced, thus, boosting up the local economy.

7.8.3 Employment

The operation of One Hills Apartments Tower-III 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.

During the operational phase, a group of doctors will be hired to provide health and care facilities in the building and separate ambulances will be provided. This will provide employment opportunity for doctors, nurses, drivers and first aid team.

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 7.5: Summary of Impacts and Mitigation Measures

Impact	Mitigation Measures
Pre-construction Phase Impacts	
Project Site, Land Use, and Design	One Hills Apartments Tower-III Project is being developed in an area which is is accessible through Murree Expressway and Angoori Road. The land use and design of the project will be in line with the existing Capital Development Authority's bylaws. The project area also houses various multi-story buildings, and the area has residential land use. The project area is located in seismic Zone II, where II represents a high hazard with moderate damage zone. The hazard due to earthquake will be reduced by using sheer wall and piling.
Visual Impact	A plantation plan has been proposed for One Hills Apartments Tower-III Project, which will be implemented.
Construction Phase Impacts	

Impact	**Mitigation Measures**
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.
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 One Hills Apartments Tower-III 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.

Impact	**Mitigation Measures**
Solid Waste Management	Solid Waste Management will also be an important issue during the operational phase of One Hills Apartments Tower-III 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 Pre-Construction and Construction Phase

The organizational roles and responsibilities are summarized below:

a) **M/s One Hills (SMC-Private) Limited**

M/s One Hills (SMC-Private) Limited being project proponent, will have the overall responsibility for compliance with the Environmental Management Plan of One Hills Apartments Tower-III Project. Furthermore, M/s One Hills (SMC-Private) Limited 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, M/s One Hills (SMC-Private) Limited 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, One Hills Apartments Tower-III 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, One Hills Apartments Tower-III 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: M/s One Hills (SMC-Private) Limited 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

M/s One Hills (SMC-Private) Limited will assume the main responsibility for the environmental performance of the One Hills Apartments Tower-III Project during the operational phase.

An environmental monitoring plan has been developed as part of the EIA of One Hills Apartments Tower-III 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 One Hills Apartments Tower-III 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

One Hills Apartments Tower-III 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

M/s One Hills (SMC-Private) Limited 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, One Hills Apartments Tower-III 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 M/s One Hills (SMC-Private) Limited management for further action. He will also have to report any impacts anticipated, along with his recommendations for further action.

8.4.3 Approvals

M/s One Hills (SMC-Private) Limited 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 M/s One Hills (SMC-Private) Limited.

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 One Hills Apartments Tower-III 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	
Pre-construction/Design Stage									
Location in an area with the seismic background	Seismic activities may damage structures, environment, health, and lives	Health, food quality, jobs, safety	One Hills Apartments Tower-III	After an earthquake with intensity higher than design.	Can be serious at times	One Hills Apartments Tower-III Project will be designed in accordance with the seismic code for Islamabad.	Design Consultant	M/s One Hills (SMC-Private) Limited	Land
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 and environmental	Sanitary waste disposal, solid (kitchen) waste disposal, fuel leakage, noise and additional traffic, water usage and pollution	Camp Site for Construction	Throughout the 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.	Site Engineer	M/s One Hills (SMC-Private) Limited	Land Analysis
Sanitation and waste disposal facilities at the campsite	Sanitation and waste disposal problems	Workers health may impair which may result in slow progress	At all solid and liquid waste collection areas, latrine	Throughout the construction period	Moderate	The proper waste management plan for campsite waste will be provided. Sewerage system at the camp to be properly designed	Project Manager	M/s One Hills (SMC-Private) Limited	Waste Management

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	
			sites of camp			(septic tank with soakage pit) to receive all sanitary wastewaters.			
Movement of vehicles in a construction site and along haulage routes	Environmental impact, impacts from the temporary haul and access roads	Soil compaction and alteration of percolation and vegetation pattern, Dust emissions	At the project site	During the 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. The existing road will be used to the extent possible for hauling materials	Project Manager	M/s One Hills (SMC-Private) Limited	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 the 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 does not contaminate the soil. Fuel storage and refuelling sites to be kept away from drainage channels. 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.	Project Manager	M/s One Hills (SMC-Private) Limited	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	
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 the 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	Project Manager	M/s One Hills (SMC-Private) Limited	Solid Waste Management
Health and safety at the workplace	Health risks for workers if unfavourable working conditions prevail	Workers progress may impair which will result in the slow progress of the project	Throughout construction area and construction campsite	Throughout the 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 (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 to ensure no health risk for labourers. Proper maintenance of facilities for workers. Regular pest control measures in the site camp.	EHS Engineer	M/s One Hills (SMC-Private) Limited	Workers Health
Soil and Burrow Material, Blasting and Cutting, Cut and Fill									
Disposal of Surplus material,	Physical environment	Water pollution from runoff of discarded asphalt,	Along the full length of the service roads	At the start of construction	Low	Construction waste to be collected for reuse.	Contractor via bid documents	M/s One Hills (SMC-Private) Limited	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	
storing material for reuse		loss of productive land due to dust	around One Hills Apartments Tower-III project			Waste disposed of in existing Dump Site. Water spraying to reduce dust.			
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 fauna species	Designated Borrow areas, and at all sites where high embankments are required.	Long-lasting	Medium	Remove topsoil and reintroduce for returning to nature. Concrete retaining walls at high embankments in critical areas.	Site Engineer	M/s One Hills (SMC-Private) Limited	Soil erosion and Water
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.	Project Manager	M/s One Hills (SMC-Private) Limited	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 at One Hills Apartments Tower-III Project	Throughout the 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.	Project Manager	M/s One Hills (SMC-Private) Limited	Construction material storage

