MILSON
PROPERTIES

Final Report
August 2026

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

FALAKNAZ TIARA

PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI



EHS Services
Environmental & Analytical Solutions

MILSON
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Environmental Impact Assessment (EIA)

FALAKNAZ TIARA

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FINAL REPORT
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Environmental Impact Assessment (EIA)

FALAKNAZ TIARA

Plot No. 25/B, Sector No. 30, Korangi Karachi

Prepared for:
Milson Properties

Prepared by:
EHS Services

Date:
August 2026

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Executive Summary

This Environmental Impact Assessment (EIA) has been prepared for the proposed Falaknaz Tiara project, a mixed-use residential and commercial high-rise development planned at Plot No. 25/B, Sector No. 30, Korangi, Karachi. The project is being developed by Milson Properties and the EIA has been prepared by EHS Services to evaluate the potential environmental, social, health, safety, traffic, infrastructure, and operational impacts associated with the project and to identify appropriate mitigation and monitoring measures.

Falaknaz Tiara is proposed on a land area of 10,002 square yards, equivalent to approximately 90,018 square feet. The development comprises a basement, ground floor, dedicated multilevel parking floors, an amenity floor, and residential towers extending up to the 44th floor. The project includes commercial showrooms and retail spaces at the lower levels, 456 residential apartments in Towers A, B, and C, dedicated parking areas, recreational and wellness facilities, landscaped roof gardens, utility rooms, firefighting systems, elevators, security systems, and environmental management infrastructure.

The proposed project has been designed to remain within applicable planning and building control parameters. The proposed FAR area is 601,512.82 square feet against the allowable FAR limit identified in the report, while the total built-up area is approximately 1,247,058.50 square feet. The project provides 482 car parking spaces against a requirement of 436, 498 motorcycle spaces, and a separate visitor parking provision of 190 cars. These provisions are intended to reduce spillover parking, regulate internal circulation, and minimize traffic-related disturbance on adjacent roads.

The EIA is required under the Sindh Environmental Protection Act, 2014 and the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021. The project falls under Schedule III, Category I(2), which covers residential/commercial high-rise buildings exceeding 500,000 square feet; therefore, a full EIA and prior approval from the Sindh Environmental Protection Agency (SEPA) are mandatory before commencement of construction or operation.

The assessment methodology included review of project design information, statutory requirements, site reconnaissance, baseline environmental and socioeconomic characterization, identification of sensitive receptors, review of utility requirements, assessment of likely construction and operational impacts, stakeholder consultation, and development of an Environmental Management Plan (EMP). The EIA follows a comparative approach by evaluating conditions before and after project implementation and by

identifying mitigation measures required to avoid, reduce, or manage adverse impacts.

The project site is located in an already urbanized part of Korangi along Hussain Dadabhoy Road/Korangi Crossing Road, opposite DHA Phase VII Extension and near the KPT Interchange. The surrounding area is characterized by a mix of residential, commercial, institutional, industrial, and transport-related activities. The project area is connected to major road corridors including Korangi Road, Khayaban-e-Ittehad, Shaheed-e-Millat Road, and the KPT Interchange, making traffic management and access planning important components of the assessment.

The site is presently an open plot. The baseline assessment considers ambient air quality, noise, soil and geology, groundwater and water supply conditions, stormwater drainage, wastewater management, solid waste management, traffic, public health and safety, seismic and geotechnical considerations, land use, socioeconomic conditions, and nearby receptors. No major irreversible environmental constraint has been identified that would make the project environmentally unacceptable, provided that the mitigation measures and monitoring requirements proposed in the EIA are implemented effectively.

During the construction phase, the principal environmental and social impacts are expected to include dust generation from excavation, material handling, and vehicle movement; noise and vibration from machinery and construction activity; emissions from equipment and generators; construction waste and debris; occupational health and safety risks; temporary disturbance to local traffic; potential soil contamination from fuel or oil leakage; wastewater from construction activities; and risks associated with excavation, lifting, working at height, and movement of heavy vehicles. These impacts are mostly temporary, localized, and manageable through good construction practices and strict site supervision.

Key construction-phase mitigation measures include water sprinkling and dust suppression, covering of loose materials during storage and transport, wheel washing where necessary, use of well-maintained equipment, noise control and scheduling of high-noise activities, provision of personal protective equipment, barricading and signage, safe access control, implementation of emergency preparedness procedures, segregation and authorized disposal of construction waste, spill prevention measures, and preparation of a traffic management plan to regulate delivery timings and maintain safe ingress and egress.

During the operational phase, the main environmental concerns relate to water demand, wastewater generation, solid waste collection and disposal, traffic movement, parking management, energy consumption, diesel generator emissions, fire safety, emergency response, security, and routine maintenance of environmental control systems. The project is expected to generate a combined water demand of approximately 81,480 to 82,950 gallons per day and sewage generation of approximately 69,258 to 70,508 gallons per day. These requirements are addressed through water storage, on-site wastewater treatment, greywater reuse, stormwater management, and utility coordination.

The project includes an on-site Sewage Treatment Plant with a capacity of approximately 70,000 gallons per day. Treated wastewater is proposed to be reused for landscaping, flushing, and other non-potable applications, thereby reducing pressure on freshwater resources. The wastewater treatment system, grease interceptors, septic tank, and drainage network must be operated and maintained by trained personnel to ensure that treated effluent meets applicable Sindh Environmental Quality Standards before reuse or discharge.

Solid waste generated during operation will be managed through a garbage chute and designated collection system. Waste shall be stored hygienically, collected regularly, segregated where practicable, and transferred through authorized municipal or private waste management services. Construction debris, surplus material, and hazardous waste must not be dumped at unauthorized locations and shall be removed through approved disposal channels in accordance with SEPA requirements.

The project incorporates important safety and resilience measures, including pressurized staircases, fire hydrants, hose reels, fire pumps, sprinklers in selected retail areas, portable extinguishers, fire alarms, smoke management, dedicated firefighting water storage, emergency access, security monitoring, and vertical transportation systems. These systems must be inspected, tested, and maintained regularly to ensure compliance with applicable fire and life safety standards and to protect occupants, visitors, workers, and adjacent communities.

Traffic and parking impacts are addressed through provision of basement and elevated parking, segregated vehicular access points, wide internal driveways, dedicated ramps, visitor parking, and controlled circulation. The operational traffic management system shall ensure safe movement of residents, commercial users, visitors, emergency vehicles, and service vehicles. During construction, delivery scheduling, route management, flagmen, signage, and

site access control will be necessary to minimize congestion and improve road safety.

Stakeholder consultation is an important component of the EIA process. The report recognizes the need to inform and engage relevant stakeholders, including local communities, nearby land users, regulatory agencies, and other interested parties. Consultation outcomes and public concerns are to be incorporated into final mitigation planning, and a grievance redressal mechanism shall be maintained during construction and operation to receive, document, investigate, and resolve complaints related to dust, noise, traffic, safety, waste, and other project-related concerns.

The Environmental Management Plan defines the institutional responsibilities, mitigation measures, monitoring requirements, training needs, documentation procedures, and corrective action mechanisms required for effective environmental compliance. The EMP shall be implemented by the project proponent through qualified environmental, health, and safety personnel, contractors, supervisors, and operational management staff. Monitoring shall include ambient air quality, noise, wastewater quality, generator emissions, solid waste handling, traffic management, occupational health and safety, emergency preparedness, and compliance with approval conditions.

The implementation of mitigation measures and environmental monitoring will help ensure compliance with the Sindh Environmental Quality Standards, SEPA approval conditions, building safety requirements, and good international and local construction practices. Records of monitoring, maintenance, waste disposal, trainings, incidents, corrective actions, and stakeholder complaints shall be maintained and made available to regulatory authorities when required.

The project is expected to generate positive socioeconomic benefits, including improved residential and commercial facilities, employment opportunities during construction and operation, enhanced local economic activity, better utilization of urban land, and provision of modern amenities within a planned development. These benefits must be balanced with responsible environmental management, infrastructure coordination, and continued regulatory oversight.

Based on the assessment, the proposed Falaknaz Tiara project is considered environmentally manageable and socially acceptable, provided that all statutory approvals are obtained and the mitigation measures, monitoring program, EMP commitments, safety systems, wastewater treatment

arrangements, solid waste management procedures, traffic control measures, and stakeholder grievance mechanism are implemented in letter and spirit. The project may proceed from an environmental perspective subject to SEPA approval and strict compliance with all conditions imposed by the competent authorities.

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1. Introduction

Project Title: Falaknaz Tiara

Developed By: Milson Properties

Site Location: Plot No. 25/B, Sector No. 30, Korangi, Karachi

Total Land Area: 10,002.00 Sq. Yards

Falaknaz Tiara is a landmark high-rise development destined to redefine Karachi's urban skyline. The project features a sophisticated B+G+44 storey residential and commercial tower, precisely designed to balance modern luxury with commercial functionality. An Environmental Impact Assessment (EIA) has been formally submitted to the Sindh Environmental Protection Agency (SEPA), detailing the project's strategic integration into the local environment. The proposed architectural vision and its geographic context within the Korangi district are further detailed in the visual representations provided in Figures 1.1 and 1.2.

The proponent, Milson Properties, is backed by a multidisciplinary consortium of seasoned professionals specializing in large-scale construction and sustainable urban development. This expert team is dedicated to maintaining rigorous quality standards and ensuring the project serves as a catalyst for local economic growth and community enhancement. To ensure technical excellence, Milson Properties has partnered with renowned industry leaders, including M/s. Architelier as the Lead Project Architect and M/s. EHS Management Services as the Environmental Consultant, both of whom bring extensive experience in planning and executing complex high-rise initiatives.

1.1 Project Overview

Falaknaz Tiara represents a pinnacle of masterfully engineered urban development, spanning a sprawling 10,002 square yard site (approximately 90,018 square feet). Setting a new benchmark for high-density sophistication, the project features a proposed Floor Area Ratio (FAR) of 601,512.82 square feet. This figure remains well within the regulatory 1:7 limit of 630,126 square feet, even when accounting for mandatory visitor parking FAR incentives. The development comprises 456 premium residential units and prioritizes inhabitant wellness by dedicating 23,142.47 square feet to amenities and recreation—a space allocation that sits perfectly within the required 2–5% threshold.

The project's vertical layout is optimized for maximum efficiency and utility:

- **Commercial Sector:** Located in the Basement and Ground Floor, consisting of premium showrooms and retail outlets.
- **Parking Facilities:** Situated across the Basement and the 1st, 2nd, and 3rd floors.
- **Amenities Hub:** The 4th floor is exclusively dedicated to wellness, recreation, and communal spaces.
- **Residential Sector:** 456 units distributed across Towers A, B, and C from the 5th to the 44th floors.

The architectural design emphasizes seamless accessibility and robust infrastructure. The site incorporates wide driveways measuring between 18 and 20 feet, complemented by precision-engineered ramps. Surpassing all regulatory parking mandates, the project provides 482 car spaces (exceeding the 436 required) and 498 motorcycle spaces. Furthermore, a massive 79,935 square-foot zone is dedicated to visitor parking, accommodating an additional 190 vehicles. Vertical mobility is managed by 12 high-speed elevators, strategically divided into 9 residential and 3 commercial units.

The development is fully self-sufficient, featuring an on-site Sewage Treatment Plant (STP), dedicated underground potable and firefighting water tanks, overhead distribution systems, and septic tank. Advanced safety measures, including pressurized staircases and comprehensive fire hydrant systems, ensure a secure and resilient living environment. More than just a residential complex, Falaknaz Tiara serves as a model for sustainable urban development in Karachi. By incorporating eco-friendly solutions and green systems, the project elevates the local ecological and social fabric while promoting a progressive image for the city.

Technical Specifications Summary

Category	Requirement / Standard	Provided / Proposed
Plot Area	10,002 sq. yd (≈ 90,018 sq. ft)	10,002 sq. yd
FAR Allowable	1:7 → 630,126 sq. ft	601,512.82 sq. ft
Visitor Parking FAR Benefit	79,935 sq. ft	Included
Recreation / Amenity	2–5% (13,401–33,504 sq. ft)	23,142.47 sq. ft

Apartments	As per FAR	456 units
Parking (Cars)	436 required	482 provided
Parking (Motorcycles)	498 required	498 provided
Visitor Parking	Mandatory	190 cars (79,935 sq. ft)
Driveways	≥18 ft wide	18–20 ft wide
Ramps	Adequate slope & width	325'×18'-8", 341'×20'-6"
STP Provision	Required	On-site STP provided
U.G. Potable Tank	Adequate storage	Provided
U.G. Firefighting Tank	Dedicated	Provided
O.H. Tank	Distribution	Provided
Septic Tank	Required	Provided
Fire Safety	Pressurized stairs, hydrants, tanks	Provided
Lifts	Adequate for occupancy	12 lifts $9Res. + 3Comm.$



Figure 1.1: Project Location



Figure 1.2: Architectural view of Falaknaz Tiara

1.2 Need for Environmental Impact Assessment (EIA)

In accordance with the Sindh Environmental Protection Act (SEPA) 2014 and its subordinate regulations, conducting an Environmental Impact Assessment (EIA) is a statutory obligation. Section 17(1) of the Act explicitly prohibits project proponents from commencing construction or operations without first filing either an Initial Environmental Examination (IEE) or an EIA and obtaining formal approval from the Sindh Environmental Protection Agency (SEPA). Specifically, the law states:

"17. (1) No proponent of a project shall commence construction or operation unless he has filed with the agency an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) and has obtained from the Agency."

Furthermore, the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021—issued under Section 37 of the 2014 Act—classify projects into three distinct categories under Schedules I, II, and III based on their potential environmental impact. Projects listed under Schedule

III are identified as having significant environmental risks and therefore necessitate a full EIA, whereas Schedule II projects require an IEE.

The proposed development falls under Category I (2) of Schedule III, which pertains to:

I. Urban development and tourism (2) Residential/commercial high-rise buildings exceeding 500,000 sq. feet.

Given that the project's total area exceeds the 500,000 sq. feet threshold, a comprehensive EIA is mandatory. This study is designed to evaluate the environmental consequences of the high-rise development and establish effective intervention strategies. The scope of this assessment includes building structural stability, water supply and wastewater management, sewage treatment systems, impacts on groundwater levels, solid waste disposal, traffic and parking logistics, safety and security protocols, and the project's proximity to sensitive environmental receptors and overall urban density.

Integrating environmental considerations alongside technical and economic planning throughout the project lifecycle ensures the protection of both micro and macro-level socioeconomic and environmental resources. The primary objectives of this assessment are to:

- Define all relevant regulatory requirements concerning environmental protection, health, and safety.
- Analyze potential environmental impacts arising during both the construction and operational phases to pinpoint specific concerns.
- Propose robust mitigation measures for integration into the project design to minimize or eliminate adverse environmental effects.

1.3 Methodology for Environmental Assessment

In June 2026, the EHS Services team was formally engaged to execute the Environmental Impact Assessment (EIA) for the Falaknaz Tiara project. The evaluation utilized a comprehensive methodology to analyze the consequences of project activities, involving the following steps:

- A specialized team from EHS Services, led by an Environmental Assessment Specialist, conducted a reconnaissance survey to pinpoint vital environmental, ecological, and social features within the vicinity.

- Data regarding production activities in the impacted zone was gathered to define the project's specific microenvironment.
- The collected information was used to detect safety, health, and environmental hazards, along with the risks associated with various project phases.
- A checklist approach was implemented to screen potential environmental impacts, ensuring the EIA report aligns with SEPA regulatory standards.

The assessment centered on a comparative analysis of environmental quality preceding and following project implementation. This was supported by a baseline profile detailing the physical, biological, and socioeconomic conditions of the project's microenvironment. Following the impact screening, the report details essential mitigation strategies.

Furthermore, the document features an Environmental Management Plan (EMP) designed to direct the Project Proponent throughout the project's duration. The EMP is intended to ensure continuous adherence to health, safety, and environmental laws while addressing social concerns and occupational risks.

The report is organized into the following sections:

1. Introduction to the Project and EIA Framework
2. Project Description
3. Review of Relevant National and Provincial Legislation & Guidelines
4. Characterization of the Project Area’s Environment
5. Stakeholder Consultation & Public Participation
6. Analysis of Potential Environmental Impacts & Mitigation Measures
7. Environmental Management and Monitoring Plan (EMP)
8. Conclusions and Recommendations

2. Description of Project

2.1 Project Setting

The project site, Falaknaz Tiara, is situated at Plot No. 25-B, Sector 30, Korangi, Karachi, precisely positioned at geographic coordinates 24.827394°N and 67.085720°E. Currently this site is an open plot (Figure 2.1) free from all encumbrances. The subject property occupies a mid-block location along Hussain Dadabhoy Road (also known as Korangi Crossing Road), directly opposite the DHA Phase VII Extension and in close proximity to the KPT Interchange. Topographically, the site is defined by its strategic frontage along a wide primary artery and a secondary road along the adjacent boundary, with the remaining perimeter abutting adjoining land parcels.

The surrounding macro-environment is integrated into a high-capacity road network comprising Korangi Road, Khayaban-e-Ittehad (DHA Phase 6), Shaheed-e-Millat Road, and the KPT Interchange. This infrastructure supports a heterogeneous traffic composition, including private automobiles, motorcycles, public transit units, and heavy commercial vehicles servicing the vital Korangi, DHA, and Clifton corridors. Notably, the absence of an immediate junction at the site's frontage focuses the development's localized traffic impact on the mid-block segment of the main road, which constitutes the primary study area for the Environmental Impact Assessment (EIA).

Site ingress and egress are facilitated through three designated access points designed to segregate vehicular flow:

- **Gate 1:** Situated at the western corner of the development on the mid-block section of Hussain Dadabhoy Road/Korangi Crossing Road, this gate serves as the primary entrance/exit for the basement parking facility.

- **Gate 2:** Located at the eastern corner along the same mid-block road frontage, this point provides dedicated vehicular access to the elevated parking levels (1st through 3rd floors).

- **Gate 3:** Positioned on the northern perimeter, this access point utilizes a secondary back street that connects back to the primary mid-block road section, providing an alternative circulation route that avoids direct frontage interference.



Project Site	Korangi Road

Figure 2.1: Current status of the Plot



Figure 2.2: Facility Access Points

2.2 The Project

The Falaknaz Tiara stands as a definitive landmark of contemporary urban architecture, representing a premier flagship mixed-use high-rise development situated at the strategic epicenter of Karachi's industrial and commercial hub in Korangi. Spanning a significant land area of 10,002 square yards, which translates to approximately 90,018 square feet, this ambitious project serves as a masterclass in integrating luxury residential living with sophisticated commercial retail infrastructure. The development has been meticulously engineered to exceed the highest global benchmarks of urban planning and environmental sustainability while maintaining rigorous compliance with the Karachi Building & Town Planning Regulations.

The project's vertical profile is strategically zoned to optimize utility, efficiency, and the separation of functions. The basement and ground floors serve as the project's commercial anchor, hosting high-end showrooms and premium retail outlets designed to cater to both residents and the surrounding Korangi business community. Dedicated parking facilities are distributed across the basement and the first three floors, ensuring ample capacity and ease of access. A specialized amenities hub on the 4th floor is dedicated entirely to resident well-being, featuring 23,142.47 square feet of communal space that includes a state-of-the-art gymnasium, an interactive gaming zone, landscaped roof gardens, and walking paths. Starting from the 5th floor, the development rises into three distinct towers—A, B, and C—housing a total of 456 apartment units.

Tower A comprises 34 floors, including the basement and ground levels. It features typical residential floor plates of approximately 23,142 square feet from the 5th to the 34th floor. This tower accommodates approximately 120 units and integrates mixed-use functions at its base, including visitor parking and retail shops. Tower B serves as the architectural pinnacle of the complex, reaching 44 floors. From the 5th to the 37th floor, it offers consistent apartment layouts of approximately 7,650 square feet. To enhance architectural aesthetics and meet setback requirements, the 38th through 44th floors feature tapering layouts that reduce from 7,650 square feet down to 1,647 square feet. It houses approximately 160 units and is topped with a dedicated service area. Tower C stands at 39 floors and contains approximately 140 units. Its layout maintains a footprint of about 9,927 square feet from the 5th to the 34th floor, with a gradual reduction in footprints from the 35th floor upward, eventually reaching specialized smaller layouts between 7,649 and 1,647 square feet on the highest levels.

The Falaknaz Tiara demonstrates a sophisticated balance between high-density urban living and open-space preservation, with a total built-up area of

1,247,058.50 square feet. While the maximum allowable Floor Area Ratio is set at 670,093.50 square feet, the project utilizes a proposed covered area of 601,512.82 square feet. Following regulatory deductions, the net covered area stands at 645,545.68 square feet. This optimization allows for a residential density of 456 units, with unique floor plates implemented above the 35th floor to facilitate architectural setbacks and visual variation.

Traffic circulation is a core pillar of the development's infrastructure, with provisions that significantly exceed statutory requirements. The development provides 482 car spaces and 498 motorcycle spaces, offering a surplus of 46 car spaces beyond the mandatory 436. A dedicated visitor parking zone on the 1st floor covers 79,935 square feet and accommodates 190 cars, a provision that grants the project a 50% Floor Area Ratio enhancement benefit under local regulations. Vehicular flow is managed via driveways 18 to 20 feet wide, ensuring seamless access for residents and emergency fire tenders. Two major ramps and a wide 43-foot road frontage ensure efficient entry and exit points.

The project integrates advanced water management systems to ensure long-term sustainability for its 2,280 residents and 210 commercial users. Total daily demand is estimated at approximately 82,950 gallons. Infrastructure includes a 167,500-gallon underground potable water tank, a 160,000-gallon firefighting reservoir, and overhead distribution tanks totaling 25,000 gallons. Furthermore, an on-site Sewage Treatment Plant with a 70,000-gallon daily capacity will recycle 28,000 gallons of water for landscaping and irrigation, significantly reducing the burden on municipal resources.

Vertical mobility is facilitated by 12 high-speed elevators, with each tower utilizing two passenger lifts and one service lift, while the commercial sector operates through three dedicated elevators to separate foot traffic. Safety is prioritized through pressurized staircases, fire pumps, hydrants, and a basement air raid shelter, all fully compliant with regulatory standards. Key compliance highlights include a proposed Floor Area Ratio within the legal limit, ground coverage maintained below the 65% maximum threshold, and recreational space that far exceeds the required percentage of the total area. The wide driveways also ensure the project surpasses the minimum requirements for fire safety and emergency access.

Summary

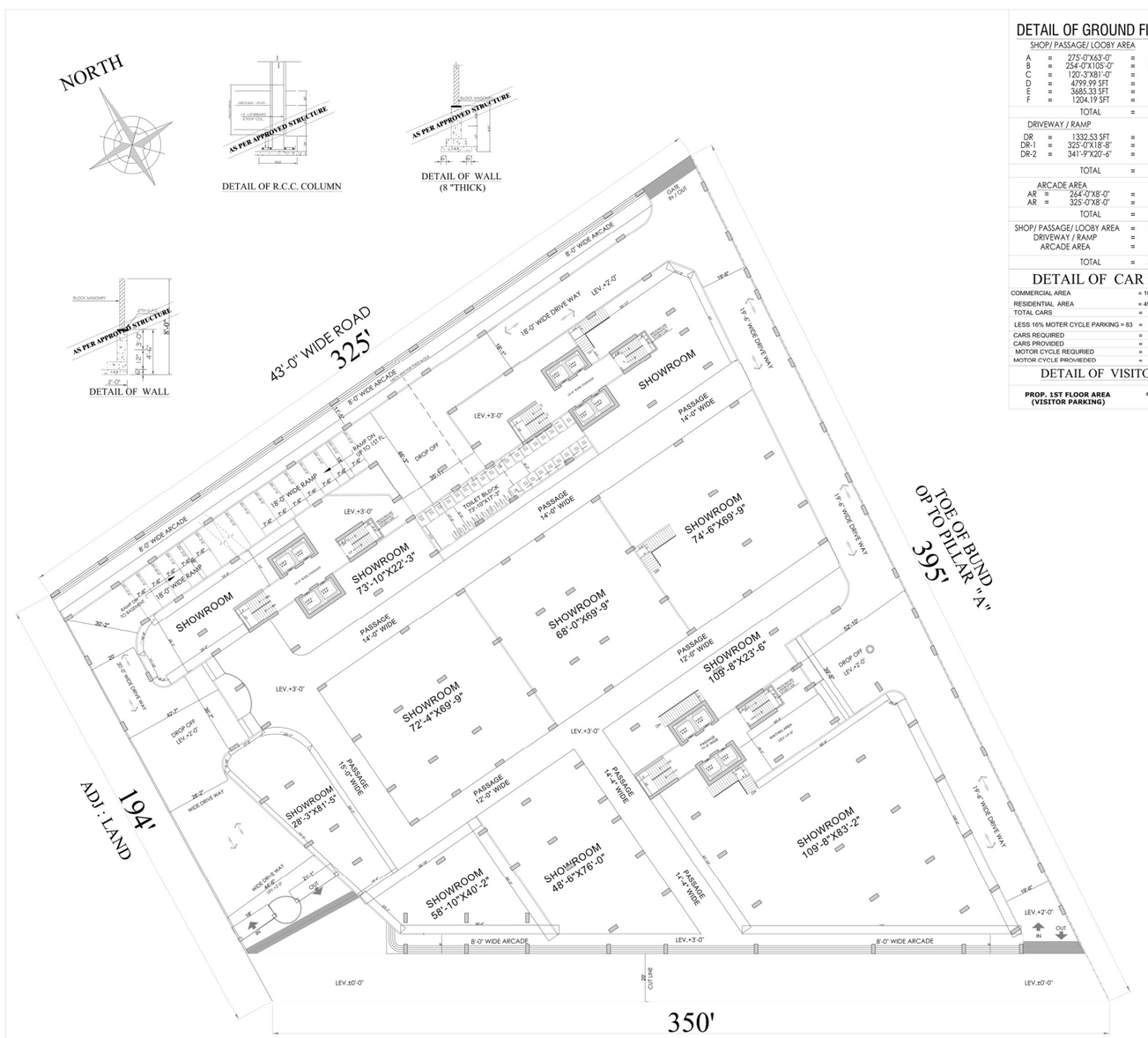
- **Project Scale:** Spans a land area of 10,002 square yards (approx. 90,018 sq. ft.) with a total built-up area of 1,247,058.50 square feet.
- **Zoning & Structure:**

- **Basement & Ground Floors:** Showrooms/retail outlets.
- **1st – 3rd Floors:** Dedicated parking facilities for residents and visitors.
- **4th Floor Amenities Hub:** 23,142.47 sq. ft. featuring a gymnasium, gaming zone, landscaped roof gardens, and walking paths.
- **Residential Towers:** 456 units distributed across three distinct towers (A, B, and C) starting from the 5th floor.