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	
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 an environmentally friendly manner and sites to be restored to original conditions.	Project Manager	M/s One Hills (SMC-Private) Limited	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.	Project Manager	M/s One Hills (SMC-Private) Limited	Noise and Air Quality
Planting trees	Ecological	Introduction of Indigenous trees species	In green areas and green belts	After construction	Medium	Implement Plantation Plan.	Project Manager	M/s One Hills (SMC-Private) Limited	Site restoration
	Social	Trees create safety hazards	Where trees are planted	Once trees have matured	Medium	Proper monitoring of the matured trees.	Project Manager	M/s One Hills (SMC-Private) Limited	
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 the proper Site Restoration Plan. Compliance monitoring of the restoration.	Project Manager	M/s One Hills (SMC-Private) Limited	Site restoration
Utility Disruption									
No utility except electricity is available	Affected utilities create a 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.	Project Manager	M/s One Hills (SMC-Private) Limited	Electricity supply management

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	
Water Issues									
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	One Hills Two (SMC-Private) Limited will arrange required water for construction in such a way that water availability and supply nearby to the community remain unaffected.	Project Manager	M/s One Hills (SMC-Private) Limited	Water management
Spillage of liquid waste	Environmental and Social Impacts	Risk of polluting surface and groundwater from spillage, drainage, and runoff from construction sites.	One Hills Apartments Tower-III Project	During construction	Low	Regular water quantity monitoring according to the determined sampling schedule. Site engineer shall ensure that construction debris does not find its way into the drainage.	Project Manager	M/s One Hills (SMC-Private) Limited	Water quality
Earthwork, stonework, and, other construction activities	Environmental and Social Impacts	Contamination of water due to construction waste, health risks for public	One Hills Apartments Tower-III Project	During construction	Low	Construction work close to water bodies to be avoided, especially during the monsoon period. Waste must be collected, stored, and taken to the existing Dump Site.	Project Manager	M/s One Hills (SMC-Private) Limited	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 the biophysical environment	Workshops at the campsite, Construction sites	Throughout the 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 pollution emission levels conform to National	Project Manager	M/s One Hills (SMC-Private) Limited	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	
						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	Murree Expressway and Angoori Road	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.	Project Manager	M/s One Hills (SMC-Private) Limited	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 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 carried out at locations and schedules specified to ensure the effectiveness of mitigation measures.	Project Manager	M/s One Hills (SMC-Private) Limited	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	
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 the 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 staffs (particularly the cooks) with respect to poaching wildlife Assist in the public awareness program.	Project Manager	M/s One Hills (SMC-Private) Limited	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 the construction period	Low	Ensure safely code for work staff is observed, including the provision and wearing of safety equipment required for specific works (e.g., helmets, dust masks, earmuffs, safety goggles, etc.). At the construction site, a readily available and fully equipped first aid unit to be provided. 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.	Project Manager, EHS Engineer	M/s One Hills (SMC-Private) Limited	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	
Archaeological Sites									
Encountering archaeological sites during earthworks and construction	Impacts of historically important sites and damage to fossils, artefacts, tombs, structure, and others, as defined in the Antiquity Act of 1975	If sites of special interest not identified and flagged, Construction workers may inadvertently cause damage	Near Project site	Throughout the construction period	Low	In case of finding any archaeological artefact structure, tomb, etc., immediately halt all works and contact the Archaeological Department. In the event of such finding, the project manager has the duty to secure the site against any intrusion until an archaeological expert decides for further action.	Project Manager	M/s One Hills (SMC-Private) Limited	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 the drainage structure clear of debris and blockage.	Project Manager,	M/s One Hills (SMC-Private) Limited	Stormwater runoff
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.	Project Manager,	M/s One Hills (SMC-Private) Limited	
Ambient Air Quality									
Induced vehicular traffic movement	Environmental and Social Impacts	Public health risk, nuisance, and other impacts on	Project area	At operation	Medium traffic generation will	Roadside tree plantation as applicable and feasible under harsh climatic condition; plants	Project Manager,	M/s One Hills (SMC-Private) Limited	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			be for a short duration	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.			
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 a short duration	Noise measurements to be carried out to ensure the effectiveness of mitigation measures, (e.g., speed limits at the Project site).	Project Manager,	M/s One Hills (SMC-Private) Limited	Noise
Flora and Fauna									
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 with One Hills Apartments Tower-III 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.	Project Manager,	M/s One Hills (SMC-Private) Limited	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.	Project Manager,	M/s One Hills (SMC-Private) Limited	Social 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	
						Traffic control measures, including speed limit, to be enforced. Mass awareness regarding traffic rules.			

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.

M/s One Hills (SMC-Private) Limited will make arrangements for collection, transportation and disposal of solid waste generated by One Hills Apartments Tower-III 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.

Operational Phase: The internal collection of solid waste will be carried out by the M/s One Hills (SMC-Private) Limited through garbage chutes from each floor of the building. M/s One Hills (SMC-Private) Limited 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.

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.

M/s One Hills (SMC-Private) Limited 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.

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 One Hills Apartments Tower-III Project

Sr No	Item	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Personal Protective Equipment (A)				
1	Dust Masks	11,520	10	115,200
2	Safety Shoes	240	3000	770,000
3	Gloves	5,760	400	2,304,000
4	First Aid Box	2	3000	6,000
5	Ear Plugs	480	400	192,000

6	Safety Helmets	240	1500	360,000
7	Safety Jackets (Hi Vis)	480	700	336,000
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	Raincoat	80	1000	80,000
			Total (A + B)	**4,158,200**

- Time Required for Construction Period = 3 years
- Number of Labor Required during peak Construction = 80
- Personal Protective Equipment PPEs
- Dust Mask : 1 Dust Mask to be used in a week by each labourer
- Safety Shoes: 1 Safety shoe for 1 year for each labourer
- Gloves : 2 pair of gloves for each labourer for each month
- First Aid Box: 1 first aid box for every 50 labourer
- Ear Plug : 1 set of the earplug to be used for 6 months for each labourer
- Safety Helmet : 1 safety helmet for each labourer for 12 months
- Safety Jackets : 2 safety Jackets (Hi-Vis) for each labourer for 12 months
- Dust Bin: Rough estimate
- Water Sprinkling the whole construction period
- Rain Cost: 1 Raincoat for each labourer

8.7 Traffic Management and Construction Material Transportation Plan

- All the construction material will be transported to the project site via Angoori Road.
- 20 km per hour speed limited will be being maintained at the project site.
- All the light vehicles cars, jeep etc. will be parked in a designated area.
- All traffic signals will be followed properly.
- 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 signboards will 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.

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 4,000 mature plants having 4-5 feet height and 1.0 to 1.5 inches stem diameter within the boundary of the One Hills Apartments Tower-III Project as well as in the project area.

The management of One Hills Apartments Tower-III 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 One Hills Apartments Tower-III Project.

On the completion of construction of the building of One Hills Apartments Tower-III Project, plantation will be carried out along the walking track around the building. The project site will be made green and beautiful with ornamental, evergreen, and shaddy trees species. Around the CDA service road there is a vacant plain ground. Plantation will also be done here.

Trees (20 ft. and above): A total of 5 trees comprising of shady, flowering, fruit trees have been recommended for plantation along eastern, northern and western boundaries as well green areas of One Hills Apartments Tower-III Project.

Table 8.3: Recommended Trees for One Hills Apartments Tower-III Project

Sr.#	Botanical Name	Local Name	Description
1	*Bombax ceiba*	Seemal	A large flowering tree having good timber
2	*Cassia fistula*	Amaltas	A tree having twice blossom in a year with beautiful yellow flower
3	*Eugenia jambolana*	Jaman	It is an evergreen fruit tree large size fruit tree with good quality timber wood
4	*Mangifera indica*	Aam	A fruit tree with large shade
5	*Psidium guajava*	Amrood	A fruit plant which can easily be grown in a semi-arid climate

Shrubs (under 20 ft.): A total of 8 evergreens, flowering and ornamental shrubs having a variety of colour have been recommended for gardens and landscaping at One Hills Apartments Tower-III Project.

Table 8.4: Recommended indoor plants for One Hills Apartments Tower-III 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

Indoor Plants: A total of 8 indoor plants has positive psychological effects, indoor air purification purpose has been recommended at One Hills Apartments Tower-III Project.

Table 8.5: Recommended indoor plants for One Hills Apartments Tower-III 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 4,000 trees will be planted. The cost of plantation includes the cost of equipment, initial planting (including restocking during first 2 years) and maintenance cost for first four years of plantation. The total estimated cost of implementation of plantation plan is Rs. 4.320 million. The Cost of raising one plant and its maintenance for 4 years is Rs. 1105.

The tentative cost of equipment for is given below in **Table 8.6.**

Table 8.6: Tentative Cost of Equipment

Sr.	Equipment	Numbers	Cost in PKR
1	Grub hoe (earth digging tool) and others	Lump sum	100,000
		Total cost of equipment	**100,000**

The cost break-up of plantation and maintenance for a period of four years is mentioned in **Table 8.7** to **Table 8.12.**

Table 8.7: Estimated Cost of Unit Plantation (4,000 Plants) for 1st Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
1	Clearance of Site (4,000 plants)	4,000	5/plant	20,000
2	Layout/ unit	4,000	2/plant	8,000
3	Digging of Pits	4,000	50/pit	200,000
4	Average cost per unit plant	4,000 plants	215/plant	860,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	4,000 plants	10/plant	40,000
6	Plantation of plants with ball of earth/unit	4,000	30/plant	120,000
7	Addition of Manure 1 cft. / pit	4,000 cft.	Lump Sum	200,000
8	Hand watering 100 times Approx. x4,000=100,000	400,000	1/watering	400,000
9	Weeding 4 times 4,000x4=16,000	16,000	5/plant	80,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	200,000