- **Tower Specifications:**
  - **Tower A:** 34 floors
  - **Tower B:** 44 floors
  - **Tower C:** 39 floors
- **Optimized Density & Regulations:** Utilizes a proposed covered area of 601,512.82 sq. ft., maintaining strict compliance with Karachi Building & Town Planning Regulations and Floor Area Ratio (FAR) limits.
- **Parking & Traffic Infrastructure:**
  - Provides 482 car spaces (46 surplus) and 498 motorcycle spaces.
  - 190-car visitor parking zone on the 1st floor, granting a 50% FAR enhancement benefit.
  - Seamless vehicular flow via 18–20 ft wide driveways and a 43-foot road frontage.
- **Sustainable Water Management:**
  - Estimated daily demand of 82,950 gallons for 2,490 total users.
  - Massive storage capacity including a 167,500-gallon potable tank and a 160,000-gallon firefighting reservoir.
  - On-site Sewage Treatment Plant (STP) recycling 28,000 gallons daily for landscaping.

- **Safety & Mobility:**
    - 12 high-speed elevators (passenger and service lifts) with dedicated lifts for the commercial sector.
    - Advanced safety features including pressurized staircases, fire pumps, hydrants, and a basement air raid shelter.
    - Fire safety access exceeding minimum regulatory requirements through wide internal driveways.

Submission Drawings are shown in figure 2.2.



DETAIL OF GROUND FLOOR AREA

SHOP/ PASSAGE/ LOOBY AREA

A	=	275'-0"X63'-0"	=	17325.00 SQ.FT
B	=	254'-0"X105'-0"	=	26670.00 SQ.FT
C	=	120'-3"X81'-0"	=	9740.25 SQ.FT
D	=	4799.99 SFT	=	4799.99 SQ.FT
E	=	3685.33 SFT	=	3685.33 SQ.FT
F	=	1204.19 SFT	=	1204.19 SQ.FT
TOTAL			=	63424.76 SQ.FT

DRIVEWAY / RAMP

DR	=	1332.53 SFT	=	1332.53 SQ.FT
DR-1	=	325'-0"X18'-8"	=	6067.75 SQ.FT
DR-2	=	341'-9"X20'-6"	=	7005.87 SQ.FT
TOTAL			=	14406.15 SQ.FT

ARCADE AREA

AR	=	264'-0"X8'-0"	=	2112.00 SQ.FT
AR	=	325'-0"X8'-0"	=	2600.00 SQ.FT
TOTAL			=	4712.00 SQ.FT

SHOP/ PASSAGE/ LOOBY AREA	=	63424.76 SQ.FT
DRIVEWAY / RAMP	=	14406.15 SQ.FT
ARCADE AREA	=	4712.00 SQ.FT
TOTAL	=	82542.91 SQ.FT

DETAIL OF CAR PARKING

COMMERCIAL AREA	= 103448.86 / 1000	=	104 CARS
RESIDENTIAL AREA	= 498063.96 / 1200	=	415 CARS
TOTAL CARS	=		519 CARS
LESS 16% MOTER CYCLE PARKING = 83	= 519 - 83	=	436 CARS
CARS REQUIRED	=		436 CARS
CARS PROVIDED	=		482 CARS
MOTOR CYCLE REQURIED	= 83 X 6		498 BIKES
MOTOR CYCLE PROVIEDED	=		498 BIKES

DETAIL OF VISITOR PARKING

PROP. 1ST FLOOR AREA (VISITOR PARKING)	=	79935.00 SQ.FT

SCHEDULE OF AREA

TOTAL AREA OF PLOT	=	10002.00 SQ.YD
OR	=	90018.00 SQ.FT
F.A.R 1:7	=	630126.00 SQ.FT
50% ENHANCEMENT DUE TO VISITOR PARKING AREA (79935.00 / 2)	=	39967.50 SQ.FT
TOTAL ALLOWABLE AREA	=	670093.30 SQ.FT
FOOT PRINT GRD FL. 65%	=	58511.70 SQ.FT
FOOT PRINT UPPER.FL.60%	=	54010.80 SQ.FT
RECREATION 2% - 5%	=	13401.87 TO 33504.67 SQ.FT
PROPOSED AREA	=	601512.82 SQ.FT

PRO. BASEMENT AREA	(PROJECT PARKING)	=	82668.93 SQ FT
PRO. GROUND FLOOR AREA	(SHOWROOM)	=	82542.91 SQ FT
PRO. 1ST FLOOR AREA	(VISITOR PARKING)	=	79935.00 SQ FT
PRO. 2ND FLOOR AREA	(PROJECT PARKING)	=	79935.00 SQ FT
PRO. 3RD FLOOR AREA	(PROJECT PARKING)	=	79935.00 SQ FT
PRO. 4TH FLOOR AREA	(AMENITY)	=	23142.47 SQ FT
PRO. 5TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 6TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 7TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 8TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 9TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 10TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 11TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 12TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 13TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 14TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 15TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 16TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 17TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 18TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 19TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 20TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 21ST FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 22ND FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 23RD FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 24TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 25TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 26TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 27TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 28TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 29TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 30TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 31ST FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 32ND FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 33RD FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 34TH FLOOR AREA	(APARTMENT)	=	23142.47 SQ FT
PRO. 35TH FLOOR AREA	(APARTMENT)	=	17577.09 SQ FT
PRO. 36TH FLOOR AREA	(APARTMENT)	=	17577.09 SQ FT
PRO. 37TH FLOOR AREA	(APARTMENT)	=	17577.09 SQ FT
PRO. 38TH FLOOR AREA	(APARTMENT LVL-1)	=	16261.45 SQ FT
PRO. 39TH FLOOR AREA	(APARTMENT LVL-2)	=	16261.45 SQ FT
PRO. 40TH FLOOR AREA	(APARTMENT)	=	7649.62 SQ FT
PRO. 41TH FLOOR AREA	(APARTMENT)	=	7649.62 SQ FT
PRO. 42ND FLOOR AREA	(APARTMENT)	=	7649.62 SQ FT
PRO. 43RD FLOOR AREA	(APARTMENT LVL-1)	=	6811.01 SQ FT
PRO. 44TH FLOOR AREA	(APARTMENT LVL-2)	=	6811.01 SQ FT
PRO. ROOF AREA	(TOWER - A)	=	920.00 SQ FT
PRO. ROOF AREA	(TOWER - B)	=	920.00 SQ FT
PRO. ROOF AREA	(TOWER - C)	=	920.00 SQ FT
BUILTUP AREA		=	1247058.50 SQ FT

LESS OF AREA

LESS BASEMENT FLOOR AREA	(PROJECT PARKING)	=	42644.83 SQ FT
LESS DRIVEWAY/RAMP AREA	(GRD FL.)	=	14406.15 SQ FT
LESS ARCADE AREA	(GRD FL.)	=	4712.00 SQ FT
LESS 1ST FLOOR AREA	(VISITOR PARKING)	=	79935.00 SQ FT
LESS 2ND FLOOR AREA	(PROJECT PARKING)	=	79935.00 SQ FT
LESS 3RD FLOOR AREA	(PROJECT PARKING)	=	79935.00 SQ FT
LESS RECREATION AREA	(4TH FL.)	=	23142.47 SQ FT
LESS BALONY AREA	(4TH FL.)	=	12910.75 SQ FT
TOWER - A	(5TH TO 34TH) 369.28 X 30	=	11078.40 SQ FT
TOWER - B	(5TH TO 37TH) 496.00 X 33	=	16368.00 SQ FT
TOWER - C	(5TH TO 42TH) 327.36 X 38	=	12439.68 SQ FT
LESS 40% SER & CIR AREA		=	268037.40 SQ FT
TOTAL		=	645545.68 SQ FT
NET TOTAL = 1247058.50 - 645545.68		=	601512.82 SQ FT

DETAIL OF BASEMENT AREA

PARKING AREA

P	=	42644.83 SFT	=	42644.83 SQ.FT

SHOP AREA

SH	=	99'-6"X290'-10"	=	28937.58 SQ.FT
SH-1	=	3229.69 SFT	=	3229.69 SQ.FT
SH-2	=	7586.83 SFT	=	7856.83 SQ.FT
TOTAL			=	40024.10 SQ.FT

PARKING AREA	=	42644.83 SQ.FT
SHOP AREA	=	40024.10 SQ.FT
TOTAL	=	82668.93 SQ.FT

SUBMISSION DRAWING

REVISED PROPOSED OF BUILDING PLAN OF PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI,

OWNER :-
M/S.G-18(PVT)LTD. THROUGH DIRECTOR
ALI JAMEEL

OWNER SIGNATURE:-

DRAWN BY:	M.Z. ALI	CHECKED BY:	
DATE:	09-2024	SCALE:	1/16" = 1'-0"

SHEET NO - 01	ENGINEER	ARCHITECT

Figure 2.2: Submission Drawing

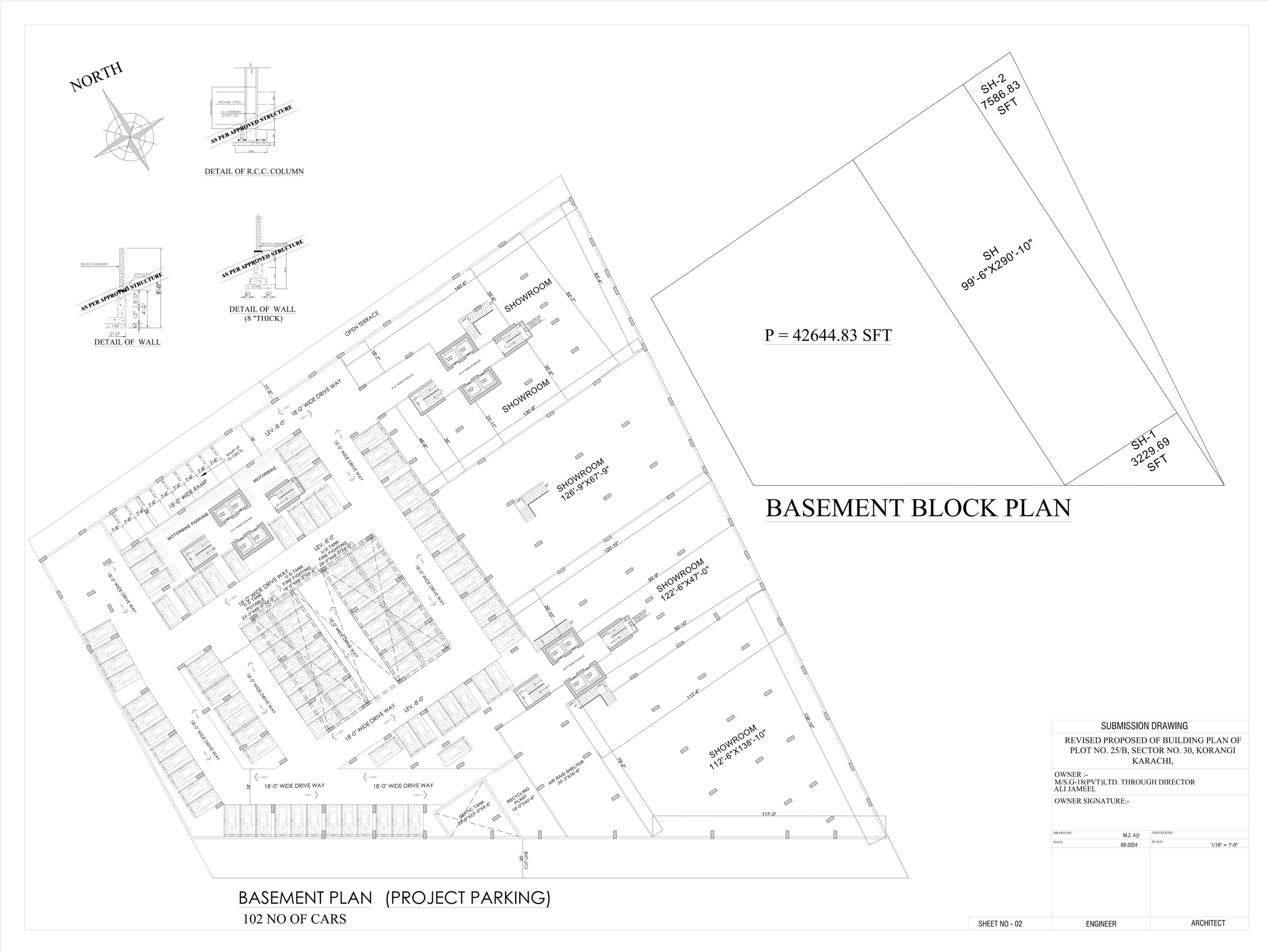


Figure 2.2: Submission Drawing



Figure 2.2: Submission Drawing



Figure 2.2: Submission Drawing



Figure 2.2: Submission Drawing



Figure 2.2: Submission Drawing



Figure 2.2: Submission Drawing



SCHEDULE OF AREA

DETAIL OF 35TH TO 37TH FLOOR AREA

DETAIL TOWER - B

FLAT AREA

A	=	24'-6" X 40'-6"	X4	=	3969.00 SQ.FT
B	=	15'-7" X 22'-0"	X4	=	1371.04 SQ.FT
C	=	17'-4" X 9'-2"	X4	=	634.97 SQ.FT
D	=	14'-4" X 10'-4"	X4	=	592.11 SQ.FT
E	=	69'-0" X 8'-6"		=	586.50 SQ.FT
		TOTAL		=	7153.62 SQ.FT

BALCONY AREA

b	=	12'-0" X 4'-0"	X4	=	192.00 SQ.FT
b-1	=	8'-0" X 4'-0"	X 8	=	304.00 SQ.FT
		TOTAL		=	496.00 SQ.FT

FLAT AREA	=	7153.62	SQ.FT
BALCONY AREA	=	496.00	SQ.FT
TOTAL	=	7649.62	SQ.FT

DETAIL TOWER - C

FLAT AREA

A	=	40'-4" X34'-6"	X4	=	5565.54 SQ.FT
B	=	47'-8" X 8'-0"	X4	=	1525.44 SQ.FT
C	=	16'-11" X 9'-6"	X2	=	321.48 SQ.FT
D	=	38'-9" X10'-4"	X 4	=	1601.15 SQ.FT
E	=	69'-0" X 8'-6"		=	586.50 SQ.FT
		TOTAL		=	9600.11 SQ.FT

BALCONY AREA

b	=	12'-0" X 4'-0"	X4	=	192.00 SQ.FT
b-1	=	16'-11" X 4'-0"	X 2	=	135.36 SQ.FT
		TOTAL		=	327.36 SQ.FT

FLAT AREA	=	9600.11	SQ.FT
BALCONY AREA	=	327.36	SQ.FT
TOTAL	=	9927.47	SQ.FT

TOWER B	=	7649.62	SQ.FT
TOWER C	=	9927.47	SQ.FT
TOTAL	=	17577.09	SQ.FT

SUBMISSION DRAWING

REVISED PROPOSED OF BUILDING PLAN OF PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI,

OWNER :-
M/S.G-18(PVT)LTD. THROUGH DIRECTOR
ALI JAMEEL

OWNER SIGNATURE:-

DRAWN BY:	M.Z. Ali	CHECKED BY:	
DATE:	09-2024	SCALE:	1/16" = 1'-0"

SHEET NO - 08	ENGINEER	ARCHITECT

Figure 2.2: Submission Drawing



SCHEDULE OF AREA

DETAIL OF 38TH FLOOR AREA
DETAIL TOWER - B

FLAT AREA

A	=	24'-6" X 40'-6"	X4 =	3969.00	SQ.FT
B	=	15'-7" X 22'-0"	X4 =	1371.04	SQ.FT
C	=	17'-4" X 9'-2"	X4 =	634.97	SQ.FT
D	=	14'-4" X 10'-4"	X4 =	592.11	SQ.FT
E	=	69'-0" X 8'-6"	=	586.50	SQ.FT
		TOTAL	=	7153.62	SQ.FT

BALCONY AREA

b	=	12'-0" X 4'-0"	X4 =	192.00	SQ.FT
b-1	=	8'-0" X 4'-0" X 8	=	304.00	SQ.FT
		TOTAL	=	369.28	SQ.FT
		FLAT AREA	=	7153.62	SQ.FT
		BALCONY AREA	=	496.00	SQ.FT
		TOTAL	=	7649.62	SQ.FT

DETAIL TOWER - C
(LEVEL - 1)

FLAT AREA

A	=	13'-10" X 21'-0"	X4 =	1161.72	SQ.FT
B	=	16'-8" X 28'-0"	X4 =	1867.04	SQ.FT
C	=	17'-6" X 22'-0"	X4 =	1540.00	SQ.FT
D	=	45'-10" X 8'-5"	X4 =	1543.55	SQ.FT
E	=	42'-10" X 11'-0"	X4 =	1884.52	SQ.FT
F	=	23'-6" X 8'-6"	=	199.75	SQ.FT
G	=	19'-0" X 10'-0"	=	190.00	SQ.FT
H	=	26'-6" X 8'-6"	=	225.25	SQ.FT
		TOTAL	=	8611.83	SQ.FT

TOWER B	=	7649.62	SQ.FT
TOWER C	=	8611.83	SQ.FT
TOTAL	=	16261.45	SQ.FT

SUBMISSION DRAWING

REVISED PROPOSED OF BUILDING PLAN OF PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI,

OWNER :-
M/S.G-18(PVT)LTD. THROUGH DIRECTOR
ALI JAMEEL

OWNER SIGNATURE:-

DRAWN BY:	M.Z. ALI	CHECKED BY:	
DATE:	09-2024	SCALE:	1/16" = 1'-0"

SHEET NO - 09	ENGINEER	ARCHITECT

Figure 2.2: Submission Drawing



39TH FLOOR PLAN
LEVEL-2



BLOCK PLAN
39TH FLOOR (LEVEL-2)

SCHEDULE OF AREA

DETAIL OF 39TH FLOOR AREA
DETAIL TOWER - B

FLAT AREA

A	=	24'-0" X 40'-6"	X4 =	3969.00	SQ.FT
B	=	15'-7" X 22'-0"	X4 =	1371.04	SQ.FT
C	=	17'-4" X 9'-2"	X4 =	634.97	SQ.FT
D	=	14'-4" X 10'-4"	X4 =	592.11	SQ.FT
E	=	69'-0" X 8'-6"	=	586.50	SQ.FT
		TOTAL	=	7153.62	SQ.FT

BALCONY AREA

b	=	12'-0" X 4'-0"	X4 =	192.00	SQ.FT
b-1	=	8'-0" X 4'-0" X 8	=	304.00	SQ.FT
		TOTAL	=	369.28	SQ.FT

	FLAT AREA	=	7153.62 SQ.FT
	BALCONY AREA	=	496.00 SQ.FT
	TOTAL	=	7649.62 SQ.FT

DETAIL TOWER - C
(LEVEL - 2)

FLAT AREA

A	=	13'-10" X 21'-0"	X4 =	1161.72	SQ.FT
B	=	16'-8" X 28'-0"	X4 =	1867.04	SQ.FT
C	=	17'-6" X 22'-0"	X4 =	1540.00	SQ.FT
D	=	45'-10" X 8'-5"	X4 =	1543.55	SQ.FT
E	=	42'-10" X 11'-0"	X4 =	1884.52	SQ.FT
F	=	23'-6" X 8'-6"	=	199.75	SQ.FT
G	=	19'-0" X 10'-0"	=	190.00	SQ.FT
H	=	26'-6" X 8'-6"	=	225.25	SQ.FT
		TOTAL	=	8611.83	SQ.FT

TOWER B	=	7649.62 SQ.FT
TOWER C	=	8611.83 SQ.FT
TOTAL	=	16261.45 SQ.FT

SUBMISSION DRAWING

REVISED PROPOSED OF BUILDING PLAN OF PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI,

OWNER :-
M/S.G-18(PVT)LTD. THROUGH DIRECTOR
ALI JAMEEL

OWNER SIGNATURE:-

DRAWN BY;	M.Z. ALI	CHECKED BY;	
DATE;	09-2024	SCALE;	1/16" = 1'-0"

SHEET NO - 10	ENGINEER	ARCHITECT

Figure 2.2: Submission Drawing

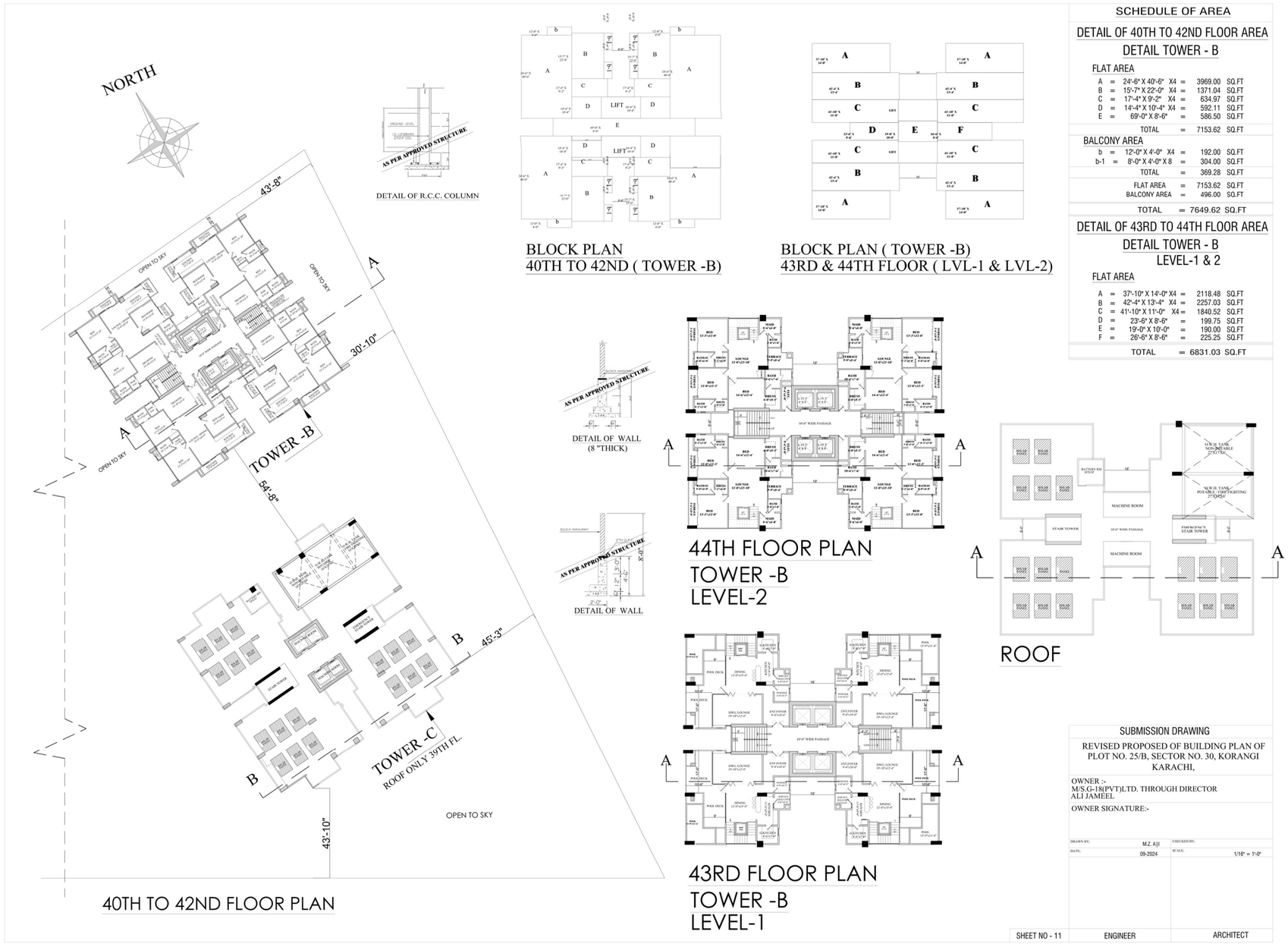
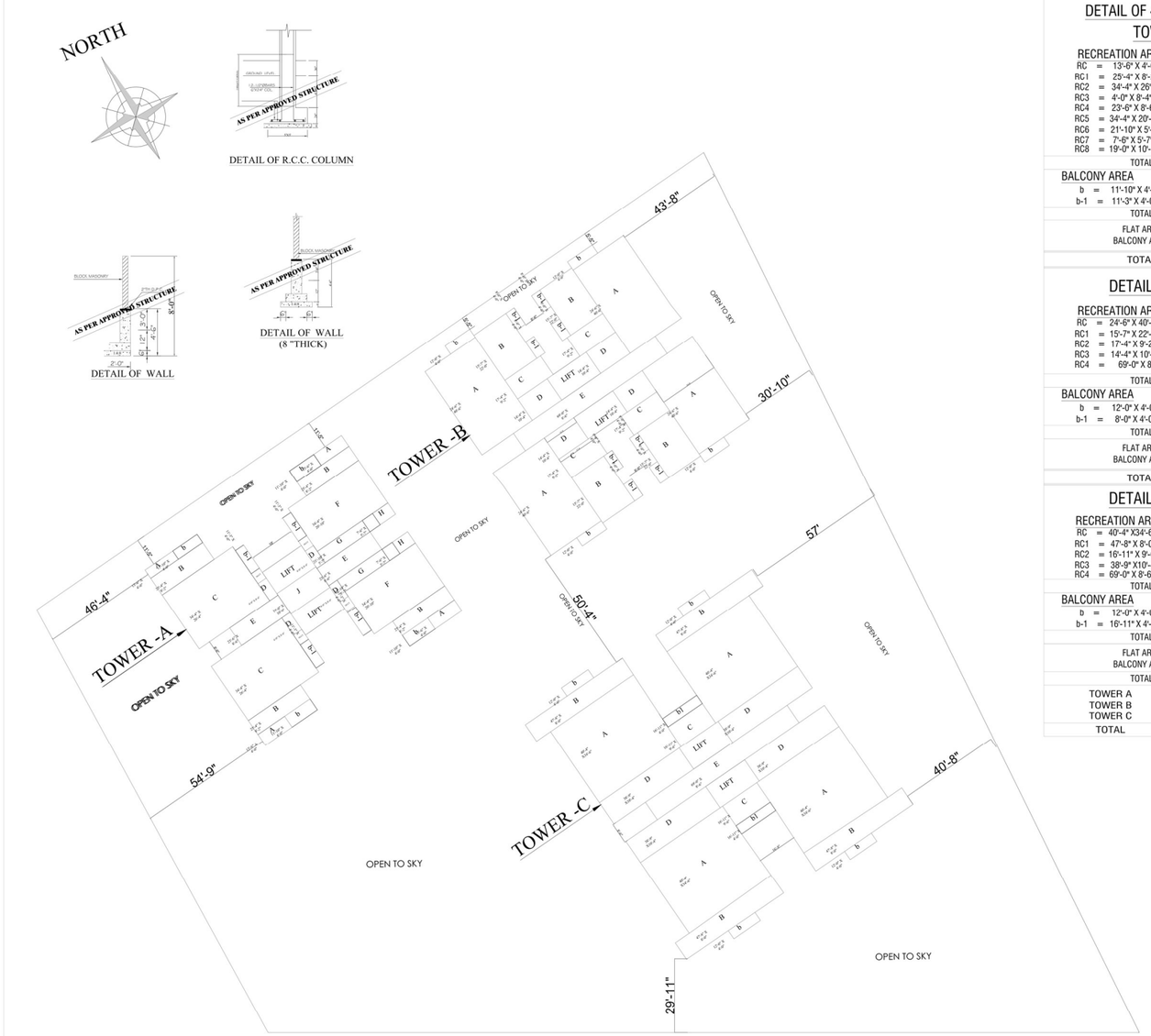