Total	**2,128,000**
Say	**2,130,000**

Table 8.8: Estimated Unit Cost of Plantation of (1200 Plants) & Maintenance for 2nd Year in case of 30% Mortality

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
3	Re-Digging of Pits	1200	50/pit	60,000
4	Average cost per unit plant	1200 plants	215/plant	258,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	1200 plants	10/plant	12,000
6	Plantation of plants with ball of earth/unit	1200	30/plant	36,000
7	Addition of Manure 1 cft. / pit	4,000 cft.	Lump Sum	25,000
8	Hand watering 100 times Approx. x4,000=100,000	400,000	1/watering	400,000
9	Weeding 4 times 4,000x4=16,000	16,000	5/plant	80,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	200,000
	Total			**1,071,000**
	Say			**1,075,000**

Table 8.9: Estimated Cost of Plantation Unit (600 Plants) & Maintenance for 3rd Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
3	Re-Digging of Pits	600	50/pit	30,000
4	Average cost per unit plant	600 plants	215/plant	129,000
5	Carriage/unit of plants from Nursery to Site including loading/unloading	600 plants	15/plant	9,000
6	Plantation of plants with ball of earth/unit	600	30/plant	18,000
7	Addition of Manure 1 cft. / pit	1,000 cft.	Lump Sum	25,000
8	Hand watering 50 times Approx. x4,000=200,000	200,000	1/watering	200,000
9	Weeding 3 times 4,000x3=12,000	12,000	5/plant	60,000
10	Miscellaneous/ Contingencies	Nil	Lump Sum	200,000
	Total			**671,000**
	Say			**675,000**

Table 8.10: Estimated Cost of Maintaining 4,000 plants for 4th Year

Sr. #	Activity	Quantity	Rate (PKR)	Amount (PKR)
1	Hand watering 50 times 4,000x50=200,000	200,000	1/time	200,000
2	Weeding	4,000	5/unit	20,000
3	Trimming/pruning of plants	4,000	5/unit	20,000
4	Miscellaneous			200,000

Total	**440,000**

Table 8.11: Total Cost of Plantation Plan for Four years

Activity	Amount (PKR)
Estimated Cost of Unit Plantation (4,000 Plants) for 1st Year	2,130,000
Estimated Unit Cost of Plantation of (1200 Plants) & Maintenance for 2nd Year in case of 20% Mortality	1,075,000
Estimated Cost of Plantation Unit (600 Plants) & Maintenance for 3rd Year	675,000
Estimated Cost of Maintaining 1,000 plants for 4th Year	440,000
Total	**4,320,000**

Table 8.12: Final Cost per Tree Planted

Activity	Amount (PKR)
Cost for maintenance of cultivated plants for 4 years	4,320,000
Cost of equipment	100,000
Total cost	4,420,000
Cost for raising one plant and its maintenance for 4 years	**1105**

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 higher officials of the M/s One Hills (SMC-Private) Limited.

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

M/s One Hills (SMC-Private) Limited. 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, One Hills Apartments Tower-III 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 M/s One Hills (SMC-Private) Limited 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 One Hills Apartments Tower-III Project has been provided in **Table 8.13**. 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 8.13: Environmental Monitoring Plan for One Hills Apartments Tower-III 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 One Hills Apartments Tower-III Project site	PM_{10}, for continuous 8 hours, on a quarterly basis	NEQS	Project Manager	M/s One Hills (SMC-Private) Limited
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	M/s One Hills (SMC-Private) Limited
Noise Levels	Construction	dB (A)	At a central location in One Hills Apartments Tower-III Project site	Twice in 8 hours at a selected site on a quarterly basis	EPA Ambient Noise standards	Project Manager	M/s One Hills (SMC-Private) Limited
Water Quality	Construction	pH, BOD, COD, TDS, TSS, DO, coliforms, hardness, nitrate, chloride, sulphate, hydrocarbon,	At onelocation, i.e., start and end of the Project site	Quarterly	NEQS	Project Manager	M/s One Hills (SMC-Private) Limited
Land clearing	Construction	Record of all cutting of trees	Throughout One Hills Apartments Tower-III Project	When a decision for a tree cutting is made.	-	Project Manager	M/s One Hills (SMC-Private) Limited
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	M/s One Hills (SMC-Private) Limited

Environmental Component	Project Phase	Parameters	Locations	Frequency	Standards	Implementing	Supervision
Safety and Traffic Rules Compliance	Operation	(1) Faulty, overloaded and speeding vehicles (2) Inspection of signage	All along with the One Hills Apartments Tower-III Project	Quarterly basis, for 2 years	To be determined	Project Manager	M/s One Hills (SMC-Private) Limited
Sewerage Effluent	Operation	NEQS parameters for liquid effluents	Sewerage outfall in Sewerage Line	Once in a month by the third party lab	NEQS	Project Manager	M/s One Hills (SMC-Private) Limited

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

Table 8.14: Cost Estimates for Environmental Monitoring during the construction phase

Environmental Monitoring Activities	Units/ No. of Samples	Unit Cost specification	Cost (Rs)
Construction phase			
Ambient air quality monitoring Quarterly basis for 3 years	12	@ 35,000 per sample for 24 hr monitoring	420,000
Ambient water quality monitoring Quarterly basis on one location for 3 years	12	@ 20,000 per sample	240,000
Noise levels, quarterly basis for 3 years	12	@ 5,000 per sample	60,000
Environment, Health Safety Engineer	3 years	@ 75,000	2,700,000
		Total	**3,420,000**

Source: *PPI Estimates, 2025*

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

M/s One Hills (SMC-Private) Limited 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 8.15.**

Table 8.15: Framework for Environmental Social Training Program of One Hills Apartments Tower-III 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	Before 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.	Before 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.	Before Construction Activities	Full Day	EHS Manager	Workers
Solid Waste Management	Waste Segregation, identification of hazardous waste, Use of PPEs and waste handling	Before 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	Before 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	Before 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	Before Commencement of Project Activities	Full Day	EHS Manager	Relevant workers and staff
Health Safety and Environmental Auditing	Health Safety and Environmental Audits, Reporting Requirements	Before 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 8.16**.

Table 8.16: Summary of Environmental Mitigation & Monitoring Cost

Basis	Activity	Cost (Rs)
Environmental Monitoring Cost	Ambient Air, Noise and Water Quality Monitoring & Cost of Hiring Environmental Engineer for 36 Months	3,420,000
Solar Panel / Renewable Energy Component	Installation of Solar Panel	3,500,000
Treatment of Wastewater	Construction of Septic Tank	8,500,000
Double Glazed Low-E Glass windows	Installation of Double Glazed Low-E Glass windows	20,000,000
Energy Efficiency	Installation of LED lights	4,000,000
Plantation Plan	Implementation of plantation plan	4,420,000
Health & Safety of Workers	PPEs and site safety equipment for 80 employees	4,158,200
Cost of Environmental Training	For the whole construction period	1,000,000
	Grand Total	**48,998,200 Say 49,000,000**

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 M/s One Hills (SMC-Private) Limited management will prepare a weekly environmental report.

8.19 Change Management Plan

The EIA for One Hills Apartments Tower-III 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, One Hills Apartments Tower-III 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, One Hills Apartments Tower-III Project.

8.20 Post Project Monitoring

M/s One Hills (SMC-Private) Limited 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 One Hills Apartments Tower-III 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:

- M/s One Hills (SMC-Private) Limited intends to develop state-of-the-art residential apartments to facilitate the population of Rawalpindi and Islamabad with state-of-the-art housing and commercial area with all the required facilities in one place.
- The proposed project will comprise of a residential tower with 3 basements, ground floor and eighteen floors. Tower III will accommodate 132 residential apartment units. The Building will have total covered area of 249,414 sq.ft.
- Total Plot area of the project is 6.91 Kanal. This will include Apartment buildings, Park/Green/Open Spaces and Roads. 62% area of the total plot area is reserved for open spaces and greenery.
- As per parking requirements, basements shall be used for parking. A total of 198 car parking spaces are available in the basement-3 (69 cars), basement-2 (65 cars), basement-1 (64 cars) of One Hills Apartments Tower III.
- The infrastructural works will include the provision of roads, water supply network, drainage, and sewerage network, electrification, solid waste management, wastewater treatment plant, and rainwater harvesting.
- The cost of the project is Rs. 2.08 Billion and will be completed in 3 years.

9.3 Recommendations

- A plantation plan has been proposed in the EIA report, which will be developed and implemented by M/s One Hills (SMC-Private) Limited for One Hills Apartments Tower-III Project.
- 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 One Hills Apartments Tower-III 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. M/s One Hills (SMC-Private) Limited 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 prepare a 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 ▪ Prepare Draft Report of the Project
Ms. Sidra Maryum	Environmental Engineer	B. Sc. Environmental Engineering, UET Taxila (2020-2024)	▪ 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.
Ms Amna Saeed	Environmental Engineer	B. Sc. Environmental Engineering, UET Lahore (2018-2022)	▪ Field work for baseline data collection in the area under study ▪ 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 Noor Ul Hassan Lodhi	Project Control, M/s One Hills (SMC-Private) Limited
2	Mr Zamir Ul Hassan	Architect, One Hills Apartments Tower-III Project
3	Mr Sher Afzal	Assistant Manager, E & SS, IESCO
4	Mr Anwar Kamal	Emergency & Disaster Management Directorate
5	Mr Zulqarnain	Emergency & Disaster Management Directorate
6	Mr Baber Abbas	Lecturer, UET Taxila
7	Dr Musharib Ali	Lecturer, NUST
8	Mr Farhan Lodhi	CEO, Environmental and Waste Management Solutions
9	Mr Kamran Shafqat	Real Estate Dealer