Figure 2.2: Submission Drawing



5TH TO 34TH FLOOR PLAN

SCHEDULE OF AREA			
DETAIL OF 4TH FLOOR AREA			
TOWER - A			
RECREATION AREA			
RC = 13'-6" X 4'-0" X4	=	216.00	SQ.FT
RC1 = 25'-4" X 8'-2" X4	=	692.01	SQ.FT
RC2 = 34'-4" X 26'-4" X2	=	1807.81	SQ.FT
RC3 = 4'-0" X 8'-4" X4	=	133.28	SQ.FT
RC4 = 23'-6" X 8'-6" X2	=	399.50	SQ.FT
RC5 = 34'-4" X 20'-10" X2	=	1430.18	SQ.FT
RC6 = 21'-10" X 5'-7" X2	=	243.62	SQ.FT
RC7 = 7'-6" X 5'-7" X2	=	83.70	SQ.FT
RC8 = 19'-0" X 10'-0"	=	190.00	SQ.FT
TOTAL	=	5196.1	SQ.FT
BALCONY AREA			
b = 11'-10" X 4'-0" X4	=	189.28	SQ.FT
b-1 = 11'-3" X 4'-0" X4	=	180.00	SQ.FT
TOTAL	=	369.28	SQ.FT
FLAT AREA	=	5196.10	SQ.FT
BALCONY AREA	=	369.28	SQ.FT
TOTAL	=	5565.38	SQ.FT
DETAIL TOWER - B			
RECREATION AREA			
RC = 24'-6" X 40'-6" X4	=	3969.00	SQ.FT
RC1 = 15'-7" X 22'-0" X4	=	1371.04	SQ.FT
RC2 = 17'-4" X 9'-2" X4	=	634.97	SQ.FT
RC3 = 14'-4" X 10'-4" X4	=	592.11	SQ.FT
RC4 = 69'-0" X 8'-6"	=	586.50	SQ.FT
TOTAL	=	7153.62	SQ.FT
BALCONY AREA			
b = 12'-0" X 4'-0" X4	=	192.00	SQ.FT
b-1 = 8'-0" X 4'-0" X 8	=	304.00	SQ.FT
TOTAL	=	369.28	SQ.FT
FLAT AREA	=	7153.62	SQ.FT
BALCONY AREA	=	496.00	SQ.FT
TOTAL	=	7649.62	SQ.FT
DETAIL TOWER - C			
RECREATION AREA			
RC = 40'-4" X34'-6" X4	=	5565.54	SQ.FT
RC1 = 47'-8" X 8'-0" X4	=	1525.44	SQ.FT
RC2 = 16'-11" X 9'-6" X2	=	321.48	SQ.FT
RC3 = 38'-9" X10'-4" X 4	=	1601.15	SQ.FT
RC4 = 69'-0" X 8'-6"	=	586.50	SQ.FT
TOTAL	=	9600.11	SQ.FT
BALCONY AREA			
b = 12'-0" X 4'-0" X4	=	192.00	SQ.FT
b-1 = 16'-11" X 4'-0" X 2	=	135.36	SQ.FT
TOTAL	=	327.36	SQ.FT
FLAT AREA	=	9600.11	SQ.FT
BALCONY AREA	=	327.36	SQ.FT
TOTAL	=	9927.47	SQ.FT
TOWER A	=	5565.38	SQ.FT
TOWER B	=	7649.62	SQ.FT
TOWER C	=	9927.47	SQ.FT
TOTAL	=	23142.47	SQ.FT

SCHEDULE OF AREA			
DETAIL OF 5TH TO 34TH FLOOR AREA			
TOWER - A			
FLAT AREA			
A = 13'-6" X 4'-0" X4	=	216.00	SQ.FT
B = 25'-4" X 8'-2" X4	=	692.01	SQ.FT
C = 34'-4" X 26'-4" X2	=	1807.81	SQ.FT
D = 4'-0" X 8'-4" X4	=	133.28	SQ.FT
E = 23'-6" X 8'-6" X2	=	399.50	SQ.FT
F = 34'-4" X 20'-10" X2	=	1430.18	SQ.FT
G = 21'-10" X 5'-7" X2	=	243.62	SQ.FT
H = 7'-6" X 5'-7" X2	=	83.70	SQ.FT
J = 19'-0" X 10'-0"	=	190.00	SQ.FT
TOTAL	=	5196.1	SQ.FT
BALCONY AREA			
b = 11'-10" X 4'-0" X4	=	189.28	SQ.FT
b-1 = 11'-3" X 4'-0" X4	=	180.00	SQ.FT
TOTAL	=	369.28	SQ.FT
FLAT AREA	=	5196.10	SQ.FT
BALCONY AREA	=	369.28	SQ.FT
TOTAL	=	5565.38	SQ.FT
DETAIL TOWER - B			
FLAT AREA			
A = 24'-6" X 40'-6" X4	=	3969.00	SQ.FT
B = 15'-7" X 22'-0" X4	=	1371.04	SQ.FT
C = 17'-4" X 9'-2" X4	=	634.97	SQ.FT
D = 14'-4" X 10'-4" X4	=	592.11	SQ.FT
E = 69'-0" X 8'-6"	=	586.50	SQ.FT
TOTAL	=	7153.62	SQ.FT
BALCONY AREA			
b = 12'-0" X 4'-0" X4	=	192.00	SQ.FT
b-1 = 8'-0" X 4'-0" X 8	=	304.00	SQ.FT
TOTAL	=	369.28	SQ.FT
FLAT AREA	=	7153.62	SQ.FT
BALCONY AREA	=	496.00	SQ.FT
TOTAL	=	7649.62	SQ.FT
DETAIL TOWER - C			
FLAT AREA			
A = 40'-4" X34'-6" X4	=	5565.54	SQ.FT
B = 47'-8" X 8'-0" X4	=	1525.44	SQ.FT
C = 16'-11" X 9'-6" X2	=	321.48	SQ.FT
D = 38'-9" X10'-4" X 4	=	1601.15	SQ.FT
E = 69'-0" X 8'-6"	=	586.50	SQ.FT
TOTAL	=	9600.11	SQ.FT
BALCONY AREA			
b = 12'-0" X 4'-0" X4	=	192.00	SQ.FT
b-1 = 16'-11" X 4'-0" X 2	=	135.36	SQ.FT
TOTAL	=	327.36	SQ.FT
FLAT AREA	=	9600.11	SQ.FT
BALCONY AREA	=	327.36	SQ.FT
TOTAL	=	9927.47	SQ.FT
TOWER A	=	5565.38	SQ.FT
TOWER B	=	7649.62	SQ.FT
TOWER C	=	9927.47	SQ.FT
TOTAL	=	23142.47	SQ.FT

SUBMISSION DRAWING

REVISED PROPOSED OF BUILDING PLAN OF PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI,

OWNER :-
M/S.G-18(PVT)LTD. THROUGH DIRECTOR
ALI JAMEEL

OWNER SIGNATURE:-

DRAWN BY:	M.Z. ALI	CHECKED BY:	
DATE:	09-2024	SCALE:	1/16" = 1'-0"

SHEET NO - 12	ENGINEER	ARCHITECT

Figure 2.2: Submission Drawing

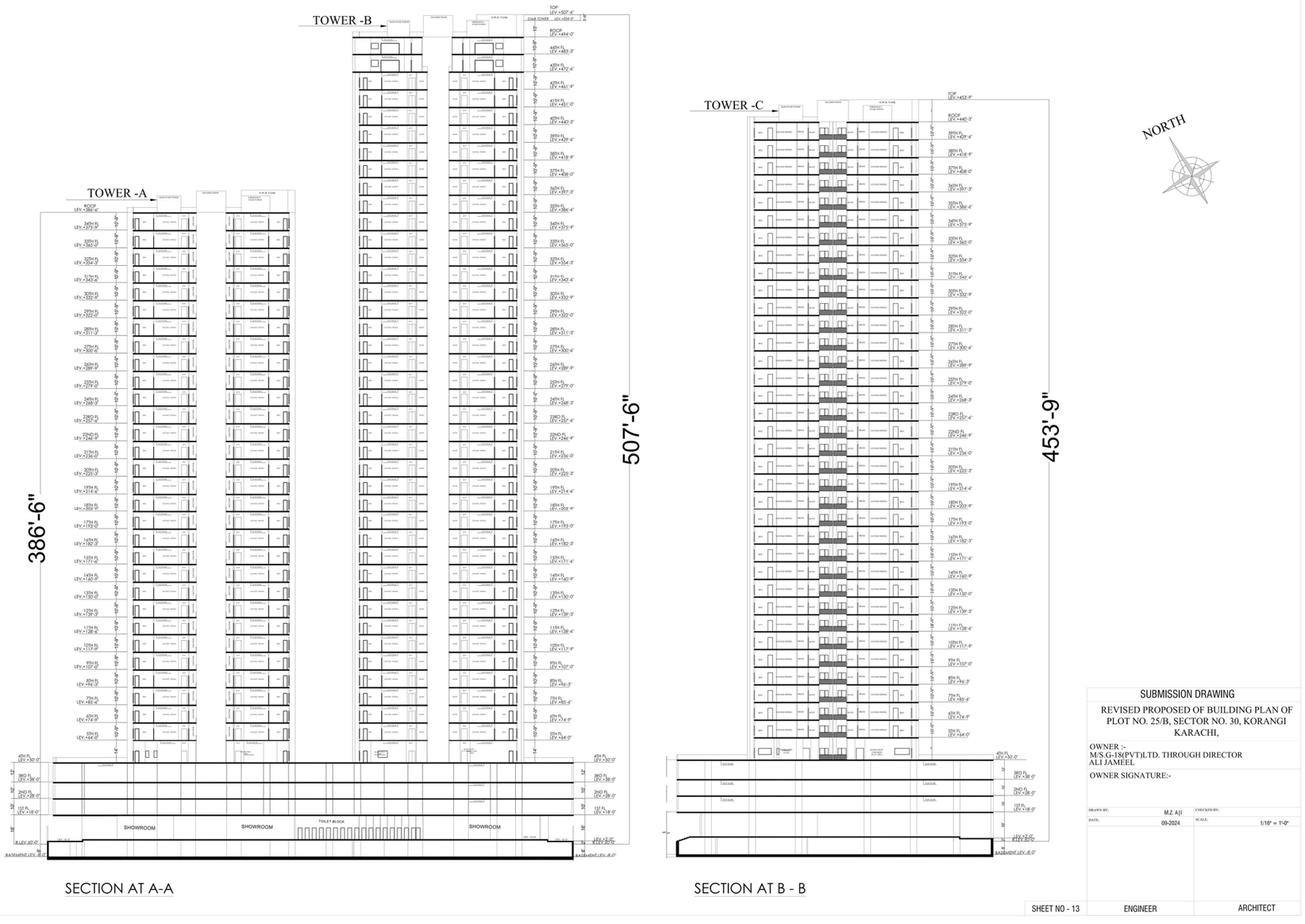


Figure 2.2: Submission Drawing

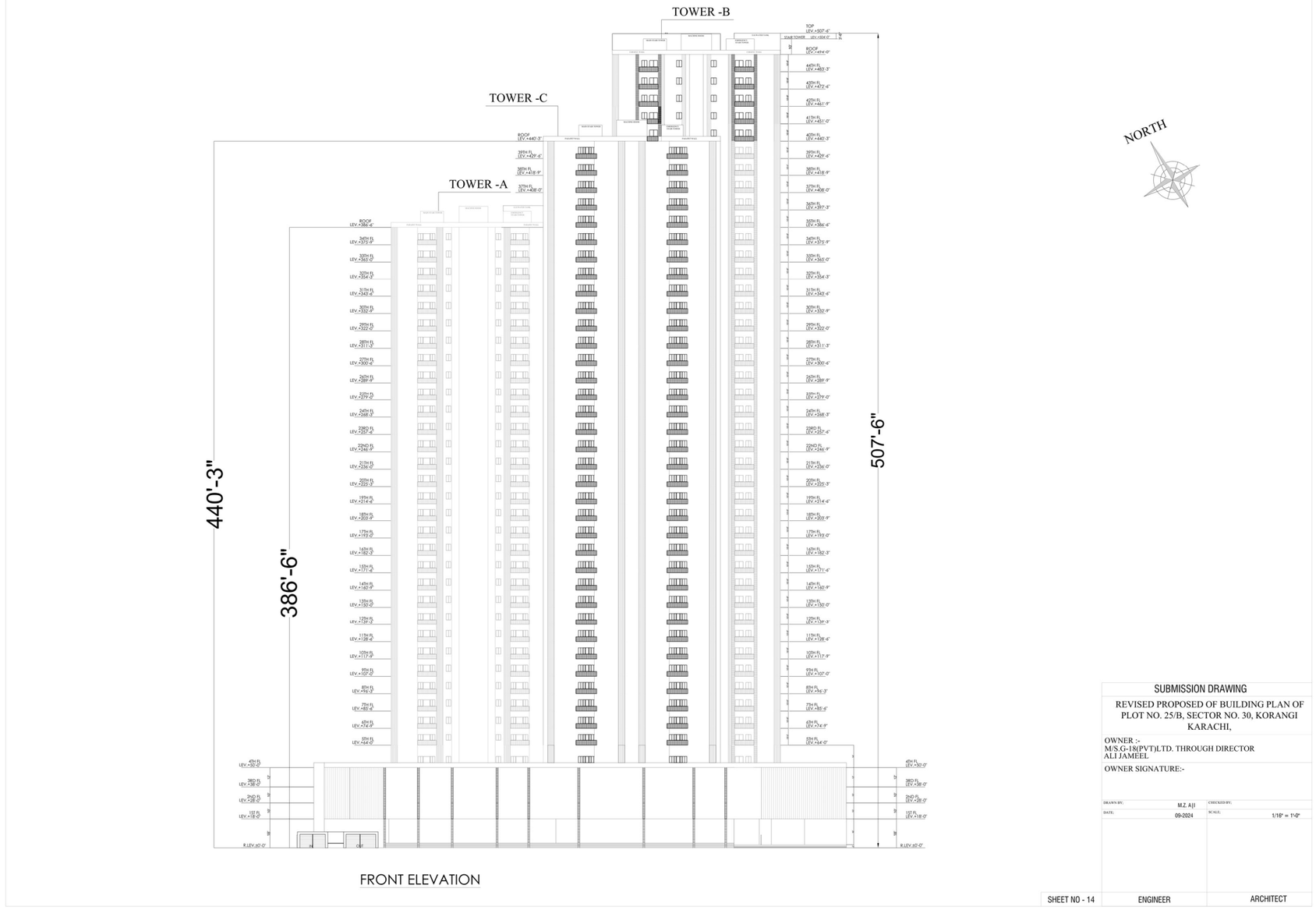


Figure 2.2: Submission Drawing

2.3 Construction Schedule

Project commencement is anticipated for September 2026, contingent upon the issuance of SEPA approval. The estimated duration for completion is between 60 to 70 months.

2.4 Mechanical, Electrical, and Plumbing (MEP) Works

The scope of mechanical, electrical, and auxiliary installations encompasses the following systems:

Mechanical and Plumbing Works:

- Potable Water Supply System
- Soil and Wastewater Drainage
- Septic Tank and Wastewater Treatment Plant
- Storm Water Drainage Infrastructure
- Natural Gas Supply Network
- Irrigation Water Supply
- Air-conditioning and Mechanical Ventilation (ACMV) Systems

Fire Protection Services:

- Portable Fire Extinguishers
- Fire Hose Reels
- Fire Hydrants and Landing Valves
- Automatic Fire Sprinkler Systems (Retail areas only)
- Automatic Fire Pump Stations
- Comprehensive Fire Alarm Systems
- Smoke Management Systems

Electrical and ELV Works:

- Main Electrical Distribution System
- Standby Power Solutions and Diesel Generator (DG) Sets
- Earthing and Lightning Protection Systems
- Illumination Design and Small Power Distribution
- Extra-Low Voltage (ELV) Systems, including:
    - Data, Telephone, Cable TV, and Internet Infrastructure
    - CCTV Surveillance (Common and External areas)
    - Integrated Security Systems
    - Intercom Systems

Building Systems and Miscellaneous:

- Vertical Transportation Systems (Elevators/Escalators)
- Building Management Systems (BMS)
- General Infrastructure for Power, Lighting, and Telecommunications

2.5 Support Services

The Falaknaz Tiara Project relies on a robust framework of essential infrastructure provided by respective utility agencies. These agencies are responsible for the provisioning of electricity, gas, water, and sewerage systems. The following sections provide a detailed technical and operational overview of these utility services, ensuring the project meets all functional and regulatory requirements.

2.5.1 Water Supply System

The primary water source for the development is the Karachi Water & Sewerage Corporation (KW&SC). To ensure a consistent supply throughout the operational phase, water will be delivered via dedicated pipelines to meet the total estimated demand, including essential firefighting reserves. The

infrastructure incorporates a dual storage strategy, utilizing both Underground (U.G) and Overhead (O.H) tanks. During the construction phase, the project will rely on water bowzers to meet immediate site needs.

2.5.1.1 Source of Water

While the proponent has already remitted the necessary challan fees for a regular KWSC connection, the actual supply from the mains is currently contingent upon the completion of the K-IV project. In light of Karachi's prevailing water scarcity—driven by climate change and surging demand—Milson Properties is proactively conducting electrical resistivity surveys. These surveys involve professional consultants assessing subsurface geological conditions to evaluate the area's groundwater potential.

The following hydrogeological insights have been derived from the validated Environmental Impact Assessment (EIA) report for the "Signature 27" project, situated near the KPT Interchange:

- *Water Presence:* Electrical resistivity values indicate significant water presence within the area.
- *Aquifer Levels:* Perch water levels are identified between 25 and 35 feet.
- *Upper Aquifer:* Characterized by high salinity with a Total Dissolved Solids (TDS) level of approximately 30,000. This layer requires a sanitary seal down to 200 feet to prevent cross-contamination.
- *Second Aquifer:* This zone exhibits relatively lower TDS levels (approx. 15,000–20,000).
- *Salinity Trends:* Resistivity curves confirm the presence of saline water. While the project intends to leverage the potential of the second aquifer, it must be noted that salinity is expected to increase over time due to seawater intrusion, particularly during heavy extraction in the operational phase. Final quantity and quality parameters will be confirmed via borehole sample analysis.

2.5.2 Wastewater and Stormwater Management

The project is designed to handle significant daily wastewater volumes with an emphasis on environmental sustainability. The system integrates a 40% recycling provision, where all wastewater is treated at an on-site Sewerage Treatment Plant (STP) located in the tower basement before being discharged

into the municipal network. To protect infrastructure, kitchen waste will pass through grease interceptors.

The Stormwater Drainage system follows the site's natural topography, utilizing a gravity-based network to efficiently collect and discharge runoff into the municipal drainage system.

2.5.3 Water Demand and Sewage Calculations

The Falaknaz Tiara development comprises residential and commercial components, with the following estimated requirements:

- *Residential Component:* Consisting of 456 apartments (2,280 residents), the water demand is approximately 79,800 gal/day. This generates 67,830 gal/day of sewage, with 27,132 gal/day slated for recycling.
- *Showroom Component:* Comprising 14 showrooms (112–210 persons), the demand ranges from 1,680–3,150 gal/day. This generates 1,428–2,678 gal/day of sewage, with 714–1,339 gal/day recycled.
- *Total Project Impact:* The combined water demand is approximately 81,480–82,950 gal/day. Total sewage generation is estimated at 69,258–70,508 gal/day, while the recycled greywater (27,846–28,471 gal/day) will be allocated for landscaping and toilet flushing.

2.5.4 Gas Supplies

Sui Southern Gas Company Ltd. (SSGCL) will provide natural gas, chosen for its cost-efficiency and lower environmental footprint. The fuel will be delivered directly to the tower through a dedicated low-pressure pipeline.

2.5.5 Fire Protection & Design Standards

A comprehensive fire suppression infrastructure has been designed for the project in strict compliance with National Fire Protection Association (NFPA) standards, including:

- *NFPA-10:* Portable Fire Extinguishers.
- *NFPA-13:* Sprinkler Systems.
- *NFPA-14:* Standpipe and Hose Systems.
- *NFPA-20:* Stationary Fire Pumps.

2.5.5.1 Fire System Specifications

The system architecture includes:

- *Portable Extinguishers:* Dry Powder and Carbon Dioxide units strategically placed near hose reels.
- *Hose Reels:* 1-inch diameter, 100 ft long reels located in lobbies/stairs to ensure every occupied point is within 20ft of a nozzle.
- *Hydrants & Inlets:* Hydrants will be installed at every stair-case mid-landing with couplings compatible with the Pakistan Fire Brigade. A dedicated Fire Brigade Inlet at the ground level allows external pumping into the system.
- *Automatic Sprinklers:* Installed selectively in ground-floor retail areas for automatic intervention.
- *Pumping System:* A dedicated fire reserve (plus a secondary roof reserve) provides one hour of in-house capability. The pump house features an electric main pump, a diesel engine standby pump, & electric jockey pumps.

2.5.6 Electrical Power

The total projected power demand is 3500 KW. A dedicated K-Electric (KE) substation space, designed to KE specifications, is located on the ground floor. While KE provides primary grid power with individual metering, the project incorporates a robust energy resilience strategy:

- *Backup Power:* Standby diesel generators to mitigate national grid shortages.
- *Renewable Energy:* 5-15% of total power will be generated through on-site solar solutions.
- *Environmental Controls:* All generators will feature noise and vibration attenuation. During construction, diesel power will be the primary source, with emissions strictly monitored for compliance.

2.5.7 Security System

Falaknaz Tiara implements a multi-layered security suite:

- *Access Control:* Electronic systems for main entries with manual overrides.

- *CCTV Surveillance:* 24-hour recording of entrances, parking, and lobbies, managed via a central security control room.

- *Communication:* An Audio-Video Intercom connects residents to the reception. Media services are provided via an RG-11/RG-6 coaxial backbone for high-quality CATV throughout the building.

2.5.8 Solid Waste Disposal

The facility features a modern garbage chute system. All collected solid waste will be managed through standardized, responsible waste management channels to ensure hygienic disposal.

2.5.9 Illumination

The lighting design prioritizes energy efficiency by utilizing high-efficiency TLD and Compact Fluorescent Lamps (CFLs). Illumination levels in apartments, lobbies, and parking areas will meet international standards while minimizing the project's overall energy footprint.

2.6 Construction & Commissioning

2.6.1 Pre-Construction Phase

The pre-construction stage serves as the foundational period for establishing the comprehensive construction framework, defining technical methodologies, and integrating advanced technological protocols essential for the project's success. A primary focus of this phase is the rigorous analysis of subsoil conditions based on site-specific geotechnical investigations. The soil profile at the Falaknaz Tiara site exhibits significant variability, characterized by soft clay layers near the surface transitioning into robust conglomerate and siltstone formations at deeper strata.

- **Stratigraphic Profile:** The subsurface composition is categorized into five distinct layers to guide excavation and piling activities:

    - **Layer I (3–18 ft):** Initial fill material followed by medium-dense silty sand integrated with gravel.

    - **Layer II (18–33 ft):** A transitional layer consisting of firm to stiff silty clay and clayey silt.

- **Layer III (33–51 ft):** Medium-dense silty sand, punctuated by occasional lenses of stiff clay.
- **Layer IV (52–58 ft):** A highly competent layer of conglomerate featuring cemented gravelly formations.
- **Layer V (Below 58 ft to 100 ft):** The primary bearing stratum consisting of solid siltstone rock.

To ensure structural integrity, long-term stability, and seismic resilience, the following engineering imperatives have been established:

- **Foundation Strategy:** Deep pile foundations have been identified as the optimal technical solution to bypass soft surface layers and transfer structural loads to the competent strata below.
- **Durability and Safety:** Implementation of advanced concrete protection measures and strict adherence to seismic design codes are mandatory to mitigate environmental degradation and geological risks.
- **Design Rationale:** The geotechnical report provides the empirical basis for foundation engineering, construction scheduling, and the deployment of environmental mitigation strategies.

2.6.2 Construction Phase

Physical execution of the project is strictly contingent upon the receipt of formal environmental clearance from the Sindh Environmental Protection Agency (SEPA). Before site mobilization, the project management team will ensure the completion of all statutory legal formalities and the acquisition of mandatory No Objection Certificates (NOCs) from all relevant municipal and provincial authorities.

The construction methodology prioritizes the use of premium-grade, environmentally sustainable materials—including high-tensile steel reinforcement, certified cement, and quality aggregates—processed through rigorous Standard Operating Procedures (SOPs). To enhance quality control and minimize on-site environmental impact, the project will utilize ready-mix concrete sourced from verified, high-capacity suppliers. The procurement scope extends to specialized finishing materials, including architectural glass, treated timber, premium tiles, aluminum sections, and high-standard electrical and plumbing components (PVC/GI).

Logistics and supply chain management will be governed by a centralized inventory system. Bulk materials such as sand and aggregates will be obtained exclusively from licensed commercial quarries within Sindh Province. Transportation logistics will also cover the delivery of fuel, lubricants, and maintenance equipment, alongside the provision of supplies necessary for the operation of the site office and labor accommodation facilities.

2.6.3 Demobilization and Site Restoration

Following the successful completion of construction and the final commissioning of Falaknaz Tiara, the contractor is mandated to execute a comprehensive and systematic demobilization plan. This phase involves the complete dismantling of the labor colony and construction camps, the decommissioning of all temporary utilities, and the professional sealing of waste disposal pits. All residual debris, surplus materials, and hazardous waste will be cleared from the premises.

The site will undergo professional grading and leveling to restore the landscape to its original pre-construction state or better. To ensure transparency and adherence to environmental safeguards, all restoration activities will be audited and verified by an Independent Monitoring Consultant (IMC). Final compliance documentation and restoration reports will be formally submitted to SEPA to close out the environmental management loop.

3. Statutory Requirements

Presented in this section are the Policy, Legal and Administrative Framework applicable to Project in the context of sustainable development. All legal provisions relevant to environmental protection applicable to the planning, construction and operation were identified under the scope of the EIA. The proponent has to be well aware of these requirements and comply with the provisions as applicable and necessary. Besides applicable laws orders of the Courts passed in recent past which have direct implications for building construction industry have also been discussed in this chapter. Legal status of the title documents, no objection certificates issued by or required from concerned departments are also vetted in this chapter.

3.1 Administrative Framework

Prior to the 18th Amendment to the Constitution of Pakistan, environmental issues were managed at the federal level under the Pakistan Environmental Protection Act of 1997. Following the amendment, environmental governance was devolved to the provinces, leading to the abolition of the federal Ministry of Environment. While national environmental management functions were transferred to provincial authorities, a new federal Ministry of Climate Change was established to oversee international environmental obligations. Currently, all four provinces have enacted their own specific environmental protection legislation.

In Sindh, the Provincial Assembly passed the Sindh Environmental Protection Act, 2014 (SINDH ACT NO. VIII OF 2014) on February 24, 2014. It received gubernatorial assent on March 19, 2014, and was officially gazetted on March 20, 2014 (referred to hereafter as the "2014 Act").

Under this Act, the Environmental Protection Council (EPC) serves as the primary policy-making body. Chaired by the Chief Minister, the EPC includes the Minister for Environment, the Additional Chief Secretary of Planning & Development, and Secretaries from various provincial departments, including Finance, Health, Agriculture, and Industry. The council also comprises Divisional Commissioners, members of the Provincial Assembly, the Director General of the EPA, and non-official representatives from the legal, medical, and commercial sectors. The EPC's responsibilities include coordinating Act provisions, approving provincial sustainable development policies and Sindh Environmental Quality Standards (SEQS), overseeing conservation efforts, and managing inter-provincial and federal-provincial environmental issues.

The Sindh Environmental Protection Agency (SEPA), established under the 2014 Act and headed by a Director General, serves as the executive arm

responsible for implementing the Act's provisions. SEPA is tasked with developing and enforcing environmental policies, preparing the Sindh Environment Report, and establishing monitoring and inspection systems to prevent pollution. The agency has the authority to conduct research, license hazardous substance handling, certify laboratories, and promote public environmental awareness. Furthermore, SEPA possesses legal powers to inspect premises, take samples, and confiscate materials under warrants issued by the Environmental Protection Tribunal or relevant courts if environmental offenses are suspected.

The 2014 Act also established the Sindh Sustainable Fund, supported by voluntary contributions and administrative fees, to finance environmental protection and conservation initiatives. The Act and its associated regulations provide a comprehensive pre- and post-approval framework that all project proponents must strictly follow.

3.2 Statutory Framework

Following the 18th Amendment to the Constitution of Pakistan in 1973, environmental protection was devolved to the provincial level, leading each province to establish its own legislative framework. Historically, legislative authority was split between Federal and Concurrent lists; "environmental pollution and ecology" fell under the Concurrent List, allowing for dual jurisdiction. However, the 2010 amendment abolished the Concurrent List, placing environmental matters under the exclusive domain of provincial governments and resulting in the dissolution of the federal Ministry of Environment. While a federal Ministry of Climate Change was established to oversee international obligations, the Pakistan Environmental Protection Act (PEPA) 1997 ceased to apply to the provinces.

In response, provinces enacted their own laws, largely modeled after PEPA 1997 to maintain consistent protection standards. Although Sindh has developed its own comprehensive rules and regulations, technical sectorial guidelines from the original PEPA 1997 remain relevant reference documents.

Sindh has been particularly proactive in formalizing its regulatory framework. Key milestones include the notification of the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, on September 3, 2021. Furthermore, in December 2014, the Sindh Environmental Protection Agency (SEPA) enacted a suite of specialized rules covering environmental sampling, hazardous substances, administrative penalties, tribunal procedures, hospital waste management, laboratory certification, plastic product prohibitions, and self-monitoring standards for industry. In June 2016, the province further notified specific quality standards for industrial wastewater, air emissions,

noise, and drinking water. Consequently, this report is governed by the Sindh Environmental Protection Act 2014, the 2021 Environmental Assessment Regulations, and the associated provincial rules.

3.3 Constitutional Provision

The Constitution of Pakistan stands as the supreme legal framework of the nation and remains one of the world's few foundational documents to explicitly safeguard environmental interests as core human entitlements. Traditionally, the legal bedrock for environmental protection was derived from Article 9 (the right to life) and Article 14 (the dignity of man). This judicial interpretation was solidified by the Supreme Court of Pakistan in the landmark case of*Shehla Zia v. WAPDA (1994)*, where the Court ruled that "life" encompasses more than mere existence; it includes the right to a clean and sustainable environment necessary for human dignity. The Court reasoned that the constitutional guarantee of dignity is compromised if a citizen lacks access to basic necessities, including an unpolluted atmosphere.

Building upon this judicial legacy, a transformative shift has occurred with the 26th Constitutional Amendment, which officially inserted Article 9A into the Constitution. This amendment explicitly recognizes the right to a clean, healthy, and sustainable environment as a distinct fundamental right. By elevating environmental quality from a judicially inferred right to an express constitutional mandate, Pakistan has modernized its legal landscape, ensuring that the protection of the ecosystem is inextricably linked to the constitutional promise of life and dignity.

3.4 Sindh Environmental Protection Act, 2014

The 2014 Act as stated above is the basic legislative tool empowering the provincial government to frame regulations for the protection of the environment. The Act envisages protection, improvement, conservation & rehabilitation of environment of Sindh with the help of legal action against polluters and green awakening of communities. It equally lays emphasis for the preservation of the natural resources of Sindh and to adopt ways and means for restoring the balance in its eco-system by avoiding all types of environmental hazards. The act is applicable to a broad range of issues and extends to air, water, industrial liquid effluent, marine, and noise pollution, as well as to the handling of hazardous wastes.

The following articles of the SEPA 2014 have a direct bearing on the proposed Project:

- Article 11(1): 'Subject to the provisions of this Act and the rules and regulations therein, no person shall discharge or emit or allow the discharge or emission of any effluent, waste, pollutant, noise or any other matter that may cause or likely cause pollution or adverse environmental effects, as defined in Section 2 of this Act, in an amount, concentration or level which is in excess to that specified in Sindh Environmental Quality Standards…'

- Article 11(2): 'All persons, in industrial or commercial or other operations, shall ensure compliance with the Environmental Quality Standards for ambient air, drinking water, noise or any other Standards established under section 6(1)(g)(i); shall maintain monitoring records for such compliances; shall make available these records to the authorized person for inspection; and shall report or communicate the record to the Agency as required under any directions issued, notified or required under any rules and regulations.'

- Article 14 (1): 'Subject to the provisions of this Act and the rules and regulations, no person shall cause any act, deed or any activity', including;

  - (b) disposal of solid and hazardous wastes at unauthorized places as prescribed;

  - (c) dumping of wastes or hazardous substances into coastal waters and inland water bodies; and

  - (d) release of emissions or discharges from industrial or commercial operations as prescribed.

- Article 15 (1): 'Subject to the provisions of this Act, no person shall operate or manufacture a motor vehicle or class of vehicles from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the Sindh Environmental Quality Standards or, where applicable, the standards established under sub-clause (i) of clause (g) of sub-section (1) of section 6'.

- Article 17(1): 'No proponent of a project shall commence construction or operation unless he has filed with the Agency an initial environmental examination or environmental impact assessment, and has obtained from the Agency approval in respect thereof'

- Article 17(2): The agency shall;

- a) review the initial environmental examination and accord its approval, subject to such terms and conditions as it may prescribe, or require submission of an environmental impact assessment by the proponent; or

- (b) review the environmental impact assessment and accord its approval subject to such terms and conditions as it may deem fit to impose or require that the environmental impact assessment be re-submitted after such modifications as may be stipulated or decline approval of the environmental impact assessment as being contrary to environmental objectives.

- Article 17(3): 'Every review of an environment impact assessment shall be carried out with public participation and, subject to the provisions of this Act, after full disclosure of the particulars of the project'.

- Article 17(4): 'The Agency shall communicate its approval or otherwise within a period of two months from the date that the initial environmental examination is filed, and within a period of four months from the date that the environmental impact assessment is filed complete in all respects in accordance with the regulations, failing which the initial environmental examination or, as the case may be, the environmental impact assessment shall be deemed to have been approved, to the extent to which it does not contravene the provisions of this Act and the rules and regulations'.

- Article 20(1): 'The Agency shall from time to time require the person in charge of a project to furnish, within such period as may be specified, an environmental audit or environmental review report or environmental management plan containing a comprehensive appraisal of the environmental aspects of the project'.

- Article 20(2): The report of a project prepared under sub-section (1) shall include:

- (a) analysis of the predicted qualitative and quantitative impact of the project as compared to the actual impact;

- (b) evaluation of the efficacy of the preventive, mitigation and compensatory measures taken with respect to the project; and

- (c) recommendations for further minimizing or mitigating the adverse environmental impact of the project.

- Article 20(3): 'Based on its review of the environmental audit report, the Agency may, after giving the person in charge of the project an opportunity

of being heard, direct that specified mitigation and compensatory measures be adopted within a specified time period and may also, where necessary, modify the approval granted by it under section 17'.

3.5 Sindh EPA (Environmental Assessment) Regulations, 2021

The Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, established pursuant to Section 37 of the 2014 Act, organize developmental projects into three distinct categories as detailed in Schedules I, II, and III. These classifications are determined by the projected severity of environmental consequences. Specifically, projects listed under Schedule III are identified as having significant potential for negative environmental impacts, thereby mandating a comprehensive Environmental Impact Assessment (EIA). Conversely, projects falling under Schedule II are expected to have more moderate environmental footprints and are therefore subject to an Initial Environmental Examination (IEE).

The proposed project is categorized as I (2) under Schedule III of the 2021 Regulations, specifically concerning:

I. Urban development and tourism

(1) ……

(2) Residential/commercial high-rise buildings exceeding 500,000 sq. feet.

Due to the project's area surpassing 500,000 sq. feet, the EIA requirement is warranted. This assessment aims to provide a comprehensive evaluation of the environmental impacts associated with the high-rise development, enabling effective interventions.

3.6 Guidelines for Public Consultation

Under the Sindh Environmental Protection Act and Regulation 11 of the 2021 Regulations, public consultation is a statutory mandate. The process is governed by the 1997 Guidelines for Public Consultation, which aim to ensure transparency, accountability, and stakeholder ownership by informing the public and providing a platform for unrepresented groups to voice their perspectives.

Key Provisions and Mechanisms:

- **Stakeholder Identification:** The guidelines adopt a broad definition of stakeholders, encompassing both directly and indirectly affected parties.

This includes project beneficiaries, those facing adverse impacts, and any groups or individuals who perceive an interest in the proposal. The selection of representatives for specific interest groups should be managed by the groups themselves to ensure authentic advocacy.

- **Methodology for Engagement:** Consultations must provide clear, non-technical information to the public. Proponents are required to allow sufficient time for stakeholders to process information and must provide formal responses to the concerns raised. Accessibility is prioritized through the strategic selection of venues and meeting times to maximize participation.

- **Timing and Tools:** Engagement should begin as early as the screening stage and persist throughout the entire Environmental Impact Assessment (EIA) process. Recommended methodologies include focus group discussions, needs assessments, semi-structured interviews, village meetings, and interactive workshops.

- **Strategic Integration:** A robust public involvement program must define clear objectives, identify appropriate consultation techniques, and establish feedback loops. Crucially, there must be a mechanism to ensure that stakeholder input is genuinely integrated into the final decision-making process.

In practice, the guidelines serve as a framework for consensus-building during the planning stages. Specifically, formal public consultation meetings are required following the assessment of impacts and the development of mitigation options, ensuring the public can review and comment on the proposed technical solutions before project implementation.

3.7 Sindh Environmental Quality Standards (SEQS)

On June 28, 2016, the Sindh Environmental Protection Agency (SEPA) officially notified a comprehensive set of standards covering industrial wastewater, effluents, domestic sewage, and air emissions. These regulations also encompass ambient air quality, vehicle noise and emissions, and drinking water quality. Collectively, these benchmarks are recognized as the Sindh Environmental Quality Standards (SEQS).

Table 3.1 shows Sindh environmental quality standard for ambient air.

Table 3.1: Sindh Environmental Quality Standard for Ambient Air

Pollutant	Time-weighted average	Concentration in Ambient Air	Method of measurement
Sulfur Dioxide	*Annual Average**	*80µgm³*	

(SO_2)	24 hours**	120µgm³	Ultraviolet Fluorescence Method
Oxides of Nitrogen as (NO)	Annual Average*	40µgm³	Gas Phase Chemiluminescence
	24 hours**	40µgm³	
Oxides of Nitrogen as (NO_2)	Annual Average*	40µgm³	Gas Phase Chemiluminescence
	24 hours**	80µgm³	
O_3	1 hour	130µgm³	Non dispersive UV absorption méthode
Suspended Particulate Matter (SPM)	Annual Average*	360µgm³	High volume Sampling, (Average flow rate not less than 1.1m³/minute)
	24 hours**	500µgm³	
Respirable Particulate Matter (PM10)	Annual Average*	120µgm³	B Ray absorption method
	24 hours**	150µgm³	
Respirable Particulate Matter (PM2.5)	Annual Average*	40µgm³	B Ray absorption method
	24 hours**	75µgm³	
	1 hour	15µgm³	
Lead (Pb)	Annual Average*	1µgm³	ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	1.5µgm³	
Carbon Monoxide (CO)	8hours**	5mg/m³	Non Dispersive Infra Red (NDIR) method
	1hours	10mg/m³	
*Annual arithmetic means of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.			
**24 hourly / 8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.			

Table 3.2 shows the standards for motor vehicle noise.

Table 3.2: The Motor Vehicle Ordinance (1965) and Roles (1969)		
Parameter	Standards (maximum permissible limit)	Measuring method
Noise	85dB(A)	Sound-meter at 7.5meter from the source

Table 3.3 shows the Sindh Environmental Quality Standard for noise.

Table 3.3: Sindh Environmental Quality Standard for Noise			
S. No.	Category of Area / Zone	Limit it in dB(A) Leq*	
		Day Time	Night Time
1	Residential area (A)	55	45
2	Commercial area (B)	65	55
3	Industrial area (C)	75	65
4	Silence Zone (D)	50	45
Note: 1	Day time hours: 6.00 a. m to 10.00 p. m		

2	*Night time hours: 10.00 p. m to 6.00p. m*
3	*Silence zone; Zone which are declared as such by competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.*
4	*Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.*
*dB(A)Leq	*Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.*

The SEQS for effluents are shown in Table 3.4.

Table 3.4: Sindh Environmental Quality Standard for Municipal & Liquid Industrial Effluents

S. No.	Parameter	Into Inland Waters	Into Sewage Treatment	Into Sea	unit
1	Temperature or Temp. increase	<3	<3	<3	°C
2	pH value (H^+)	6-9	6-9	6-9	
3	Biological Oxygen Demand $(BOD)_5$ at 20 °C	80	250	80	mg/l
4	Chemical Oxygen Demand $(COD)_{Cr}$	150	400	400	mg/l
5	Total Suspended Solids (TSS)	200	400	200	mg/l
6	Total Dissolved Solids (TDS)	3500	3500	3500	mg/l
7	Oil and Grease	10	10	10	mg/l
8	Phenolic Compounds (as Phenol)	0.1	0.3	0.3	mg/l
9	Chloride (as Cl^-)	1000	1000	SC	mg/l
10	Fluoride (as F^-)	10	10	10	mg/l
11	Cyanide (as CN^-)total	1.0	1.0	1.0	mg/l
12	An-ionic detergents (as MBAS)	20	20	20	mg/l
13	Sulphate(SO_4^{2-})	600	1000	SC	mg/l
14	Sulphide (S^{2-})	1.0	1.0	1.0	mg/l
15	Ammonia (NH_3)	40	40	40	mg/l
16	Pesticides	0.15	0.15	0.15	mg/l
17	Cadmium	0.1	0.1	0.1	mg/l
18	Chromium (trivalent and hexavalent)	1.0	1.0	1.0	mg/l
19	Copper	1.0	1.0	1.0	mg/l
20	Lead	0.5	0.5	0.5	mg/l
21	Mercury	0.01	0.01	0.01	mg/l
22	Selenium	0.5	0.5	0.5	mg/l
23	Nickel	1.0	1.0	1.0	mg/l
24	Silver	1.0	1.0	1.0	mg/l
25	Total toxic metals	2.0	2.0	2.0	mg/l
26	Zinc	5.0	5.0	5.0	mg/l
27	Arsenic	1.0	1.0	1.0	mg/l
28	Barium	1.5	1.5	1.5	mg/l

29	Iron	8.0	8.0	8.0	mg/l
30	Manganese	1.5	1.5	1.5	mg/l
31	Boron	6.0	6.0	6.0	mg/l
32	Chlorine	1.0	1.0	1.0	mg/l

The SEQS for drinking water are shown in Table 3.5.

Table 2.5: Sindh Environmental Quality Standards for Drinking Waters (mg/l)

S.#	Properties/ Parameters	Standard Values for Pakistan	S.#	Properties / Parameters	Standard Values for Pakistan
Bacterial			**Chemical**		
1	All water intended for drinking (E.Coli or Thermo tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Essential Inorganics (mg/liter)		
			3	Aluminum (Al) mg/l	≤ 0.2
			4	Antimony (Sb)	≤ 0.005
2	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	5	Arsenic (As)	≤ 0.05
			6	Barium (Ba)	0.7
			7	Boron (B)	0.3
3	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 case of large supplies, where sufficient samples are examined, must not be resent in 95% of the samples taken throughout any 12-month period.	8	Cadmium (Cd)	0.01
			9	Chloride (Cl-)	< 250
			10	Chromium (Cr)	≤ 0.05
			11	Copper (Cu)	2
			Organic (mg/L)		
			12	Phenolic compounds	<0.0002
			Toxic Inorganics (mg/liter)		
			13	Cyanide (CN)-	≤ 0.05
			14	Fluoride (F)	≤ 1.5
			15	Lead (Pb)	≤ 0.05
			16	Manganese (Mn)	≤ 0.5
Physical			17	Mercury (Hg)	≤ 0.001
4	Color	< 15 TCU	18	Nickel (Ni)	≤ 0.02
5	Taste	Non-objectionable/ Acceptable	19	Nitrate $(NO_3)^-$	≤ 50
6	Odor	Non-objectionable/ Acceptable	20	Nitrite $(NO_2)^-$	≤ 3

7	*Turbidity*	*< 5 NTU*	*21*	*Selenium (Se)*	*≤ 0.01*
8	*Total Hardness as $CaCO_3$*	*< 500 mg/l*	*22*	*Residual Chlorine*	*0.2-0.5 At consumer end 0.5-1.5 at source*
9	*TDS*	*<1000*			
10	*pH*	*6.5-8.5*			
Radioactive					
11	*Alpha Emitters bq/L*	*0.1*	*23*	*Zinc (Zn)*	*5.0*
12	*Beta emitters*	*1*			

3.8 Sindh Prohibition of Child Employment Act, 2017

Article 11(3) of the Constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mines or any other hazardous employment. In accordance with this Article, the Prohibition of Child Employment Act (PCEA) 2017 disallows the child labor in Sindh. The PCEA defines a child as a person who has not completed his/her fourteenth years of age, and an adolescent means a person who has completed fourteenth year of age but has not completed eighteenth years of his age. No child shall be employed or permitted to work in any establishment including construction but an adolescent can be employed or permitted to work under strict guidelines provided in the PCEA and rules. An adolescent shall not be employed in any hazardous work included in the schedule to the PCEA.

3.9 Land Acquisition Act, 1894

The Land Acquisition Act, 1894 (LAA) governs land acquisition against compensation for public interest projects. It is termed as draconian law because it gives complete powers to the government to acquire the land and there is no provision for landowner to refuse transferring the land. Only remedy to a landowner is to challenge quantum of compensation, that too, through a civil court where decades pass in deciding the matter. The Act gives power to the Government to acquire the land under emergency clause under which requirement of prior public notice is exempted.

3.10 Cutting of Trees (Prohibition) Act, 1975 and the Protection of Trees and Bush Wood Act, 1949

The Cutting of Trees Act prohibits cutting or chopping of trees without prior permission of the Forest Department. Section 3 of this Act states "No person shall, without the prior written approval of the local formation commander or an officer authorized by him in this behalf, cut fell or damage or cause to cut, fell or damage any tree."

Similarly, the Protection of Trees and Bush wood Act, 1949 prohibits cutting of trees and bush wood without permission of the Forest department. The Act was enforced to prevent unlawful removal/clearing of trees and green area for any reason without the consent of the Forest Department".

3.11 Pakistan Panel Code, 1860 (PPC)

Chapter XIV of the PPC deals with the offences affecting the public health, safety, convenience, decency and morals. Person may be guilty of public nuisance if his act or omission causes common injury, danger or annoyance to the public or results in spread of infection of disease dangerous to life. The chapter also deals with environmental pollution.

3.12 Sindh Solid Waste Management Board Act, 2014

The Sindh Solid Waste Management Board (SSWMB) was established through an Act passed by the Provincial Assembly on 10th February 2014. Subsequently, the Amended Sindh Solid Waste Management Board Act-2021 was enacted by the Provincial Assembly of Sindh on 11th December 2021.

Under these acts, the "Powers and Functions of the Board" grant the Board rights over solid waste-related issues, as well as the assets, funds, and liabilities of the Councils. The Board possesses sole rights over all kinds of solid waste within the limits of all Councils. Furthermore, the Board has the authority to grant permissions to individuals, institutions, industries, factories, workshops, and furnaces for activities such as compost making and power generation from solid waste, including the segregation of recyclable materials from waste, collection, treatment, sale and purchase, recycling, or disposal of any kinds of waste.

In the performance of its functions, the Board shall not impede or prejudice the exercise of the executive authority of the Government.

3.13 Disaster Management Act, 2010

This Act was enacted to provide for the establishment of a National Disaster Management System for Pakistan. Sindh Disaster Management Authority enforces the Act. The Act defines 'disaster' as a catastrophe or a calamity in an affected area, arising from natural or man-made causes or by accident which results in a substantial loss of life or human suffering or damage to, and destruction of, property. Disaster management includes preparedness and response. The Act provides establishment of disaster management authorities at national, provincial and district levels. The authorities require preparing and implementing disaster management plan for their area.

3.14 The Sindh Occupational Safety and Health Act, 2017

The Sindh Occupational Safety and Health Bill 2017 has been approved by the Provincial Assembly of Sindh (Ref. Sindh Bill No. 27 of 2017) and enacted as the Sindh Occupational Safety and health Act, 2017. The Act makes provision for Occupational Safety and Health conditions at all workplaces for the protection of persons at workplaces against risk of injury arising out of the activities at workplaces and the promotion of safe, healthy and decent working environment adapted to the physical, physiological and psychological needs of all persons at work.

3.15 Laws on protection of Archaeological Sites & Cultural Heritage

After the Eighteenth amendment in the constitution the subject of "Ancient and historical monuments, archaeological sites and remains" the entry No.37 of the concurrent legislative list has also devolved to provincial legislations. There are two laws that are directly relevant for archaeological relics. The first is The Antiquities Act, 1975, which ensures the protection of Pakistan's cultural resources. Since separate provincial Act has not been enacted yet the Antiquities Act, 1975 shall remain enforce in Sindh under Article 270AA(6) of the Constitution of Pakistan, 1973. The second is The Sindh Cultural Heritage (Preservation) Act, 1994, which is the provincial law for the protection of cultural assets. Its objectives are similar to those of the Antiquity Act.