No	Name of Respondent	Age	Gender	Education Qualification	Occupation
10	Mr. David	34	Male	Middle	Helper, Worker
11	Fazal Qadir	32	Male	Middle	Excavator Operator
12	Muhammad Nasir	35	Male	Primary	Labour
13	M. Shehzad	32	Male	-	Labour
14	Ghulam Hussain	45	Male	Inter	Contractor
15	M. Kamran	35	Male	Inter	Surveyor QAQC Dept.
16	Muhamad Saleem	28	Male	BSc	Engineer
19	Jawad Ahmed	30	Male	Bachelors	Private Job
20	M. Irfan Mir	35	Male	Matric	Driver

Annexure-6: Approval of Building Plan by Bahria Town

BAHRIA TOWN

BAHRIA TOWN
Private Limited
BAHRIA ENCLAVE ISLAMABAD

BAHRIA ENCLAVE ISLAMABAD

Date: 28-02-2024
Ref # DWC/One Hills Three/002

One Hills (SMC-Private) Limited
Plot # 08,
4/3 Apartment,
Bahria Enclave II Hills,
Islamabad

Subject: **Non-Objection Certificate (NOC) for DVC from CDA of Plot # 08 (4184.07 Sq Yds), ¾ Apartment, Bahria Enclave II Hills, Islamabad. Initial Drawings submitted by NZ Architects on behalf of One Hills (SMC-Private) Limited, Office # 30, F24-D, Western Wing, Rasheed Plaza, Jinnah Avenue, Blue Area, Islamabad.**

The initial architectural plans for Plot # 08, Apartment, Bahria Enclave II Hills, Islamabad, have been submitted. This Non-Objection Certificate (NOC) for DVC is issued under the following Terms & Conditions:

1. The approval is granted solely for the DVC process in CDA,as per request of the client
2. As clearly mentioned in our first letter issued on **04-02-2025**, the height of the building in compinting with **CAA** and **CDA**. Therefore, this NOC is subject to approval from both authorities.
3. The client must submit the required fee **before the issuance of this letter**. The estimated covered area must comply with **FAR 1:4** as per **CDA and Bahria SOPs**. Based on the first proposal, the estimated covered area is **250,000 sqft**, and the fee will be **PKR 18.75 per SFT**, which must be submitted via **pay order**.
4. After CDA, DVC approval, the client must **resubmit and reapply** for the Final NOC from the Design Wing Bahria Enclave ISB.
5. As per Bahria Town regulations, the **building elevation must be approved by the CEO**. The client must submit the final building view for approval. The final approved view must be signed and submitted before obtaining final approval. Exterior finishes will be approved by the Design Wing Commercial.
6. The Design Architect will be responsible for the complete **Working Drawings**. Any discrepancies found will be rectified by the architect with intimation to the Design Wing Bahria Enclave ISB.
7. After issuance of this letter, i.e the client may proceed with the **DVC process** and hire a Structural Design Consultant registered with **PEC** and **CDA**. The consultant will be wholly responsible for the **safety and stability of the structure.**
8. The client may also hire an **MEP Consultant** registered with the **Fire Safety Department, CDA**, and **Disaster Management**. The MEP Consultant will be wholly responsible for **fire safety and MEPdesign systems**.

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Marketing Sales Office No. +92-51-2721027-8

BAHRIA TOWN

BAHRIA TOWN
Private Limited
BAHRIA ENCLAVE ISLAMABAD

BAHRIA ENCLAVE ISLAMABAD

9. The overall responsibility of the **Architectural, Structural, and MEP designs** will rest with the respective Design Consultant.
10. The **Bye-laws and SOPs** of Bahria Town must be followed in **true letter and spirit**. Any violation will result in the cancellation of the NOC by the Design Wing Bahria Enclave Islamabad .
11. The client must submit an **Undertaking** regarding the acceptance of the Terms & Conditions mentioned in Bahria Town SOPs and this letter.
12. Bahria Town reserves the right to **cancel the approval letter** in case of any violation of SOPs.
13. The client must submit **soft copies of all drawings** along with **three sets of hard copies** to the Design Wing for final approvals.

12/3/2025

Shazia Baania
Senior Architect Commercial
Bahria Enclave Islamabad
PCAT # [illegible]

Shazia Baanian
Senior Architect
Commercial

11/3/2025

Shujat Ali Hamid
Chief Architect

C.C

- DG Planning and Design
- Executive Director, BEI
- Manager Building Control, BEI
- Architectural Consultant (NZ Architects)
- Office File

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Annexure-7: Ambient Air Quality, Noise Level Monitoring and Water Testing Report

Green Crescent
Environmental Consultants Pvt. Ltd.

Sr. No# 25A/ 001912

CHEMICAL ANALYSIS TEST REPORT (GROUND WATER)

Sample Details			
Job Ref. No:	GCEC-PK-ISL-03/2025	Project Name:	One Hills Apartment
Telephone No.	0300-9110245	Sample Matrix:	Ground Water Sample
Sample Date:	19-01-2025	Sampled By:	GCEC
Sample Receipt Date:	20-01-2025	Date of Completion of Analysis:	25-01-2025
Grab/Composite:	Grab Sampling		
Sample Identification			
03	Motor Pump (Tower-III)		

Parameters	Analysis Method	Unit	LOR	Result 03	NEQS
PHYSICAL & CHEMICAL ANALYSIS					
pH**	APHA-4500H+ B	-	0.01	6.69	6.5-8.5
Odor	In-house	-	-	Odorless	Non-Objectionable
Taste	In-house	-	-	Sweet	Non-Objectionable
Color	APHA-2120 B/C	Pt/Co	1.0	<1.0	≤15 TCU
Turbidity**	APHA-2130 B	NTU	0.1	<0.1	<5 NTU
Total Hardness**	APHA-2340 B & C	mg/l	0.1	360.0	< 500 mg/l
Total Dissolved Solid (TDS)**	APHA-2540 C	mg/l	1.0	472.0	< 1000
Ammonia	APHA-4500-NH_3-B	mg/l	0.002	<0.002	-
Chloride**	APHA-4500Cl- B	mg/l	0.24	21.68	< 250
Cyanide (CN)	APHA-4500CN E	mg/l	0.01	<0.01	≤ 0.05
Fluoride (F)**	APHA-4500F- D	mg/l	0.01	<0.01	≤ 1.5
Nitrite	APHA-4500NO2 B	mg/l	0.01	<0.01	≤ 3 (P)
Nitrate**	APHA-4500NO3 C	mg/l	0.1	2.0	≤ 50
Phenolic Compound	APHA-5530 D	mg/l	0.01	<0.01	-
Residual Chlorine	APHA-4500Cl G	mg/l	0.1	<0.1	0.2-0.5
Aluminum (Al)	APHA-3111Al B	mg/l	0.028	<0.028	≤ 0.2
Cadmium**	APHA-3111Cd B	mg/l	0.0028	<0.0028	0.01
Copper**	APHA-3111Cu B	mg/l	0.0045	<0.0045	2
Chromium**	APHA-3111Cr B	mg/l	0.0054	<0.0054	≤ 0.05 (P)
Mercury	APHA-3112Hg B	mg/l	0.0008	<0.0008	≤ 0.001
Antimony (Sb)**	APHA-3111Sb B	mg/l	-	ND	≤ 0.005 (P)
Nickel**	APHA-3111Ni C	mg/l	0.008	<0.008	≤ 0.02
Zinc**	APHA-3111Zn B	mg/l	0.0033	<0.0033	5.0
Arsenic	APHA-3111As B	mg/l	0.01	<0.01	≤ 0.05 (P)
Barium	APHA-3111Ba B	mg/l	0.031	<0.031	0.7
Manganese**	APHA-3111Mn B	mg/l	0.0016	<0.0016	≤ 0.5
Iron**	APHA-3111Fe B	mg/l	0.1	<0.1	-
Boron	APHA-4500-B (C)	mg/l	0.1	<0.1	0.3
Lead**	APHA-3111Pb B	mg/l	0.013	<0.013	≤ 0.05
Selenium	APHA-3111Se B	mg/l	-	ND	0.01 (P)
MICROBIOLOGICAL ANALYSIS					
Total Coliforms	APHA:9222 B	CFU/100ml		Absent	0/100ml
Faecal Coliforms (Ecoli)	APHA:9222 D	CFU/100ml		Absent	0/100ml

Abbreviations:
ND: Not Detected **LOR:** Limit of Reporting **NEQS:** National Environmental Quality Standards

Note:
Uncertainty of all the parameters and laboratory conditions at the time of analysis will be provided as per client's requirement. The lab environmental conditions are maintained at 25±5C° and humidity at 50±20%. **Disclaimer: The results are solely of the sample provided. **All the starred parameters are PNAC accredited.*

Sample Analyzed By:

Analyst
Mr. Idrees Zaman

Name of Chief Analyst with Seal:

Mr. Usman Raza Jaswal

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Green Crescent
Environmental Consultants Pvt. Ltd.

Sr. No# 25A/ 001918

Ambient Air Quality Monitoring

Project Name	One Hills Apartment
Job Reference Number	GCEC-PK-ISL-03/2025
Monitoring Point	Tower III
Date of Intervention	17-Jan-2025 to 18-Jan-2025

Sr. #	Time	CO (mg/m³)	NO (µg/m³)	NO_2 (µg/m³)	NO_x (µg/m³)	SO_2 (µg/m³)	$PM_{2.5}$ (µg/m³)	PM_{10} (µg/m³)
1	16:00	4.72	13.50	12.32	25.82	8.48	70.03	94.83
2	17:00	4.83	11.96	11.50	23.46	7.50	78.26	87.39
3	18:00	4.87	14.77	10.75	25.51	7.81	75.05	89.75
4	19:00	3.29	12.63	10.90	23.53	7.39	76.52	97.70
5	20:00	3.23	10.88	12.99	23.88	7.91	76.90	107.79
6	21:00	3.28	11.03	14.36	25.39	8.63	74.31	81.06
7	22:00	3.22	13.54	12.52	26.06	7.55	78.20	100.57
8	23:00	2.94	14.58	11.21	25.78	7.81	74.85	77.53
9	0:00	2.83	11.41	10.92	22.33	8.38	78.32	86.66
10	1:00	2.60	11.78	12.18	23.96	7.60	79.97	92.55
11	2:00	2.66	15.11	11.40	26.51	7.81	86.61	105.21
12	3:00	2.92	10.88	12.89	23.78	8.74	74.57	87.54
13	4:00	2.77	11.52	12.44	23.97	9.10	76.74	107.79
14	5:00	2.69	13.52	10.96	24.48	9.00	79.54	102.49
15	6:00	2.46	12.82	12.76	25.58	9.67	79.59	95.57
16	7:00	2.63	11.20	13.90	25.10	9.46	74.59	89.75
17	8:00	2.74	13.11	11.99	25.10	10.03	74.37	84.46
18	9:00	3.32	12.01	13.43	25.43	8.94	78.32	89.75
19	10:00	4.53	11.12	14.04	25.16	9.05	77.51	98.44
20	11:00	4.75	12.36	13.07	25.43	7.91	77.99	95.57
21	12:00	3.32	14.69	12.85	27.54	9.51	78.77	93.87
22	13:00	3.23	13.05	11.13	24.18	9.01	76.93	89.75
23	14:00	3.13	11.28	12.04	23.32	8.59	76.47	83.34
24	15:00	3.90	10.77	14.26	25.03	9.77	77.40	96.08
Average Concentration		3.37	12.48	12.37	24.85	8.57	77.16	93.14