3.16 Antiquities Act, 1975

The act ensures the protection of cultural resources in Pakistan. It is designed to protect antiquities from destruction, theft, negligence, unlawful excavation, trade and export. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The Act prohibits new construction in the proximity of a protected antiquity and empowers the Government of Sindh to prohibit excavation in any area which may contain articles of archaeological significance. The developers are obligated to ensure that no activity is undertaken within 61 m (200 ft) of a protected antiquity, and to report to the GoPS's Dept. of Archaeology if any archaeological discovery made during the course of the project.

3.17 The Sindh Cultural Heritage (Preservation) Act, 1994

The Sindh Cultural Heritage (Preservation) Act, 1994 is the provincial law for the protection of cultural assets. According to KB&TPR 2002, any building declared as a Heritage Building by the GoS, under the above-mentioned preservation Act (1994) shall not be considered for approval by the KBCA,

except with the prior approval of the department designated as such by the Government of Sindh. Under the Act an Advisory Committee is formulated to overlook and subsequent right of Acquisition of a protected heritage of architectural, historical, archaeological or national value, custodian/guardianship rights for preservation and declaration of protected heritage, evaluation of ownership rights, take legal action against any offender who attempts to damage, destroy, remove, deface, alter or imperil the protected heritage or to build on or near the site. It also details the purchase, maintenance and repair works of a protected heritage under the government's jurisdiction. The advisory committee may also receive voluntary donations towards the cost of maintenance of a protected heritage site. The act also establishes the right of access to certain protected heritage sites, penalties for violators, formulation of rules and provides protection to the persons working under this Act.

3.18 Sindh Condominium Act, 2014

The purpose of Act is to regulate the services, amenities, façade, parking and common areas in public sale projects by the residents, union or society of the project through the registered maintenance companies in the Province of Sindh. Under the Act maintenance of the project for one after obtaining completion certificate shall be the responsibility of the builder against prescribed maintenance fee charged from the allottees. Section 3 of the Act provides complete mechanism how builder will maintain the building for one year, and who will maintain thereafter etc. The Act further provides for responsibilities and rights of maintenance societies, and company, provision for insurance of the building.

3.19 Civil Aviation Rules, 1994

The Civil Aviation Rules 1994 has mandated it for all the builders and developers to obtain No Objection Certificate (NOC) from Civil Aviation Authority (CAA) under rule 68, section-3 of Civil Aviation Rules, 1994 for "Height Clearance" for projects/buildings within the radius of 25km of all airports. The rule 68, section 3 (Safe Guarding at Aerodromes (68) Limitation of obstructions) reads as under: "No person shall erect any temporary or permanent structure, nor position a vehicle or other mobile object on or in the vicinity of any aerodrome to which these rules are applicable, that will be within the clearance area, or will protrude through an obstacle limitation surface, at that aerodrome".



پاکستان سول ایوی ایشن اتھارٹی

اطلاعِ عام

ہر خاص و عام، تمام متعلقہ افراد بشمول بلڈرز، ڈیولپرز اور سیلولر کمپنیاں، جو تمام ایئر پورٹس کے گرد 15 کلومیٹر کی حدود میں کوئی عمارت تعمیر کرنا یا ایلیویشن نصب کرنا چاہتی ہوں، کو مطلع کیا جاتا ہے کہ اُن پر لازم ہے کہ وہ سول ایوی ایشن اتھارٹی کے قوانین 1994ء کے رول 68، سیکشن 3 کے تحت، عمارت یا ایلیویشن کی بلندی کی حد کے تعین کیلئے سی اے اے سے پیشگی اجازت نامہ (NOC) ضرور حاصل کریں۔ اجازت نامہ (NOC) حاصل کرنے کیلئے درخواست درج ذیل دستاویزات کے ساتھ ڈائریکٹر جنرل، سول ایوی ایشن اتھارٹی، ہیڈ کوارٹر، جناح انٹرنیشنل ایئرپورٹ، ٹرمینل۔1، کراچی کو بذریعہ ڈاک ارسال کی جائے۔

الف) پراجیکٹ کا نام

ب) مجوزہ سائٹ کا سروے آف پاکستان سے باضابطہ تصدیق شدہ WGS-84 جیوگرافیکل کوآرڈینیٹس (WGS-84 Geographical Coordinates)، جو کہ ڈگری، منٹ اور سیکنڈ کے 1/100 ویں حصے کے 8 ہندسوں (up to 8 digits of their 1/100 part) پر مشتمل ہوں۔

ج) سروے آف پاکستان سے تصدیق شدہ گائیڈ میپ اسکیل 1:500,000، جس میں ہر مجوزہ مقام کی نشاندہی کی گئی ہو۔

د) مجوزہ عمارت کی کُل بلندی (چھت پر تمام تنصیبات کے ساتھ) / بی ٹی ایس ٹاور کی سطح زمین سے بلندی۔

ہ) مجاز حکام کی جانب سے جاری شدہ یا منظور شدہ پلاٹ کا سائٹ پلان۔

نوٹ: خلاف ورزی کرنے والے کے خلاف سول ایوی ایشن آرڈیننس 1960ء اور سول ایوی ایشن رولز 1994ء کی متعلقہ شقوں کے تحت کارروائی کی جائے گی۔

ڈائریکٹر جنرل هیڈ کوارٹرز، پاکستان سول ایوی ایشن اتھارٹی، ٹرمینل۔1، جناح انٹرنیشنل ایئرپورٹ، کراچی۔

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3.20 Sindh Drinking Water Policy, 2017

Public Health Engineering & Rural Development Department, Government of Sindh, with the approval of Chief Minister Sindh issued the drinking water policy on 3rd May 2017.

Principles: The main principles of Sindh Drinking Water Policy, adopted from the National Drinking Water policy 2009, and aligned with the Sustainable Development Goals, are as follows:

- Access to safely managed drinking water is a fundamental right of every citizen and that it is the responsibility of the Government to ensure its provision to all citizens,
- Water allocation for drinking purpose shall be given priority over other uses,
- In order to ensure equitable access, special attention shall be given to removing the existing disparities in coverage of safe drinking water and for addressing the needs of the poor and the vulnerable on priority basis.
- Recognizing that inadequate and unsafe water supply and sanitation are a major cause of diarrhea and nutritional deficiency in children, which as a consequence contribute towards child mortality. Safely managed drinking

water supply and sanitation shall be integrated in health, nutrition and school health programs.

- Access shall be increased to high quality nutrition-sensitive services, including access to water, sanitation facilities, and hygiene.
- Key hygiene actions (safe drinking water, hand washing with soap, safe disposal of excreta, food hygiene) shall be integrated as essential components in all nutrition programs.
- Realizing the fact that access and availability of safe drinking water affects all aspects of life of a citizen, a multi sectoral approach, involving different departments of the government, shall be adopted to address the issues related to safe drinking water.
- Being cognizant of the fact that women are the main providers of domestic water supply and maintainers of hygienic household environment, their participations in planning, implementation, monitoring and operation & maintenance of water supply systems shall be ensured, and WASH shall be integrated in maternal and neonatal health programs.
- Responsibilities and resources shall be delegated to local authorities to enable them to discharge their assigned functions with regard to provision of safe water supply.
- A supportive policy framework shall be developed that encourages alternate options through private provision, public private partnerships, the role of NGOs and community organizations
- The execution of component-sharing model for government programs and projects shall be promoted to ensure financial sustainability and community and private sector involvement in development and O&M.
- Low cost technologies in water and sanitation, that are easy and cost-effective to maintain shall be developed and used.

Goals and Objectives:

Overall Goal: The goal of the Sindh Drinking Water Policy is to improve the quality of life of people of Sindh by reducing morbidity and mortality caused by water-borne diseases through provision of safely managed and potable drinking water to the entire population that is located on premises, available when needed, and free from contamination, affordable and of sufficient quantity, and in a way, that is efficient, equitable and sustainable.

Objectives:

- Introduce legislative measures and regulations to create an enabling framework for safely managed drinking water supply, regulation of water usage, extraction, treatment, transportation and distribution.
- Ensure that all drinking water resources and supply systems are protected with community involvement.
- Develop district level drinking water availability plans for urban and rural areas to ensure improved planning for equitable access.
- Enhance the coverage of safely managed drinking water supply in the province to achieve the Sustainable Development Goals (SDGs) targets of universal access.
- Develop criteria for installation of new drinking water supply schemes and ensure that all new schemes are safely managed, rationalized and constructed through need-based criteria so that all areas and communities are served.
- Develop standardized service delivery models for both urban and rural drinking water supply schemes to improve efficiency, cost-effectiveness, monitoring & sustainability.
- Develop mechanisms for reuse, recycle and recharge of wastewater for other municipal and productive uses.
- Ensure that all drinking water supply systems are designed and constructed in line with the national drinking water quality standards and all municipal discharges comply with National Environment Quality Standards (NEQS).
- Install water treatment plants at existing drinking water supply schemes where required and incorporate water treatment facilities in all new drinking water supply schemes.
- Ensure development of water safety plans for all drinking water supply systems.
- Develop and sustain regular drinking water quality monitoring & surveillance, and institute mechanisms for remedial action.

- Increase public awareness about water borne and water related diseases (including polio), nutrition and hygiene, and enhance the role of communities for household water treatment/storage, water safety and conservation, and safe hygiene practices.

- Ensure that drinking water supply projects are nutrition sensitive and integrated in health, nutrition and school health programs.

- Institutionalize Water, Sanitation & Hygiene (WASH) in schools (infrastructure and 3 starts) and introduce curricular change to incorporate health, nutrition and hygiene and improve safe water and sanitation practices among school children.

- Institute adaptation measures and disaster risk reduction and mitigation strategies to minimize the impact of climate events on drinking water supply system.

3.21 Sindh Sanitation Policy, 2016

The goal of the Provincial Sanitation policy is to ensure that the entire population of Sindh has access to a safely managed sanitation service and sanitary environment that is also nutrition- sensitive and hygienic. The motto of the policy was 'Saaf Suthro Sindh' (Neat and Clean Sindh). The Policy sets targets to achieve its motto. For instance, eradication of Open Defecation from Sindh Province by 2025, while 70% villages of 13 high priority districts achieve the status of open defecation free by 2020; create and develop wastewater treatment mechanisms to cover 75% of urban areas and 40% in rural areas by 2025, and implement integrated solid waste management with 100% coverage in urban areas and 60% in rural areas of Sindh by 2025. A WASH behavior change and communication strategy has also been developed for sustainable and safe hygiene environment by 2025 to enhance the living standards of the people of Sindh.

3.22 Groundwater (Extraction, Consumption & Management), Regulations - 2024

In 2024, the Board of Karachi Water & Sewerage Corporation established the Groundwater (Extraction, Consumption, and Management) Regulations under the authority of section 47 of the KW&SC Act 2023. These regulations apply to the entire Karachi Division and any additional areas specified by the Government. Under these regulations, "Consideration of Applications for Grant of License" requires that applicants declare their existing sources of water supply, such as the KW&SC network, bores, tube wells, wells, tankers, or any other provisions, along with the intended quantity needed through the

prescribed application form. Misleading or incorrect information shall lead to the rejection of the application. To assess existing sources and proposed extraction connections (bore, tube wells) or suppliers, KW&SC field staff or authorized agents are permitted to enter premises and record flows, including the inspection of tanks and inflow points.

3.23 Karachi Strategic Development Plan 2020

Karachi Strategic Development Plan (KSDP) 2020 was formulated in 2007 as the official development plan of the City District Government of Karachi (CDGK). This is the first ever approved development plan which has now a legal status under Section 40 of the Sindh Local Government Ordinance 2001 in contrast to the previous master plans. The contents of KSDP 2020 consist of following 7 chapters and they are summarized as follows:

(1) Introduction/Outline

1) Coverage of the Plan: Whole City District of Karachi, consisting of 18 Towns, 6 cantonments, and Federal and provincial governments land-holding agencies; approximately 3,600 sq.km, of which 1,300 sq.km is urbanized (built-up) area.

2) Critical Issues in Land Planning and Municipal Control: The land planning and municipal control is fragmented into about twenty agencies, such as 6 Cantonment Boards, Karachi Port Trust, Port Qasim Authority, Defence Housing Authority, Pakistan Steel, Pakistan Railways, Export Processing Zone, Sindh Industrial Trading Estate, Government Sindh, City District Government Karachi, Lyari Development Authority, Malir Development Authority, cooperative housing societies and private owners, with overlapping powers/functions and utter lack of coordination. The share of CDGK is only 31% of the total area.

3) Vision for Karachi: "Transforming Karachi into a world class city, an attractive economic center with a decent life for Karachiites".

4) Plan Objectives: In order to achieve the vision, the Plan consists not only of physical renewal plans but equally invoking the spirit and commitment of both leaders and citizens to realize a more prosperous, secure & sustainable future.

- Finding out Karachi's advantages/potential for future development
- Promoting a holistic vision towards sustainable growth

- Identifying and addressing key issues in social, economic, environment & urban infrastructure sectors
- Setting out strategic framework against the backdrop of current conditions
- Framing the development plans and programs
- Putting in place an effective, collaborative institutional arrangement with participation of all stakeholders

5) Status and Role: KSDP 2020 has a legal status under SLGO for guiding city's growth in a planned and coordinated manner, and is mandatory for all agencies, stakeholders to follow the plan.

6) Time Span of the Plan: The operational time span for the plan extends to the year 2020 within the scope of Pakistan's Vision 2030. The plan will be further extended to 2030 to cover the city's region that includes part of surrounding districts of Thatta, Jamshoro and Lasbella.

(2) Summary of Land Use Plan, KSDP 2020

Major points of land use plan/strategy are:

Page 1-4 "The spatial needs for commerce, industry, housing and infrastructure development to cope with future population growth (15.2 million in 2005 to 27.6 million in 2020; 4% of AAGR) will be provided through a set of policies and programs, as follows":

1) Spatial Growth Strategy (Basic)

- Densification: Saddar, Jamshed, North Nazimabad, Gulberg, SITE and Shah Faisal Towns
- Densification & Infill: Gulshan-e-Iqbal, Landhi, Korangi, New Karachi Towns, DHA & Cantonments
- Infill and Expansion: Baldia, Malir, Orangi and Gadap Towns
- Status Quo: Lyari and Liaquatabad Towns

2) Various Land development policies and Strategies

In addition to the basic strategy (spatial growth), following several individual land development policies/strategies were considered and proposed in the plan.

- Regeneration of the Inner City
- Promotion of Mixed-Use Development
- Permit and Guide Vertical Development and Densification
- Enable Densification and Vertical Development of Existing Residential Areas
- Development of New Urban Centers
- Policy for Urban Renewal
- Integration of Civil Areas of Cantonment and other Land-Owning Agencies
- Incorporation of Existing Goths into the Urban Fabric
- Development of Industrial Zones
- Decentralization of financial districts
- Additional site for international airport
- Special Purpose Zone along Northern bye-pass
- Development of Education city
- Additional spaces for graveyards and landfill sites for garbage

3.24 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. All the federal and provincial governments, organizations, authorities, both public and private are mandated to adopt and implement Building Code of Pakistan-Fire Safety Provisions-2016, as notified. Any construction and modification of buildings in violation of Building Code of Pakistan (Fire Safety Provisions-2016) shall be considered as violation of professional engineering works as specified under clause (xxv) of section 2 of the Act.

The implementation and enforcement of this bye-law shall vest with the Authority Having Jurisdiction (AHJ) within their respective jurisdictions and circles as follow:

- (1) Building Control, Housing and Development Authorities
- (2) District Administration
- (3) Tehsil or Town Administration
- (4) Municipal Administration
- (5) Station Headquarters (Army, Air Force and Navy)
- (6) Cantonment Administration
- (7) Union Council Administration
- (8) Autonomous Bodies
- (9) Industrial Estates
- (10) Directorates of Civil Defense
- (11) Export Processing Zones
- (12) Other Federal/Provincial Authorities as and when notified

This Bye-law shall come into force upon being notified and all the concerned AHJs shall implement the same immediately in the prescribed manner.

All relevant AHJs shall ensure compliance and implementations of this Code and accordingly adopt or amend their relevant regulations, Bye-laws or rules as the need be.

This Bye-law shall apply to both new and existing buildings.

- buildings permitted for construction after the adoption of these Provisions shall comply with the provisions stated herein for new buildings forthwith.
- existing buildings constructed prior to adoption of these provisions shall comply with the provisions stated herein as soon as possible but not later than three years of notification of these provisions; and

- minimum fire protection requirements such as provision of fire alarm and detection system, fire extinguishers, emergency response plans and fire drills shall however be in place as soon as possible but not later than one year of notification of these provisions.

Any person who fails to comply with this Bye-law 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 of AHJ.

3.25 Guidelines for Sensitive and Critical Area, October 1997

The above guidelines list up a number of areas subject to protection in terms of sensitive ecosystems and archaeological importance. In Appendix II of the Guidelines, a list of eight Archaeological Sites and Monuments, of which four of them are National Monuments, in Karachi is provided. Further, there are 203 sites declared as "Protected Heritage" within Karachi District.

None of such sites, however, exist within the microenvironment of the proposed Project.

4. Description of Environment

This section delineates the existing environmental & socioeconomic landscape of both the macro and microenvironments surrounding the Project area.

The Macro-Environment Profile and site analysis for **Falaknaz Tiara**, situated at Plot No. 25/B, Sector No. 30, Korangi, Karachi (24.827394°N, 67.085720°E), reveal a project strategically positioned at the intersection of Karachi's industrial heartland and its rapidly developing residential sectors. From an administrative and demographic perspective, the development falls under the jurisdiction of the Town Municipal Corporation Korangi within the **Korangi District**, a region that serves a massive and dense population exceeding 3.1 million people. Sector 30 specifically represents a diverse socio-economic landscape, housing a mix of middle-income professionals, entrepreneurs, and a large skilled industrial workforce, while local governance remains focused on modernizing civic services and upgrading infrastructure to meet the needs of this growing community.

The physical site itself consists of an unencumbered open plot that occupies a strategic mid-block position along Hussain Dadabhoy Road, which is widely recognized as Korangi Crossing Road. Its location is particularly advantageous as it stands directly opposite the DHA Phase VII Extension and remains in immediate proximity to the KPT Interchange. The site's topography is enhanced by dual-road access, featuring significant frontage along a wide primary artery and a secondary road along its adjacent boundary, while the remaining perimeter abuts neighbouring land parcels to create a self-contained development area. This physical prominence is bolstered by integration into one of Karachi's most robust high-capacity road networks. Connectivity is anchored by major arteries such as Korangi Road, Korangi Creek Road, Shah Muhammad Road, Shaheed-e-Millat Road, and Khayaban-e-Ittehad, providing seamless transit to Shahrah-e-Faisal and the Central Business Districts. The local traffic environment is heterogeneous, consisting of private vehicles, public transit, and heavy commercial logistics servicing the DHA and Clifton corridors, though its mid-block location ensures that localized traffic impact is concentrated primarily on the main road.

Economically, Falaknaz Tiara is embedded within one of Pakistan's most critical industrial zones. Its close proximity to the Korangi Industrial Area, Pakistan Refinery Limited, and the Korangi Creek Industrial Park generates a constant and high-volume demand for premium residential and commercial spaces. This industrial powerhouse is complemented by a growing retail sector and a logistics-driven employment base, creating a synergy between planned residential societies like Darusalam and Allahwala Town and essential social infrastructure such as reputable schools and medical clinics. Supporting this

economic activity is a utility framework managed predominantly by K-Electric, with a visible shift toward solar energy integration and ongoing municipal efforts to upgrade water supply, sewerage systems, and drainage to ensure long-term structural viability and flood resilience.

Furthermore, the macro-environment is uniquely defined by the Korangi Creek Mangroves, which serve as a vital ecological buffer and a focal point for urban afforestation. This natural feature allows the project to balance its industrial proximity with environmental sustainability, as the mangrove belt provides a natural cooling effect and enhances local biodiversity in line with modern green urbanism standards. Ultimately, as a gateway between industrial zones and upscale residential sectors like DHA, Sector 30 offers exceptional investment potential. Under the broader Korangi modernization plan, the area is set for further public transport integration and sustainable growth, positioning Falaknaz Tiara as a premier choice for both high-quality urban living and long-term commercial enterprise within a rapidly evolving metropolitan landscape.

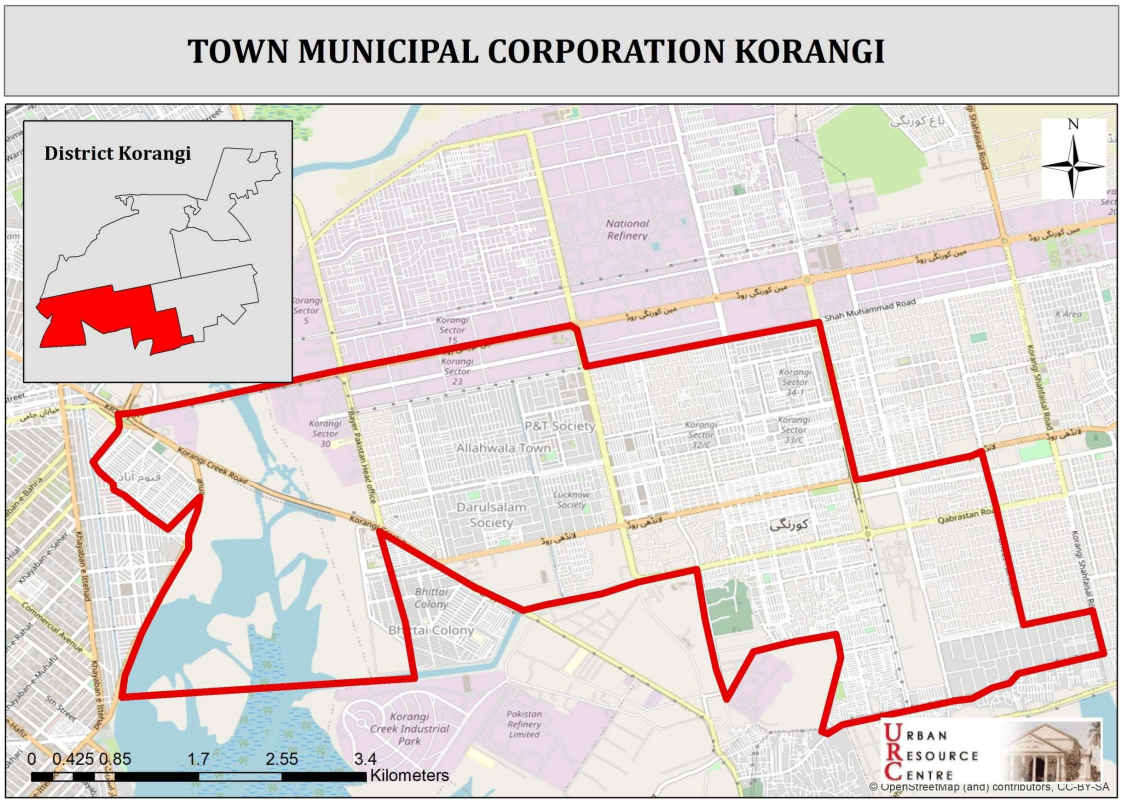


Figure 4.1: Map showing Town Municipal Corporation Korangi



Figure 4.2: Project Area

4.1 Physical Resource

Detailed description of the physical resources existing in the area is stated in the following sections. Major areas covered under physical resources are; topography, geology, soil conditions, climate, surface and ground water resources, and seismology. Most of the information is collected from the authentic secondary resources besides primary data collection for critical aspects. Respective departments were contacted by the project team members and information was collected with the help of checklist. Other

studies and reports were referred to and reviewed for the verification of information.

4.1.1 Climatic Condition

The broader climate is characterized by hot, dry summers, followed by mild winters that bring substantial, intermittent rainfall during the monsoon. The southwest monsoon prevails from April to October, leading to a reversal in wind direction during the rest of the year, alongside significant precipitation across a large portion of the Indian Subcontinent. The peak heat occurs from mid-March to June, whereas January is the coldest month, with temperatures dropping to approximately 10°C. Karachi's annual rainfall averages approximately 217.3 mm, with close to 80% of this precipitation occurring during the monsoon season. Notably, the 2025 monsoon season in Karachi recorded 304.4 mm of rain, surpassing the average rainfall of prior years, highlighting the need for resilient drainage solutions within Falaknaz Tiara's infrastructure.

Seasonal Characteristics:

- *Summer (mid-March to mid-June):* This season is primarily defined by high temperatures, accompanied by moderate rainfall, average humidity, and robust winds originating from the southwest and moving towards the northeast.
- *Summer Monsoon (mid-June to mid-September):* During this interval, the region experiences elevated temperatures, substantial rainfall, high humidity, and strong winds persistently blowing from the southwest to the northeast.
- *Post-Monsoon Summer (mid-September to mid-November):* This period is marked by moderate temperatures, reduced rainfall, and prevailing winds from the southwest to the northeast. As the season nears its conclusion, the wind direction shifts from southwest to northeast.
- *Winter (mid-November to mid-March):* Characterized by cooler temperatures and arid conditions, this season exhibits low humidity and a significant reduction in wind speed. Winds transition from blowing northeast to southwest, ultimately shifting to the northwest by winter's end.