Monitoring Performed By:
Deputy Analyst
Farhan Mehmood

Name of Chief Analyst with Seal:
Mr. Usman Raza Jaswal

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Green Crescent
Environmental Consultants Pvt. Ltd.

Sr. No# 25A/ 001919

Ambient Air Quality Monitoring

Project Name	One Hills Apartment
Job Reference Number	GCEC-PK-ISL-03/2025
Monitoring Point	Tower III
Date of Intervention	17-Jan-2025 to 18-Jan-2025

Parameter	Unit	Monitoring Duration	LDL	Average Obtained Concentration	NEQS
Nitrogen Dioxide (NO_2)	µg/m³	24Hours	1.00	12.37	80.0
Nitrogen oxide (NO)	µg/m³	24Hours	1.00	12.48	40.0
NO_X	µg/m³	24Hours	1.00	24.85	120.0
Sulphur Dioxide (SO_2)	µg/m³	24 Hours	1.00	8.57	120.0
Carbon Monoxide (CO)	mg/m³	08 Hours	0.01	3.37	5.0*
Ozone (O_3)	µg/m³	1 Hours	-	12.70	130.0**
Particulate Matter (PM_{10})	µg/m³	24 Hours	1.00	93.14	150.0
Particulate Matter ($PM_{2.5}$)	µg/m³	24 Hours	1.00	77.16	35.0
Total Particulate Matter (TSP)	µg/m³	24 Hours	1.00	210.24	500.0
Lead Air borne Particles	µg/m3	24 Hours	-	0.13	1.5

Abbreviations:
LDL= Lowest Detection Limit
NEQS= National Environmental Quality Standards
(*8 hours standard for CO
**1 hour standard for O_3)
µg/m³= Micrograms per Cubic Meter
mg/m³= Milligrams per Cubic Meter

Monitoring Performed By:
Deputy Analyst
Farhan Mehmood

Name of Chief Analyst with Seal:
Mr. Usman Raza Jaswal

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Green Crescent
Environmental Consultants Pvt. Ltd.

Sr. No# 25A/ 001920

Noise Level Monitoring Report

Project Name	One Hills Apartment
Job Reference Number	GCEC-PK-ISL-03/2025
Monitoring Point	Tower III
Date of Intervention	17-Jan-2025 to 18-Jan-2025

Sr. #	Time	Method/Technique	Unit	Results LAavg	NEQS (Residential)
		Night Time			
1.	23:00	Noise Meter	dB	43.4	
2.	00:00	Noise Meter	dB	46.3	
3.	01:00	Noise Meter	dB	41.7	
4.	02:00	Noise Meter	dB	46.4	
5.	03:00	Noise Meter	dB	44.4	45.0
6.	04:00	Noise Meter	dB	43.8	
7.	05:00	Noise Meter	dB	47.1	
8.	06:00	Noise Meter	dB	46.7	
Night Time Average			**dB**	**44.98**	**45.0**
		Day Time			
9.	07:00	Noise Meter	dB	46.1	
10.	08:00	Noise Meter	dB	49.4	
11.	09:00	Noise Meter	dB	44.8	
12.	10:00	Noise Meter	dB	50.9	
13.	11:00	Noise Meter	dB	46.9	
14.	12:00	Noise Meter	dB	42.0	
15.	13:00	Noise Meter	dB	48.5	
16.	14:00	Noise Meter	dB	42.1	
17.	15:00	Noise Meter	dB	50.6	55.0
18.	16:00	Noise Meter	dB	47.4	
19.	17:00	Noise Meter	dB	43.9	
20.	18:00	Noise Meter	dB	45.1	
21.	19:00	Noise Meter	dB	45.7	
22.	20:00	Noise Meter	dB	48.3	
23.	21:00	Noise Meter	dB	44.8	
24.	22:00	Noise Meter	dB	43.6	
Day Time Average			**dB**	**46.26**	**55.0**

Monitoring Performed By:
Deputy Analyst
Farhan Mehmood

Name of Chief Analyst with Seal:
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