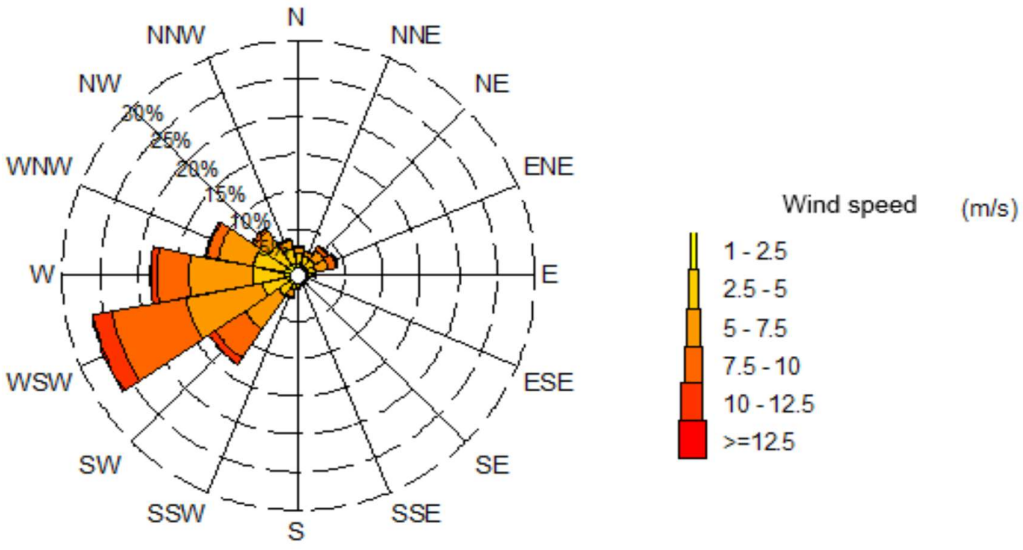


Figure 4.3: Annual Wind Rose

4.1.2 Geology & Soil Conditions

Geological Context and Site Conditions The project is located on a coastal alluvial plain near Korangi Creek. The site's geology is characterized by the Indus deltaic system, featuring a complex sequence of alternating sand, silt, and clay layers. The deep-seated rock formations consist of lithified deltaic sediments, including conglomerate and siltstone.

- **Hydrogeology:** The site features a shallow groundwater table encountered at approximately 10–11 feet, which is subject to tidal fluctuations from the nearby creek.

- **Seismicity:** In compliance with the Building Code of Pakistan (2007), the project is situated in Zone 2B. This indicates a moderate seismic risk, with the ground classified as Soil Profile Type Sc.

Subsurface Stratigraphy The structural design of Falaknaz Tiara is informed by a detailed five-layer soil profile:

1. **Surface and Upper Layers (0–18 ft):** The surface consists of fill material transitioning into medium-dense silty sand with gravels. While providing moderate bearing strength, the variability of the fill requires careful management to prevent settlement.

2. **Intermediate Compressible Layer (15–33 ft):** A stratum of firm to stiff clayey silt and silty clay. Due to its compressibility and low permeability, this layer is deemed unsuitable for the shallow foundations of high-rise structures.

3. **Transitional Zone (33–51 ft):** Medium-dense silty sand featuring occasional stiff clay interbeds. While offering improved load-bearing capacity compared to the layer above, it remains a transitional zone prone to differential settlement.

4. **Primary Bearing Stratum (52–58 ft):** A cemented gravelly formation (conglomerate). This layer is characterized by high strength and low compressibility, serving as an ideal termination point for structural piles.

5. **Ultimate Support Base (Below 58 ft):** Hard siltstone rock extending to at least 100 feet. This layer offers very high bearing capacity and negligible settlement, providing the final stability required for the development.

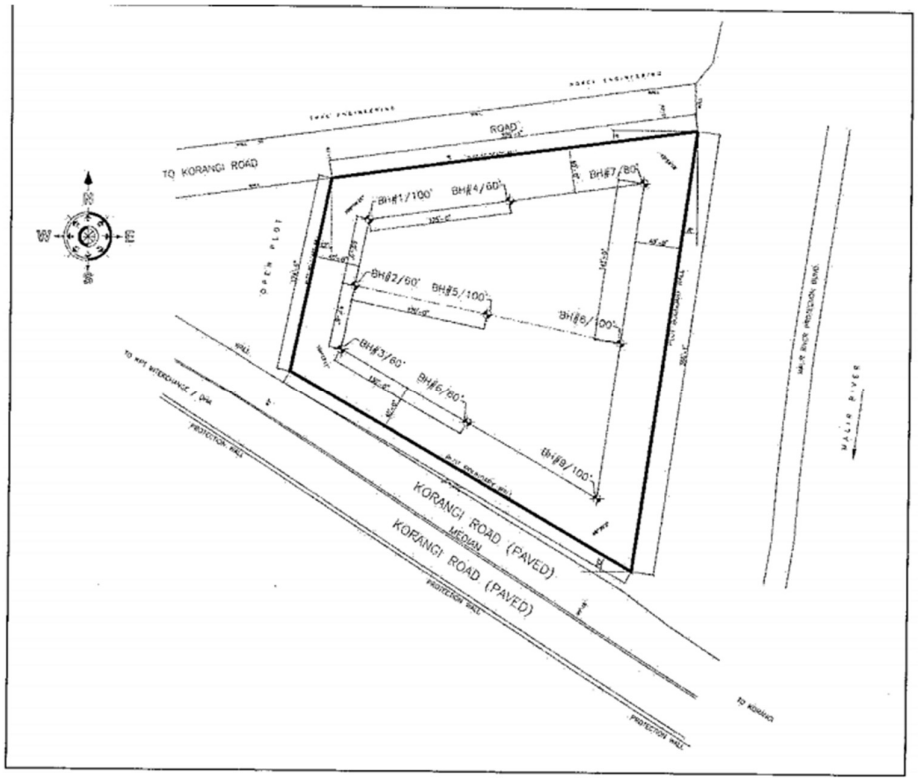


Figure 4.4: BH Locations at the site

4.1.3 Seismicity

Karachi is categorized as **Zone 2B** by the Sindh Building Control Authority. Geological surveys and historical seismic data indicate that the city is prone to moderate earthquakes ranging from 5.0 to 6.0 in magnitude, corresponding to Modified Mercalli Scale intensities of VII to VIII. Consequently, Karachi is recognized as a region with moderate seismic risk.

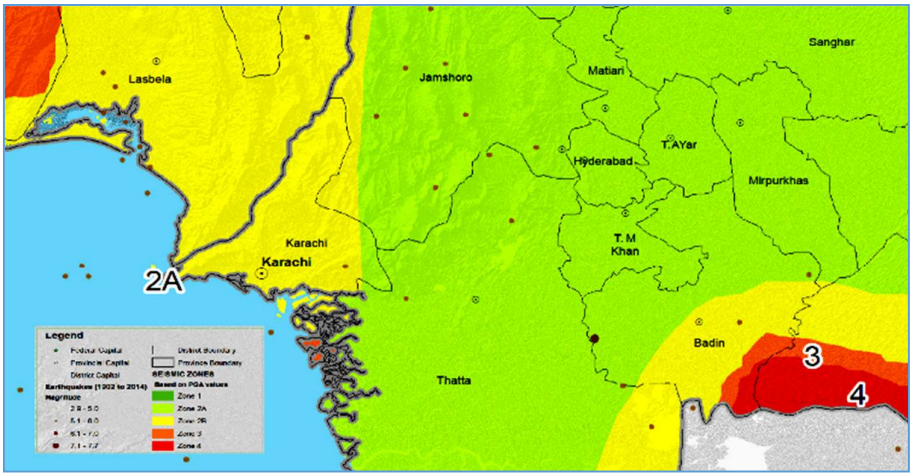


Figure 4.5: Seismic Zones between Karachi[1]

- Uniform Building Code (1997) Classification: Seismic Zone 2B
- Zone Factor (z): 0.20
- Soil Profile Type: Sc (characterized by soft to medium stiff soil of moderate depth)
- Seismic Coefficients:
    - Ca (Acceleration): 0.24
    - Cv (Velocity): 0.32

This technical classification confirms a moderate level of seismic hazard, necessitating that all structural designs are engineered to effectively resist earthquake-induced forces.

[1] Map data source(s): PMD, GSP, Pakistan Engineering Council – Prepared by Al hasan Systems Private Limited

4.1.4 Ambient Air & Noise Quality

In Karachi, the transport sector serves as the primary driver of air pollution, particularly along major corridors. Consequently, ambient air quality in the city and the specific project vicinity is intrinsically linked to fossil fuel consumption. According to the Pakistan Air Quality Initiative (PAQI) report, "Unveiling Karachi's Air — A Scientific Foundation for a Clean Air City," Karachi generates approximately 394 kilotons of atmospheric emissions annually. The industrial sector is the leading contributor to particulate matter (PM2.5) at 49%, followed by transport at 33%. The city's total pollutant load comprises 39.11 kilotons of PM2.5, 52 kilotons of sulphur dioxide (SO_2), 100.78 kilotons of nitrogen oxides (NO_x), and 203.41 kilotons of carbon monoxide (CO), representing an average of 1.86 kg of PM2.5 per resident annually. Notably, 80% of nitrogen oxide emissions stem from heavy diesel vehicles operating in port and industrial zones, while power plants utilizing coal and high-sulphur fuel oil remain significant sources of SO_2. Although Karachi's coastal location facilitates pollutant dispersion via sea breezes, background levels remain elevated due to marine salt and desert dust.[2]

To establish a robust environmental baseline for the project area, ambient air quality (AAQ) monitoring was executed across three strategic locations. Data for the first two locations, AQ/N1 (KPT Flyover Area) and AQ/N2 (Defence Morr, Main Korangi Road), constitute secondary data derived from the ESIA of the Karachi Port to Qayyumabad Corridor Project. These sites were monitored in March and May to account for seasonal fluctuations at the expressway's starting point. Additionally, site-specific primary monitoring was conducted at the Falaknaz Tiara project site (FT/AQ1) by EHS Services on 15 June 2026. The tables below outline the site selection logic, geographical coordinates, and a comparative analysis of the recorded pollutants against regulatory environmental standards.

Table 4.1: Description of Monitoring Locations and Selection Criteria

No.	Location	Point ID	Rationale for Selection	Coordinates	Data Source
1	KPT Flyover Area	AQ/N1	Establishing baseline conditions at a critical traffic hub near the project commencement.	24°49'52.23"N, 67° 4'44.50"E	Secondary (ESIA: Karachi Port to Qayyumabad Corridor)
2	Defence Morr,	AQ/N2	Assessing the existing airshed at	24°50'14.55"N, 67° 4'4.44"E	Secondary (ESIA: Karachi

2 Karachi produces 394 kilotons of hazardous emissions every year' - Pakistan - DAWN.COM

	Main Korangi Road		the proposed origin of the expressway.		Port to Qayyumabad Corridor)
3	Falaknaz Tiara	FT/AQ1	Evaluating localized air quality levels directly at the project site.	24.827394°N, 67.085720°E	Primary (EHS Services)

Table 4.2: Secondary Air Quality Data Analysis (AQ/N1 & AQ/N2)

Parameter	Limits	AQ/N1 (March)	AQ/N1 (May)	AQ/N2 (March)	AQ/N2 (May)
CO mg/m³	5	0.78	0.84	0.81	0.44
NO µg/m³	40	20.9	21.5	23.7	20.2
NO_2 µg/m³	80	20.2	19.5	20.5	24.0
SO_2 µg/m³	20	11.0	34.2	12.0	26.4
O_3 µg/m³	100	15.3	16.4	22.2	16.0
PM_{10} µg/m³	150	89.3	109.7	95.6	104.1
$PM_{2.5}$ µg/m³	75	55.4	38.6	47.1	24.5
SPM µg/m³	500	252.3	374.5	246.1	370.5
Lead µg/m³	1.5	-	-	-	-

Table 4.3: Primary Air Quality Monitoring Results at Falaknaz Tiara (15 June 2026)

Pollutant Parameter	Unit	Measured Concentration	Regulatory Standards (SEQS)
Carbon Monoxide (CO)	mg/m³	0.21	5
Nitric Oxide (NO)	µg/m³	8.3	40
Nitrogen Dioxide (NO_2)	µg/m³	19.5	80
Sulfur Dioxide (SO_2)	µg/m³	8.9	20
Ozone (O_3)	µg/m³	19.7	100
Particulate Matter (PM_{10})	µg/m³	76.4	150
Particulate Matter ($PM_{2.5}$)	µg/m³	21.7	75
Suspended Particulate Matter (SPM)	µg/m³	221.9	500
Lead (Pb)	µg/m³	BDL	1.5
Note: BDL = Below Detection Limit. *Monitoring performed by EHS Services.*			

The air quality assessment for the project area involved a comparative analysis of secondary data (Table 4.2) and primary monitoring results (Table 4.3). The secondary data, recorded at stations AQ/N1 and AQ/N2 during March and May, indicates that most parameters remained within the prescribed regulatory limits (SEQS). Specifically, Carbon Monoxide (CO) levels ranged from 0.44 to 0.84 mg/m³, well below the 5 mg/m³ limit. Similarly, Nitrogen Dioxide (NO_2) and Ozone (O_3) concentrations were consistently low across both periods. However, Sulfur Dioxide (SO_2) showed a notable increase in May, reaching up to 34.2 µg/m³ at AQ/N1, which exceeds the limit of 20 µg/m³. Particulate matter concentrations (PM_{10} and $PM_{2.5}$) fluctuated significantly; PM_{10} reached a peak of 109.7 µg/m³ in May at AQ/N1 but remained within the 150 µg/m³ threshold.

Total Suspended Particulate Matter (SPM) levels were higher in May compared to March, reflecting seasonal variations in dust or local activity.

The primary monitoring conducted at Falaknaz Tiara on June 15, 2026, as shown in Table 4.3, corroborates the general findings of the secondary data but indicates improved localized air quality. All measured concentrations for primary pollutants were well within the regulatory standards. Carbon Monoxide was recorded at a minimal 0.21 mg/m³, and Nitrogen Dioxide stood at 19.5 µg/m³. Sulfur Dioxide levels were measured at 8.9 µg/m³, which is significantly lower than the seasonal peaks observed in the secondary data. Particulate matter levels were also compliant, with PM_{10} at 76.4 µg/m³ and $PM_{2.5}$ at 21.7 µg/m³, both falling significantly below their respective limits of 150 µg/m³ and 75 µg/m³. Lead (Pb) concentrations were found to be Below the Detection Limit (BDL). Overall, the primary monitoring results suggest that the current air quality at the specific project site is satisfactory and aligns with environmental safety standards.

4.1.5 Water Resources, Water Quality and Drainage

4.1.5.1 Hydrogeology of Karachi

Hydrogeologically, the city of Karachi lies in the Hab River Basin and the Malir River Basin. The Malir River Basin is drained by the Malir River and the Lyari River. The aquifer of Karachi is, therefore, mainly recharged by seepage from Hab River, Hab Dam as well as the Malir and the Lyari Rivers. The Hab River lies on the western frontier of Sindh and for some distance the boundary between Sindh and the Baluchistan provinces. It located about 30 km to the west of Karachi, along the Karachi- Lasbela boundary. It falls into the Arabian Sea near Cape Monze, with a total drainage course length of 336 km. During the past several years, a number of pumping wells have been installed to meet requirements for the irrigation-water supply (to raise vegetables, fruits, dairy and poultry) and drinking-water supply for Karachi. Excessive pumping of groundwater and continuous lowering of water-table is likely to result in intrusion of seawater into the Malir Basin under natural seepage conditions and under artificially induced conditions of recharge of saline seawater in the coastal aquifer(s) of Karachi.

Recharge Sources: Five possible water-sources are contributing to the groundwater recharge in Karachi. The first possible source is the rainfall. As the city of Karachi suffers from deficit of precipitation (only rainfall), the contribution to shallow groundwater storage from rain is very little. However, rainfall in the hinterlands and other areas surrounding Karachi may significantly contribute to the groundwater flow-system. The two freshwater sources are the Hab Lake/Hab Dam and the Indus River. Water from Hab Dam and the Indus

River is piped to various residential zones in Karachi for drinking and irrigation purposes. The spring water discharges into Malir River and Lyari River and the municipal/industrial waste effluents added to these rivers are also contributing to groundwater storage as a fourth recharge source. Seawater intrusion along Karachi coast is the fifth possible source.

Shallow Groundwater: Physico-chemical data of shallow groundwater (depth less than 30 meters) shows that the shallow wells, located in the vicinity of coast and in the proximity of polluted rivers, have relatively higher values of electrical conductivity, salinity and population of Coliform bacteria. The shallow groundwater is moderately saline, representing electrical conductivity values in the range of 1.1 to 1.9 mS/cm and salinity in the range of 1 ppt. The pH of shallow groundwater varies from mildly acidic (~6.3) to mildly alkaline values (~7.9). Areas with quite poor sanitary conditions have relatively low values of pH (~6.3 to 6.8). Shallow groundwater below 20 meters is slightly reducing. The dissolved oxygen is in the range of 1.5 to 7.9 mg/L. Turbidity of shallow groundwater varies between 3.6 NTU and 95 NTU. The concentration of HCO_3^- (356-514ppm, n=4), Cl^- (82-169 ppm, n=4) and SO_4^{-2} (38-117 ppm, n=4) in shallow groundwater is very reasonable. The mean chemical concentrations of Cl^-, SO_4^{-2} and HCO_3^- in shallow groundwater are as follows:

- Mean Cl^- (Shallow Groundwater): 132.8 $\pm$ 36.5 ppm (n=4)
- Mean SO_4^{-2} (Shallow Groundwater): 63.3 $\pm$ 36.7 ppm (n=4)
- Mean HCO_3^- (Shallow Groundwater): 423 $\pm$ 67.4 ppm (n=4)

The range of variation in stable isotope content of total dissolved inorganic carbon (TDIC) and oxygen in Lyari River water is as follows:

- δ 18 O (Shallow Groundwater) -6.3 to -5.8 ‰ V-SMOW (n=8)
- δ 13 C (TDIC-Shallow Groundwater): -16.5 to -5.5 ‰ PDB (n=8)

The mean stable isotope content of 18O and 13C in shallow groundwater is as follows:

- Mean δ 18 O (Shallow Groundwater): -5.9 + 0.32 ‰ V-SMOW (n=8)
- Mean δ 13 C (TDIC-Shallow Groundwater): -10.1 + 3.3 ‰PDB (n=8)

The stable-isotope results indicate that the shallow / phreatic aquifers are recharged by a mixture of fresh waters of Indus River and Hab River (draining spring water and flooded rainwater), as well as polluted Lyari and Malir rivers and their feeding drains (both under natural infiltration conditions and artificially induced infiltration conditions) and, to a much smaller extent, from direct recharge of local precipitation.

Deep Groundwater: In general, Deep groundwater is mostly saline and has high electrical conductivity (range: 1.9- 19.1 mS/cm) and salinity (range: 1.7-7.4 ppt), as compared to shallow groundwater.

Based on hydro chemical data of water samples collected from pumping wells, it is assumed that the shallow mixed deep groundwater discharged by large-

scale pumping wells mainly represents the deep groundwater from confined aquifer. The mean chemical concentrations of Cl^-, SO_4^{-2} and HCO_3^- in shallow mixed deep groundwater are as follows:

- Mean Cl- (Deep Groundwater): 2169.2 + 1828.0 ppm (n=9)
- Mean SO4-2 (Deep Groundwater): 458.4 + 691.4 ppm (n=9)
- Mean HCO3- (Deep Groundwater): 353.6 + 215.4 ppm (n=9)

The range of variation in stable isotope content of total dissolved inorganic carbon (TDIC) and oxygen in shallow mixed deep groundwater is as follows:

- δ 18 O (Deep Groundwater): - 6.2 to -4.2 ‰ V-SMOW (n=10)
- δ 13 C (TDIC – Deep Groundwater): -13.2 to -0.3 ‰ PDB (n=10)

The mean stable isotope content of 18O in shallow mixed deep groundwater is as follows:

- Mean δ 18 O (Deep Groundwater): -5.3 +0.7‰ V-SMOW (n=10)
- Mean δ 13 C (TDIC- Deep Groundwater): -10.5 + 3.7‰ PDB (n=10)

The hydro chemical and stable isotope results indicate that the confined aquifer hosts a mixture of rainwater from hinterlands and surrounding regions around coastal Karachi, as well as sea trapped water / seawater, through intrusion under natural infiltration conditions or under induced recharge conditions.

Groundwater Recharge Characteristics/Sea water Intrusion: Presently, coastal Karachi is known to have five sources of recharge to its groundwater reserves.

(i) Rainfall,
(ii) Indus River water supply
(iii) Hab-River & Hab Lake water supply
(iv) Polluted Lyari and Malir rivers/ contributory channels draining mixtures of domestic industrial and agricultural wastewater, composed of pre-said three sources
(v) Seawater.

The possibilities of major contribution to groundwater recharge of shallow/phreatic aquifer directly by local rainfall seems very small, due to very poor frequency of rainfall events and rainfall intensities in the Karachi and high evaporation rates. The long-term (15 years annual record) mean monthly average precipitation for Karachi is between 0-15 mm during the months of January to June, 23 – 91 mm during the months of July to September, and 0-7 mm during the months of October to December. The remaining four sources play a significant role in recharge of the shallow aquifer-system and deep groundwater system (confined aquifer) in coastal Karachi. Unpolluted seawater of Karachi coast is characterized by a δ 18O value of ~ +1 ‰ VSMOW and a chloride content of ~23000 ppm. Both the Lyari River and Malir River waters, as well as the Indus River water and the Hab Lake water, have

extremely very low aqueous contents of chloride and sulfate ions as compared to seawater. The average mean value of δ 18O in polluted river waters is ~ 5 ‰ V-SMOW and in shallow groundwater is -5.9 ‰ V-SMOW. The relatively deeper ground waters representing confined aquifer have a mean δ 18O value of -4.3 ‰ VSMOW and excessively high values of aqueous chloride and sulfate.

4.1.5.2 Greater Karachi Bulk Water Supply System

To supply the city of Karachi with 280 MGD of water supply, the Greater Karachi Bulk Water Supply Scheme was designed in 1953. The scheme was modeled and divided into four equal phases on the basis of population projection till the year 2000. Each scheme, with the design rate of 70 MGD, comprised of open canals, covered conduits, a tunnel, siphons, pumping stations and mains to supply water from the Keenjhar Lake. The details are discussed below and shown in Figure 4.6.

1st Phase

- Proposed raw-water pumping at Dhabeji to bring 70 MGD of water from Keenjhar Lake and water treatment plant of 70 MGD at COD Hills, Karachi.
- Development of complete water conveyance system comprising of a 280 MGD lined canal, a conduit of equal capacity up to Pipri and of 140 MGD capacity up to Karachi.
- Work on 10 MG reservoir at COD Hills along with the distribution net-work.
- It started in 1954 and completed in 1961 at a total cost of PKR 185 million.

2nd Phase

- It included construction of a 70 MGD pump house at Dhabeji, laying of 84" dia pre-stressed pipe siphons, a 25 MGD pump house at pipri and two water treatment plants of 25 and 45 MGD along with 10 MG reservoirs at Pipri and COD Hills respectively.
- Work for this phase was awarded in 1969 and completed in early 1971 at a total cost of PKR 200 million.

3rd Phase

- It included the construction of a 70 MGD pumping station at Dhabeji, two pumping stations along with water treatment plants of 25 MGD capacity each at North East Karachi and Pipri, 84"dia pipe siphons, three balancing reservoirs and the distribution mains.
- - A reservation for supply of 22 MGD of un-filtered water to Karachi Steel has also been made under this phase.
- - Work for this phase started in 1975 and completed in 1978 with the total cost of PKR 750 million.

4th Phase

- Due to financial constraints, 4th Phase works were divided into two parts.

- Under this phase improvement of lined canal, modifications of the present Dhabeji Pumping Stations, laying of 84" dia pipe syphons, construction of a 25 MGD pump house and clarification units at Pipri were commissioned.
- Also, improvement of the secondary distribution network and installation of domestic meters in K.D.A. Scheme No.1 & 5 were taken up with the assistance of World Bank and all the works were completed in June, 1987 at a total cost of PKR 360 million.
- After this phase, the city's water supply increased by 50 MGD.

Hub Water Supply System

- The Hub dam was constructed by WAPDA on Hub River to from 1963-1981
- At Stage-I, 90 MGD pump house, two steel pressure mains one 20 MG reservoir, trunk mains and primary treatment of lake water by screening and chlorination were completed in August, 1982 at a total cost of PKR 260 million.
- Stage-II included the improvement of secondary distribution network and construction of a 90 MGD water treatment plant.

5th Phase (Greater Karachi Bulk Water Supply Scheme)

- Karachi's water supply system has expanded considerably in this phase. As discussed in initial four phases, Karachi was getting 280 MGD of water.
- Then 100 MGD water were added to the system through K-II supply project which were completed in 1998 with the assistance of World Bank.
- Through a bulk water supply project, the city got another 40 MGD of water in 2000.
- K-III 100 MGD Water Supply Project, further added into the existing supply which were completed in 2006 with the assistance of GoP.
- Now, the K-IV water project has been planned to fill the gap between the city's demand and supply of water.
- Approved on July 10, 2014 with the proposed design capacity of supplying an additional 650 MGD of water to Karachi. K-VI will be completed in three phases at a cost of PKR 25.6 billion rupees.

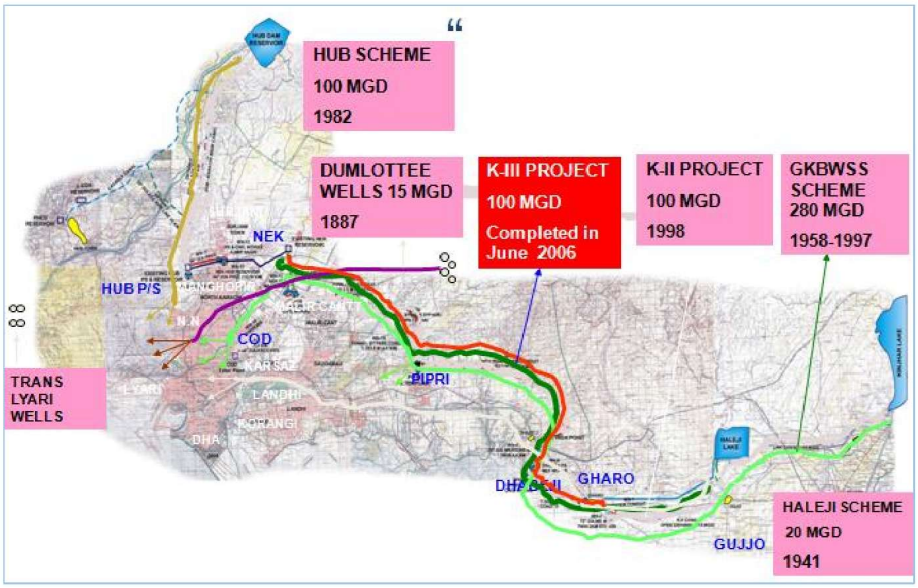


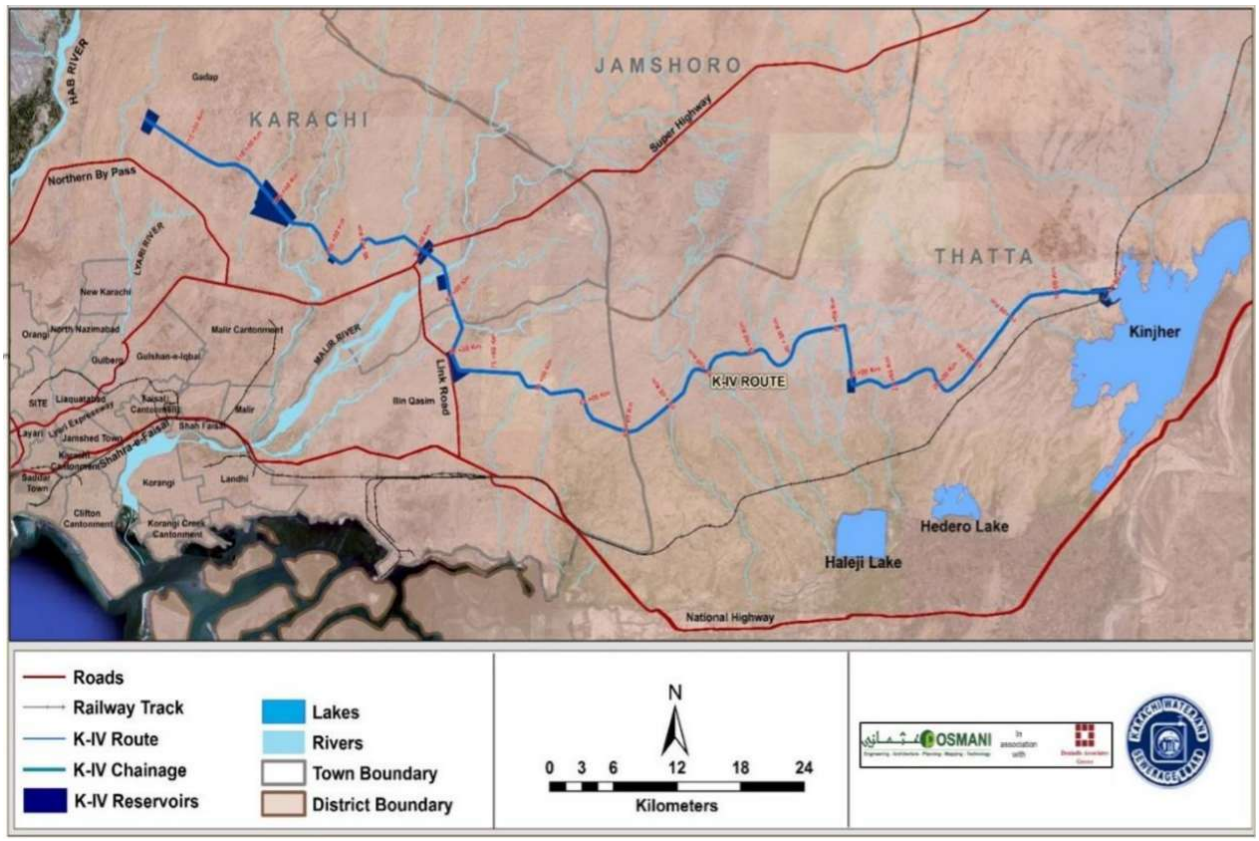
Figure 4.6: Water Supply System of Karachi (Glimpse from Past to Present)
Source: KW&SB (2019)

4.1.5.3 Proposed Bulk Water Supply Scheme

K-IV, is a municipal infrastructure project being jointly developed by the Provincial and Federal Governments in Karachi, Pakistan, to augment the city's daily water supply. This project is divided into three phases and each phase will increase water supply capacity. Details of K-IV are shown in Figure 4.7.

K-IV Project; Part of Greater Karachi Water Supply Scheme, Indus Water from Keenjhar Lake to Karachi City		
Phase	**Capacity**	**Proposed Completion Year**
K-IV Phase-1	260 MGD	Year 2018
K-IV Phase-2	260 MGD	Year 2022
K-IV Phase-3	130 MGD	Year 2025

Figure 4.7: K-IV Bulk Water Supply Schemes Karachi



4.1.5.4 Present Water Supply and Sewerage System

The water supply and sewerage system in the macroenvironment is managed by Karachi Water Supply & Sewerage Corporation (KW&SC). Present water supply system of Karachi City has a supply capacity of 560 mgd. Actually, as of the end of year 2006, the KW&SB supply bulk water of about 630 mgd beyond the capacity as shown in following Table. Out of 630 mgd, water of 209 mgd is supplied without filtration, which is equivalent to one third of actual supply amount of 630 mgd.

Water is collected and treated by the conventional water treatment plants and distributed by a system which is at least 40-45 years old with some new distribution facilities in the city. The outdated system along with improper operation and maintenance causes the issue of revenue loss. In addition, there is no metering for retail customers and only 25 percent of commercial and industrial customers have a metered supply. The water supply is irregular due to power failure at KW&SB pumping stations which further increases the problems in water distribution system. Moreover, almost 40 per cent of the population lives in slums with limited water supply & poor sanitary infrastructure.

Figure 4.8 presents the detailed water distribution in Karachi.

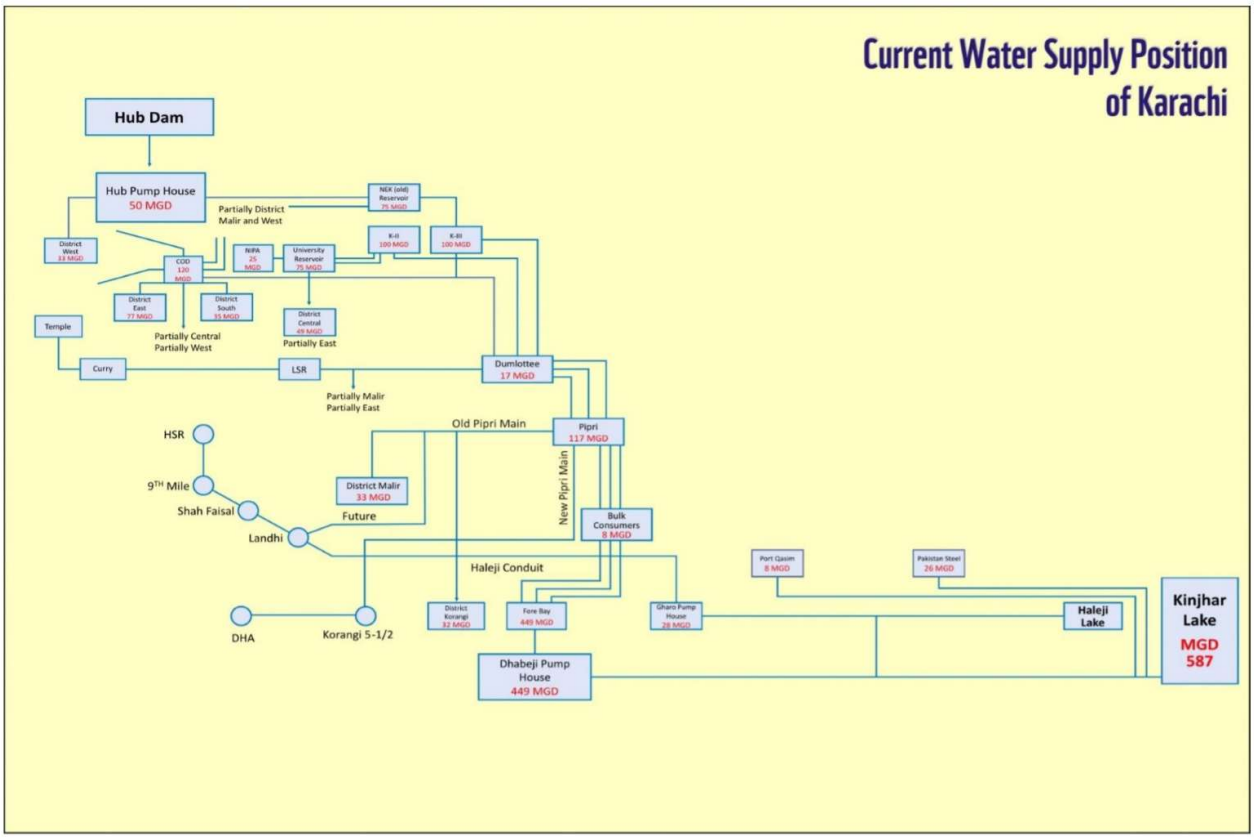


Figure 4.8: Current Water Distribution System in Karachi from Hub Reservoir and Keenjhar Lake

Table 4.4: Present Water Supply Capacity			
Supplied from		***Rated Capacity***	***Actual Supply***
Gharo Filtration Plant		20 mgd	30 mgd
Pipri Filtration Plant	with Filtration	100 mgd	102 mgd
	without Filtration	-	32 mgd
Dumlottee Conduit (without Filtration)	from Wells	20 mgd	0 mgd
	from GK/K-III Systems	-	17 mgd
NEK Old Filtration Plant		25 mgd	5 mgd
NEK New Filtration Plant		100 mgd	100 mgd
COD Filtration Plant	with Filtration	115 mgd	104 mgd
	without Filtration	-	48 mgd
Hub Filtration Plant		80 mgd	80 mgd
Supply without Filtration (from K-III System)		100 mgd	95 mgd
Supply without Filtration (from GK System)		-	17 mgd

Table 4.4: Present Water Supply Capacity		
Total	560 mgd	630 mgd

4.1.5.5 Water Supply Network

Karachi water and sewerage corporation (KWSC) is the organization responsible for water transmission and distribution across the city. Indus river system authority (IRSA) provides water to Sindh, therefore, this river indirectly becomes part of water supply system for the city. River Indus feeds water to the Lake Keenjhar. From Keenjhar, water through conduits goes to Haleji, Gharo, Port Qasim, Steel Mills and then to Dhabeji pumping station. From Dhabeji Pumping station, water is pumped to different pumping stations to supply water among all six districts of the city by using electrical pumping motors. Water from Hub Dam is supplied to Hub Pump House through Hub Canal and then supplied to NEK, Old Reservoir and different areas of the city. Karachi's water supply infrastructure comprises of 25 bulk water reservoirs, 150 pumping stations, 8 water-filtration plants, 75 kilometers of canals, over 11,000 kilometers of pipeline, 20 sewage-pumping stations, 3 sewage treatment plants, and over 250,000 manholes. Almost 1.13 million domestic connections and 9,317 bulk customers in Karachi are provided water supply and sewerage services (Figure 4.9). In informal settlements and industries, the most of the water demand is met through non-piped systems, including private water tankers. Almost 24 hydrants have been licensed to the private parties by KWSC. Out of these 24 hydrants, only 10 are operational while the rest were closed as per a recent Supreme Court Order. unregulated hydrants are rampantly spread across the city. KWSC introduced amendments to discourage the illegal use of hydrants. Since 2009, it has dismantled over 948 illegal hydrants in an effort to confront the illegal use of water. Now six regulated and meter hydrants supply water to the city. Despite that, the issue of unregulated hydrants needs attention. There are two distribution channels for Karachi, mainly Northern and Southern Channels.

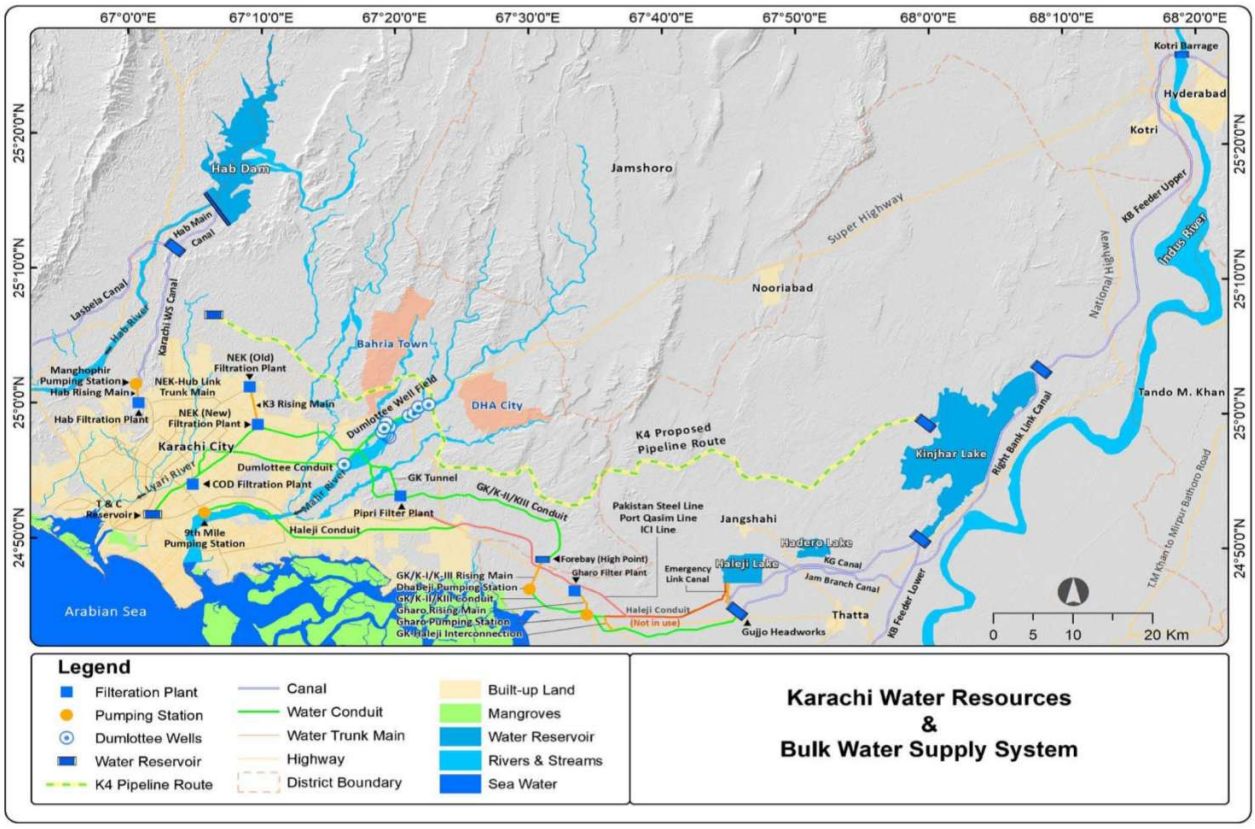


Figure 4.9: Karachi Water Resources and Bulk Water Supply System

4.1.5.6 Water demand and supply with past trends and future trends

Karachi predominantly depends on the River Indus for its water supply, particularly due to the reduced inflow from the Hub Dam. Currently, the city receives about 580 million gallons per day (MGD) from the River Indus, while its actual requirement ranges between 820 and 1,200 MGD per World Health Organization (WHO) standards, indicating that Karachi is only meeting approximately 50% of its water needs.

The K-IV water supply project, which consists of three phases, is critical to addressing this issue. Phase I aims to add an additional 260 MGD to the existing supply network but remains incomplete, exacerbating the water demand and supply gap. Phases II and III are planned to contribute another 260 MGD and 130 MGD, respectively; however, delays are anticipated for these phases as well. Even upon completion of the K-IV project, it is expected that the city will continue to face water shortages, and the situation is projected to worsen without additional measures being implemented to rectify the current challenges.

4.1.5.7 Surface water and Groundwater Quality Assessment

The water scarcity in Karachi is largely attributed to the rapid population growth and industrial activities, compelling residents to rely on alternative water sources such as privately-owned groundwater systems. These sources extract, process, and sell groundwater at significantly high costs. Unfortunately, the quality of this groundwater is poor, primarily due to over-extraction by farmers, infiltration of domestic wastewater, contamination from industrial chemicals, and seawater intrusion, which make it unsafe for human consumption without adequate treatment.

A study conducted by the Pakistan Council of Research in Water Resources (PCRWR) during 2015-2016 revealed alarming water quality issues in Karachi. Out of 28 water samples taken from various sources, 24 were contaminated with E. coli, indicating that approximately 86% of Karachi's water is unfit for consumption. The most likely cause of this bacterial contamination is the discharge of sewage, which often runs parallel to drinking water pipelines, leading to contamination due to poor maintenance and pipe breakages. Notably, no significant improvement in water quality was observed from 2002 to 2015.

Additionally, another analysis of surface and groundwater samples found that nearly 88% of the sources exceeded the World Health Organization's recommended lead levels. A World Bank study across 18 towns in Karachi revealed that 89% of blood samples showed lead levels higher than WHO guidelines. Elevated lead exposure has been linked to learning disabilities in children, posing substantial socioeconomic challenges for future generations.

4.1.5.8 Ground Water Potential in the Macroenvironment

To address the persistent water scarcity in Karachi—exacerbated by climate change and escalating urban demand—Milson Properties has initiated professional electrical resistivity surveys to evaluate subsurface geological conditions and groundwater potential.

The following hydrogeological findings are based on the validated Environmental Impact Assessment (EIA) for the "Signature 27" project, located near the KPT Interchange:

- **Subsurface Water Detection:** Electrical resistivity data confirms significant water presence within the project area.
- **Aquifer Stratification:** Perched water tables are situated between depths of 25 and 35 feet.

- **Upper Aquifer Characteristics:** The shallow aquifer displays high salinity, with Total Dissolved Solids (TDS) reaching approximately 30,000. To safeguard against cross-contamination, a sanitary seal must be installed to a depth of 200 feet.

- **Secondary Aquifer Potential:** A second aquifer zone has been identified with relatively lower TDS levels, ranging between 15,000 and 20,000.

- **Salinity and Sustainability Outlook:** While resistivity curves indicate saline conditions, the project aims to utilize the second aquifer. However, it is anticipated that salinity levels will rise over time due to seawater intrusion, especially during periods of high extraction. Definitive water quality and quantity metrics will be established following detailed borehole sample analysis.

4.1.5.9 Sewerage system of Karachi

To enhance the sewerage system of Karachi and mitigate pollution in natural water bodies, the Karachi Water and Sewerage Corp (KWSC) is implementing the Greater Karachi Sewerage Plan (S-III). This initiative seeks to improve the environmental conditions of the city through a comprehensive system for the collection, treatment, and disposal of wastewater from municipal and industrial sources. Sewage will be transported via a reinforced concrete pipe to the River Lyari and Malir, eventually being discharged into the sea.

Key Components of the Project:

- **Malir Trunk Sewer**: 5 contract packages totaling 22.74 km in length.

- **Lyari Trunk Sewer**: 8 contract packages spanning 33.32 km.

- **Upgrading and Capacity Enhancement of Sewage Treatment Plant** from 51 to 100 MGD at Haroonabad SITE.

- **Upgrading and Capacity Enhancement of Sewage Treatment Plant** from 54 to 180 MGD at Muaripur.

- **Construction of a New Sewage Treatment Plant** in Korangi with a capacity of 180 MGD.

The treatment of sewage, a previously neglected issue, received renewed attention from the water commission, culminating in the restoration of Sewage Treatment Plant-III (77 MGD) in June 2018. Although the completion of Treatment Plant-I (100 MGD) was anticipated in 2019, it remains unfinished, despite prior commitments made to the Judicial Commission. Additionally,

Sewage Treatment Plant-IV (180 MGD), expected to be operational by December 2020, has yet to be completed. In June 2025, the Chief Minister of Sindh instructed KWSC to ensure the full operational status of the TP-I component of the S-III project by the end of August and to expedite the work on TP-IV for completion within a year.

Recent updates highlight that the Haroonabad TP1, located in the SITE Industrial Area, is currently operational and undergoing testing as of December 2025. Described as a "game-changer," this plant aims to recycle sewage for industrial use, targeting a supply of approximately 1 million gallons per day (MGD) to the SITE area by the end of December 2025. This initiative is expected to reduce industrial production costs while conserving clean public water. Furthermore, secondary treatment for 20 MGD has been successfully completed, with plans to eventually treat up to 100 MGD of sewage. TP1 primarily caters to major districts, including SITE, North Nazimabad, North Karachi, Gulberg, and Liaquatabad.

Another treatment facility was established in DHA Phase VIII to manage sewage from both DHA Phase VIII and Clifton Cantt. This facility became operational in 2014 with a capacity of 2.4 MGD, currently processing 1.2 MGD of sewage from DHA Phase VIII.

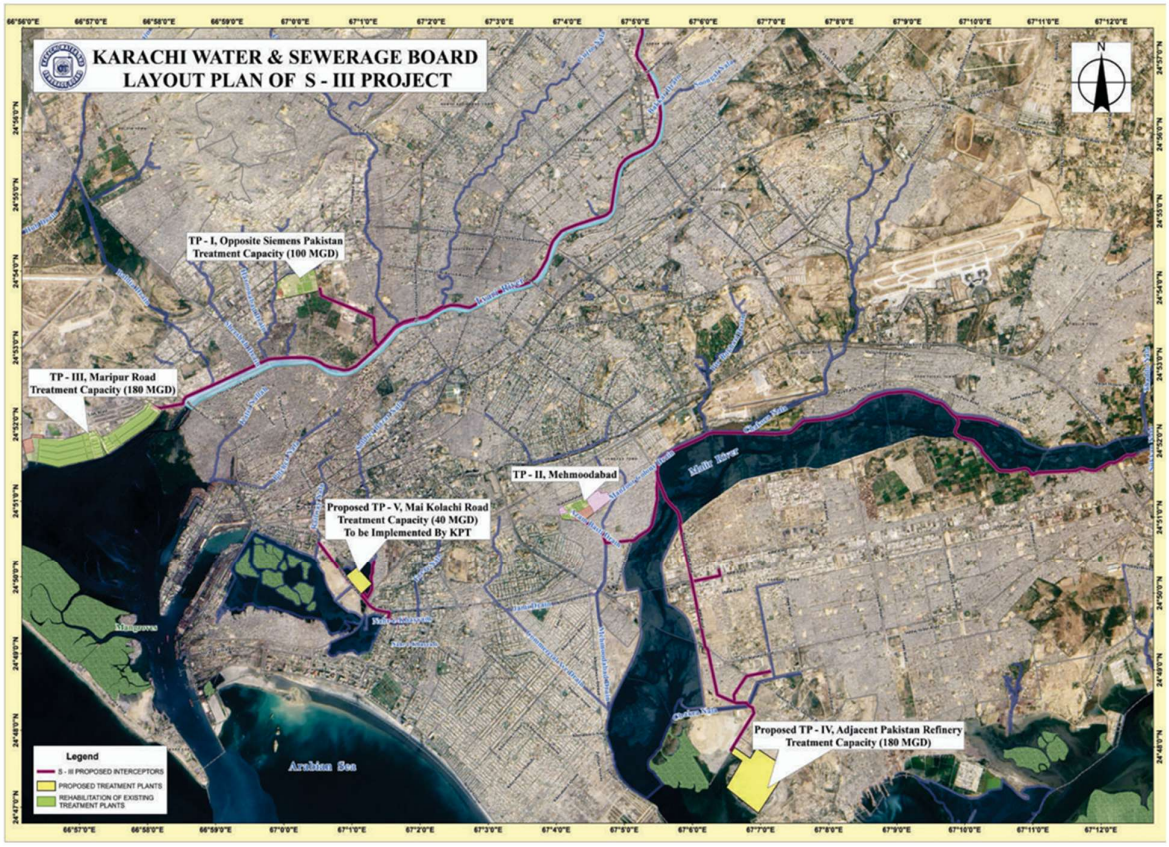


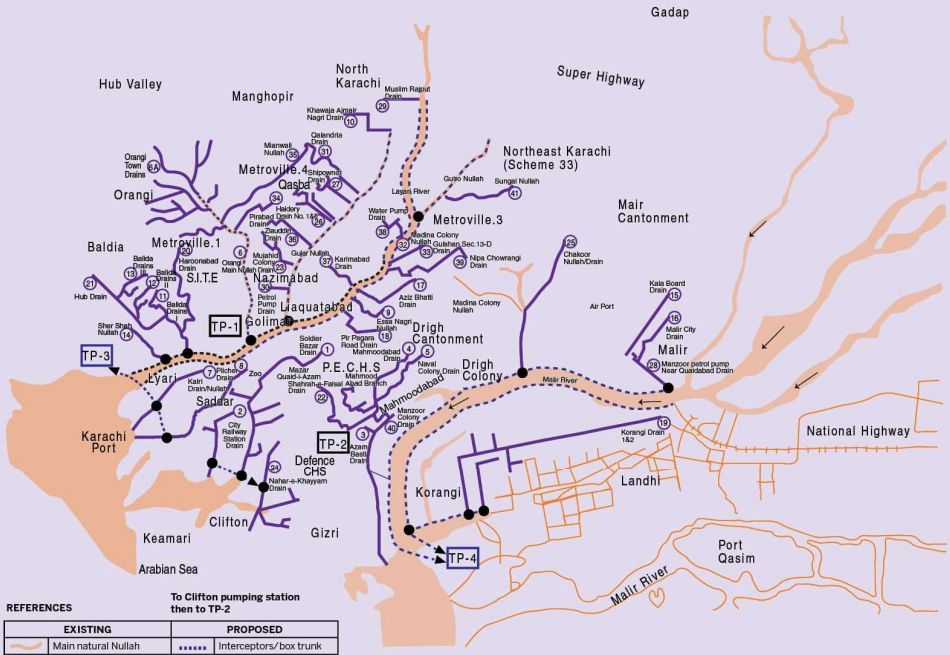
Figure 4.10: Layout Plan of S-III

4.1.5.10 Collection and Disposal Mechanism

Overview of Sewage Collection and Discharge: Karachi's sewage management relies on a combined network of underground pipes and open channels that ultimately discharge into natural water bodies. Domestic sewage and industrial effluents are primarily channelled into the Lyari and Malir rivers, which serve as the main arteries for wastewater transport to the coastal areas. The system faces a severe deficit in treatment capacity: out of the approximately 475 million gallons per day (MGD) of wastewater generated, an estimated 420 MGD is released untreated. This massive volume flows into the sea via a 232 km main nullah and a sprawling 1,000 km network of local drains. The significant disparity between waste generation and the capabilities of existing treatment facilities results in approximately 417–425 MGD of raw sewage polluting the marine environment.

Karachi map showing the documented natural *nullahs* and drains (which are the main disposals for sewage and rain water) and the intergration of these with the mains and STPs.

CONCEPTUAL PLAN FOR A REALISTIC SEWAGE DISPOSAL SYSTEM



S.No.	Name of Drain/Nullah	Length (ft)
1.	Soldier Bazar Drain +4 Branches	40000
2.	City Railway Station Drain	10825
3.	Azam Basti Drain	866
4.	Mahmoodabad Drain & Branch	27000
5.	Naval Colony Drain	11258
6.	Orangi Nullah Main (Banaras Chowk to Lyari Nadi)	19918
6A.	Orangi Town Drain	94234
7.	Kalri Drain / Nullah	9526
8.	Pitcher Drain	14700
9.	Essa Nagri Nullah And Welfare Colony Drain	7794
10.	Khawaja Ajmair Nagri Drain And North Karachi Sec. 11-A Drain	14000
11.	Baldia Drains – I	15715
12.	Baldia Drains – II	7000
13.	Baldia Drains – III	7784
14.	Sher Shah Nullah	6603
15.	Kala Board Drain	9310
16.	Malir City Drain	9959
17.	Aziz Bhatti Drain	13856
18.	Pir Pagara Road Drain	8877
19.	Korangi Drain 1 & 2	48496
20.	Haroonabad Drain	17753
21.	Hub Drain	23815
22.	Shahrah-e-Faisal Drain	6000
23.	Mujahid Colony Drain	12500
24.	Nahar-e-Khayyam Drain	5629
25.	Chakoor Nullah/Drain	23080
26.	Haidery Drain I & II	15600
27.	Shipowner College Drain	6575
28.	Manzoor Petrol Pump to Islamia Kanta Malir (Near Qaidabad) Drain	900
29.	Muslim Rajput Colony Drain	2552
30.	Petrol Pump Drain	3350
31.	Qalandria Drain	17200
32.	Madina Colony Nullah	1299
33.	Gulshan-e-Iqbal Sec. 13-D Drain	9093
34.	Pirabad Drain	2598
35.	Mianwali Colony Nullah (Joins 6A)	11238
36.	Ziauddin Hospital Drain	16478
37.	Karimabad Drain	7000
38.	Water Pump Drain	5890
39.	NIPA Chowrangi Drain	15588
40.	Manzoor Colony Drain	11700
41.	Sungal Nullah	8660

Source: OPP-RTI

Figure 4.11: Existing Sewerage System of Karachi

Stormwater Drainage and Infrastructure: The city's drainage infrastructure consists of both artificial channels (stormwater drains) and natural water channels (nallahs). Due to the inadequacies of the dedicated sewerage system, these channels function as de facto sewers year-round, in addition to carrying runoff during the monsoon season.

Table 4.5: Town-wise Stormwater Drainage and Nallah Specifications

Town	Depth (m)	Width (m)	Length (km)
1. Keamari	1.21	0.91–3.04	7.62
2. SITE	2.13	3.65	16.08
3. Baldia	1.22	2.43	11.77
4. Orangi	1.52	2.43–3.65	34.10
5. Lyari	1.37	0.6–13.7	19.40
6. Saddar	1.37	3.05	11.14
7. Jamshed	1.50	2.43	33.80
8. Gulshan Iqbal	3.64	2.4–15.2	28.00
9. Faisal	1.22–4.57	1.52–24.0	20.10

10. Landhi	1.22	2.43	35.36
11. Korangi	1.52	2.74	36.40
12. North Nazimabad	1.22	2.40	30.70
13. North Karachi	1.22	2.40	45.10
14. Gulberg	1.37	2.40	22.10
15. Liaquatabad	1.52	3.65	19.50
16. Malir	1.22	3.04	6.15
17. Bin Qasim	1.22	3.64	14.63
18. Gadap	1.22	3.65	24.43
Total			**416.38**
Source: KW&SC (formerly KWSB)			

Operational Challenges and Maintenance Issues: Karachi lacks dedicated pumping facilities for stormwater. Instead, sewage "ejector" stations are repurposed to handle stormwater during heavy rains. Maintenance is hindered by administrative inefficiencies; while KW&SC cleans drains prior to the monsoon, town administrations often inadvertently push street sweeping waste back into the drains, causing immediate re-clogging and subsequent flooding.

Furthermore, the system is crippled by illegal encroachments—houses and buildings constructed directly over drains—and routine garbage dumping. These factors significantly reduce the hydraulic capacity of the channels. Addressing these issues requires a combination of strict building code enforcement and the implementation of a comprehensive solid waste management system to prevent the drainage network from being used as a refuse site.

4.1.6 Solid Waste Management

Karachi, one of the world's most populous urban centers, generates an estimated 14,800 metric tons of solid waste every single day. The management of this massive volume is overseen by the Sindh Solid Waste Management Board (SSWMB), which operates through a collaborative framework involving municipal authorities and specialized private contractors. Currently, the city's waste management landscape is undergoing a significant transformation driven by the World Bank-backed Solid Waste Emergency & Efficiency Project (SWEEP). This initiative aims to modernize Karachi's infrastructure by transitioning from primitive disposal methods to a network of engineered landfills and strategically located transfer stations.

Existing Infrastructure and Operational Framework

Collection and Logistics: The primary collection mechanism combines traditional labor with modern outsourcing. Door-to-door waste retrieval is

facilitated by local sanitary workers and Chinese private contractors. To navigate the city's dense urban geography, particularly in districts like Keamari and Karachi West, the fleet utilizes a mix of localized tricycles and mini-lifters that can access narrow lanes before transferring waste to larger transport vehicles.

Traditional Disposal Sites: Historically, the city has relied on open-air dumpsites, most notably Jam Chakro and Gond Pass. These sites were characterized by semi-managed operations that lacked environmental safeguards, frequently resulting in open-air burning and uncontrolled leachate runoff.

The Informal Economy: A critical yet unofficial component of the system is the informal recycling sector. An estimated network of over 40,000 waste pickers operates across the city, intercepting recyclable materials like paper, plastics, and metals directly from communal bins. While this sector lacks formal integration into the municipal structure, it effectively reclaims up to 25% of all reusable materials before they reach final disposal sites.

Planned and Under-Construction Infrastructure

Modern Garbage Transfer Stations (GTS): To enhance logistics and reduce the environmental footprint of waste transit, several advanced transfer stations are currently under construction. High-priority sites include Sharafi Goth, Dinga Morr, Imtiaz, and Gutter Baghicha. These facilities are designed to optimize bulk transit and introduce initial sorting capabilities. By mid-2026, the Sharafi Goth facility has reached a physical completion rate of over 52%, signaling a move toward more streamlined urban haulage.

Engineered Sanitary Landfills: The 485-acre Jam Chakro facility is being converted into a sophisticated sanitary landfill. This upgrade includes the development of engineered cells featuring leachate collection tanks to prevent groundwater contamination, gas extraction wells to capture methane, and dedicated internal monitoring roads.

Waste-to-Energy and Biogas Initiatives: The SSWMB is increasingly focusing on resource recovery to mitigate methane emissions and reduce fossil fuel reliance. Localized biogas conversion units have been initiated to process organic waste from livestock markets and vegetable hubs. On a larger scale, the city is moving through the advanced pipeline phases for grid-tied waste-to-energy plants, including a flagship 50 MW processing facility designed to convert municipal waste into sustainable electricity.

4.2 Description of Ecological Environment

The continuous expansion of urban conglomerates has fundamentally altered both the micro and macro-ecological environments within the project area. Rapid urban sprawl, characterized by extensive land clearance and the removal of natural vegetation to facilitate industrialization and infrastructure, has triggered significant high-order ecological risks. This transformation has not only degraded the physical environment, as detailed in previous assessments, but has also decimated the region's biological integrity and overall biodiversity.

Field surveys indicate a sparse distribution of floral species within the macroenvironment, with observations limited to varieties such as Conocarpus, Acacia nilotica (Sindhi Babur), Capparis decidua (Kirar), Ficus religiosa (Peepal), Azadirachta indica (Neem), Prosopis juliflora (Devi), and Suaeda fruticosa (Lani). Notably, horticulturists and environmental activists have identified Conocarpus as ecologically detrimental, drawing parallels to the previous mass planting of Eucalyptus. Much like the Eucalyptus trees that were eventually removed due to their negative environmental impact, the widespread introduction of Conocarpus is now viewed as a recurring ecological error. In response to these concerns, various NGOs and Community-Based Organizations (CBOs) have recently intensified efforts to plant Neem trees along major corridors and arterial roads to restore ecological balance.

The degradation of the environment is further exacerbated by the scarcity of both surface and groundwater, alongside the discharge of untreated wastewater into the Lyari and Malir Rivers. These factors have led to an irreversible decline in the biodiversity of both indigenous and introduced vegetation. Consequently, the macroenvironment currently offers minimal support for the survival or growth of fauna. The surveyed area lacks established habitats for mammals, birds, or reptiles, reflecting a severely compromised ecosystem.

4.3 Socioeconomic Environment

Sector 30 Korangi stands as a vibrant and bustling urban hub within the Korangi Sub-Division of Karachi. This densely populated landscape is defined by a dynamic demographic profile and a complex tapestry of socioeconomic layers, ranging from established residential blocks to informal settlements. The area is deeply integrated into the city's economic fabric, bolstered by its proximity to major industrial zones and a resilient community network.

Demographic Composition and Social Fabric The Korangi Sub-Division is home to a massive population of 1,363,992 residents, as documented in the 2023 Census. The community is predominantly youthful, with approximately 38.9%

of the population under the age of 15 and a significant 58.5% falling within the working-age bracket of 15–64 years. The gender distribution reflects a slight majority of females at 52.9%, compared to 47.1% males. Culturally, the sector is a melting pot of linguistic diversity; while Urdu is the primary language spoken by 60.2% of residents, the neighborhood also resonates with the sounds of Punjabi, Sindhi, Pashto, and various other regional dialects. The literacy rate is recorded at a notable 70.9%, representing over 724,000 literate individuals contributing to the local workforce and social structure.

Healthcare and Medical Infrastructure The healthcare landscape of Sector 30 is anchored by prominent institutions such as the Korangi General Hospital and the specialized Indus Hospital (Korangi Campus). Complementing these large-scale facilities is a network of Basic Health Units (BHUs) and a variety of private clinics distributed throughout the sector. These centers provide essential primary care, outpatient services, and specialized treatments to the local populace, forming a critical medical safety net for the high-density residential clusters.

Educational Landscape Education in Sector 30 is facilitated through a dual system of public and private institutions. The Sindh Education Department operates multiple primary and secondary government schools, ensuring foundational education is accessible to the youth. This is supplemented by a robust sector of private academies and madrassahs, which cater to diverse educational needs and community preferences. The high concentration of school-aged children drives a constant demand for academic services and vocational training within the locality.

Utility Networks and Civic Infrastructure The sector is supported by an extensive infrastructure network designed to meet the needs of an urban environment. Electricity is provided through K-Electric's grid, powering both households and local commercial enterprises. The Karachi Water & Sewerage Corporation manages a pipeline network for water supply, supplemented by a dedicated tanker service. Waste management is formally handled by the Sindh Solid Waste Management Board, while the sewerage system consists of a mix of underground pipelines and localized drainage systems. Transportation is highly active, with a steady flow of buses, minibuses, and rickshaws connecting residents to the wider Karachi area, including future prospects for Bus Rapid Transit (BRT) expansion.

Karachi Port to Qayyumabad project (connecting via the Jam Sadiq Interchange) links directly to the Shahrah-e-Bhutto corridor. This connection will benefit Sector 30, Korangi, by diverting heavy commercial and port traffic away from local roads, cutting commute times, and improving industrial transport access to the M-9 Motorway.

Emergency Services and Community Facilities Civic amenities in Sector 30 include essential community spaces such as the Korangi No. 6 Graveyard and various smaller community-specific burial grounds. Safety and emergency response are facilitated by the Korangi Fire Station, which serves both the residential blocks and the adjacent industrial interests. The presence of these services ensures a level of preparedness for urban contingencies and provides the necessary civic framework for a high-density population.

Economic Profile and Surrounding Environment The socioeconomic identity of Sector 30 is inextricably linked to the nearby Korangi Industrial Area, one of the nation's most vital economic engines. This proximity provides vast employment opportunities in the textile, leather, and food processing sectors for the predominantly low- to middle-income households. The area is characterized by a blend of planned housing schemes and informal urban settlements, creating a diverse real estate environment where residential living and industrial productivity coexist. This synergy fosters a localized economy rich in small-scale commerce, service providers, and a steady labor supply for Karachi's industrial growth.

5. Public Consultation

Stakeholder consultation for the Falaknaz Tiara project is a fundamental pillar of the decision-making process, aimed at integrating the perspectives of all primary and secondary stakeholders. The core objective of this engagement is to address potential concerns, optimize project design, and bolster the project's overall legitimacy. By fostering a participatory and objective environment, these consultations ensure long-term project sustainability.

Initiating stakeholder engagement at the earliest stages of the project cycle is vital. This proactive strategy allows for the integration of vital feedback from both directly and indirectly affected communities, enabling the refinement of design, planning, and implementation strategies to ensure the project remains environmentally and socially responsible.

In compliance with the Sindh Environmental Protection Act of 2014, stakeholder consultation serves as a mandatory tool within the Environmental Impact Assessment (EIA) framework. This legal requirement ensures that ecological considerations and stakeholder interests are balanced through transparent engagement. For the Falaknaz Tiara EIA, consultation sessions were prioritized at the inception phase, successfully capturing the insights of diverse community groups and institutional stakeholders.

5.1 Objectives of Stakeholder Consultation

The public consultation framework for the Falaknaz Tiara project was designed to achieve the following:

- To transparently inform both primary and secondary stakeholders regarding the project scope and planned activities.
- To gather constructive feedback from all stakeholder groups to refine project execution.
- To define the assessment boundaries by identifying potential environmental and social impacts and developing robust mitigation measures.

5.2 Identification of Stakeholders

Stakeholders are defined as any individuals, groups, or institutions who may be impacted by the project or who possess the influence necessary to affect its outcome. For Falaknaz Tiara, these are classified as:

- **Primary Stakeholders:** Immediate neighbors, residents, and business owners in the project's direct vicinity.
- **Secondary Stakeholders:** Institutional intermediaries and regulatory bodies essential to the project's delivery and compliance.

Key identified stakeholders include:

- Sindh Environmental Protection Agency (SEPA)
- Sindh Building Control Authority (SBCA)
- Emergency services (Rescue 1122)
- Utility service providers
- Environmental NGOs (IUCN-Pakistan, WWF-Pakistan)
- Academic institutions

The engagement methodology employed a systematic approach, beginning with formal correspondence followed by dedicated follow-ups via digital channels and direct meetings.

5.3 Outcomes of Scoping Meeting: Observations and Directives

- *Strategic Significance and Economic Impact:* The meeting affirmed the project's status as a landmark shift toward sustainable urban living in Karachi, establishing a new benchmark for the national real estate sector. It was recognized as a critical economic driver capable of generating large-scale employment for a diverse workforce, including both specialized laborers and skilled engineers. Furthermore, the development is strategically positioned to leverage CPEC-related activities and rising foreign investment, serving as a primary catalyst for property value appreciation throughout the Korangi region.

- *Infrastructure and Connectivity (PTQ Corridor):* Discussions highlighted the strategic importance of the project location, specifically its proximity to the Karachi Port to Qayyumabad (PTQ) corridor and the Jam Sadiq Interchange. The scope includes key infrastructure developments designed to divert heavy commercial and port traffic away from local roads, thereby significantly reducing commute times. Enhanced accessibility to the M-9 Motorway was also identified as a vital factor in strengthening the project's role as a dual hub for industrial transport and residential convenience.

- *Safety, Resilience, and Fire Protection:* A core outcome of the meeting was the mandatory commitment to international safety benchmarks to mitigate risks inherent in high-rise developments. Technical directives require the installation of state-of-the-art firefighting systems on every floor and individualized fire alarms for every residential unit. The meeting formalized the requirement for a "secure sanctuary" model, prioritizing unobstructed emergency access and robust evacuation protocols.

- *Environmental Stewardship and Urban Ecology:* The scoping team mandated the integration of substantial green spaces within architectural plans to actively combat the urban heat island effect. A formal recommendation was adopted to prioritize the intensive plantation of native species, such as Neem and Amaltas, over invasive flora to ensure climate adaptation and water efficiency. These landscaping initiatives are intended to demonstrably improve the ecological health and aesthetic value of the Korangi area.

- *Water Conservation and Resource Management*: Given regional utility challenges, water security was designated as a primary operational priority. The meeting reached a consensus on implementing advanced conservation technologies and dedicated systems for sewage and greywater recycling. A specific directive was issued to utilize treated greywater for landscaping and other non-potable purposes to minimize the project's overall environmental footprint.

- *Community Responsibility and Civil Planning:* The finalized scope emphasizes civic responsibility, specifically regarding disciplined construction waste management and active support for local traffic education. The project is tasked with bridging the gap between existing infrastructure and future urban requirements through innovative engineering. The overarching long-term vision is to establish a sophisticated, mobile, and modernized community environment that serves as a model for Karachi's urban evolution.





Scoping Meeting



Meeting with Env. Dept - SMIU



Meeting with SEPA



Meeting with Director, PTQ Project

6. Screening of Potential Environmental Impacts and Mitigation Measures

This section delineates the methodology for screening environmental aspects and evaluating the potential impacts of project activities on physical, biological, and socioeconomic environments. The assessment integrates a rigorous literature review, stakeholder engagement, primary and secondary baseline data analysis, and expert judgment. Correspondingly, a comprehensive suite of mitigation measures has been proposed to reduce, minimize, or offset negative impacts, with a strong recommendation for their implementation. The report also accounts for the recent intensification of construction activities within the project's zone of influence.

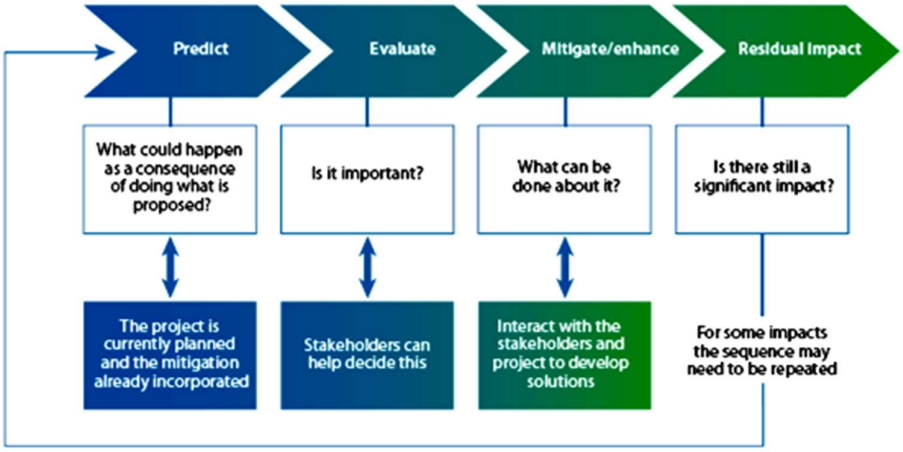


Figure 6.1: Impact Assessment Approach

6.1 Screening of Potential Environmental Impacts in Siting of Project

The project is strategically situated on a cleared, encumbrance-free site designated as Plot No. 25/B, Sector No. 30, Korangi, Karachi. The proponent is currently engaged in the formal process of securing the necessary permissions and No Objection Certificate (NOC) for architectural plan approval from the Sindh Building Control Authority (SBCA).

From an environmental standpoint, the microenvironment surrounding the site lacks sensitive receptors. The immediate vicinity and Corridor of Impact (CoI) contain no protected areas—such as wildlife sanctuaries, game reserves, or national parks—nor any documented archaeological, historical, or cultural heritage sites. Consequently, the project siting presents no significant environmental sensitivities. Furthermore, as the site is located within a mature

commercial zone devoid of ecologically significant species, the development will not result in substantial disturbances to local flora or fauna.

Upon completion, the project is projected to require a daily water supply of approximately 83,000 gallons and a power demand of roughly 3,500 KW. In alignment with global sustainability mandates and the United Nations Sustainable Development Goals (SDGs), the proponent has committed to generating 5–15% of the primary power requirement through an integrated solar energy system, thereby reducing the project's carbon footprint.

The development is designed as a self-contained edifice equipped with integrated backup power generation to ensure operational continuity. The infrastructure incorporates advanced water supply and treatment systems based on sustainable green building principles, engineered for optimal resource efficiency and minimal environmental discharge. Traffic management, both internal and external, will be executed in strict accordance with the regional Traffic Masterplan to ensure efficient circulation and mitigate congestion.

All financial liabilities regarding utility provisioning and area development have been settled with the relevant regulatory authorities. The site's strategic connectivity to the proposed PTQ corridor and the Bus Rapid Transit (BRT) network serves as a significant advantage, enhancing urban mobility and the quality of life for occupants. To ensure privacy and safety, the design includes a sophisticated 24-hour security framework. Ultimately, the project aims to establish a secure and premium residential and commercial hub, serving as a benchmark for successful urban development in a prime location.

6.2 Assessment of Impacts at the Construction and Operation stages

6.2.1 Demolition of Structure(s)

The Falaknaz Tiara site is an undeveloped, open parcel of land, entirely free of permanent structures both on-site and in the immediate vicinity. This condition facilitates the direct commencement of construction activities, beginning with comprehensive land development and excavation. Throughout the construction phase, the Sindh Environmental Protection Agency and the Sindh Building Control Authority will be consistently informed of all project proceedings.

6.2.2 Building Stability

The selection of an optimal foundation system is a complex engineering decision that depends heavily on the interplay between subsoil conditions, specific structural characteristics, and the magnitude of anticipated loads. For this project, the proposed building towers are designed to include one basement level per tower, positioning the base of the structures approximately 10 meters below the existing ground surface. Geotechnical investigations reveal a stratified soil profile characterized by significant variability, where upper strata consist of relatively weak clays that transition into more competent conglomerate and siltstone formations at greater depths. Due to these conditions, shallow foundations are deemed feasible only for auxiliary or light structures, whereas deep pile foundations are mandatory for the high-rise towers to ensure adequate load transfer to the stronger underlying strata.

Environmental and seismic factors also play a critical role in the structural design and longevity of the project. With the groundwater table situated at a depth of 10 feet, comprehensive waterproofing systems and robust corrosion protection measures are essential to safeguard the integrity of the substructure. Furthermore, the structural design must strictly adhere to the seismic requirements outlined for Zone 2B in the Building Code of Pakistan (2007). To address potential chemical aggressiveness in the soil and groundwater, durability measures—such as the utilization of GGBS cement and the provision of adequate concrete cover—must be implemented. Finally, to ensure safety during the development phase, excavation stability must be rigorously monitored, and it is highly recommended that all significant excavation activities be scheduled during the dry season to mitigate risks associated with water ingress and soil instability.

6.2.3 Erosion of Soil

Generally, the exposed soil after excavation for foundations is vulnerable to erosions and runoffs by rains. Such a situation is of temporary nature and short duration. It lasts only during the landscaping and concreting phase of construction at the site. Standards operating procedures have to be adopted to minimize the impact.

Mitigation Measure

- Covering the open soil during the construction phase till such time that the foundation will adequately concreted.

- Intensification in fugitive dust emission caused by erosion of soil will be mitigated by appropriate measures to reduce the level of impact to minor significance.

- Control of air emission during construction will be ensured by adopting sound operating procedures such as:

  - Exposed surface will be regularly wetted to effectively keep airborne dust levels to minimum
  - Stockpiles of fine material will be wetted or covered with tarpaulin especially during windy weather conditions.
  - Site workers will be mandated to wear dust masks especially during dry & windy weather conditions.

6.2.4 Excavation

Foundation construction will necessitate deep excavation, creating a void that could compromise the integrity of the surrounding soil. To ensure excavation stability and protect adjacent building foundations, soil retention measures, such as bracing or shoring, will be implemented during basement construction. Maintaining a dry excavation is critical, requiring work to be scheduled during the dry season. Given the groundwater table at approximately 10 feet, robust waterproofing is essential to prevent moisture ingress into both the retention system and the basement.

Mitigation Measure

- A comprehensive engineering study of sub-soil structures and an impact analysis of surrounding properties have been completed.
- The construction site has been securely fenced and obscured to minimize visual impact.
- During basement construction, excavation cuts will be continuously monitored, with shoring and bracing deployed as necessary. Excavation will be exclusively conducted during the dry season.
- The neighborhood will receive early notification of the project via prominent signage. The site will be fully enclosed to contain fugitive dust emissions within the immediate vicinity. IMC will conduct continuous monitoring of activity impacts, proactively addressing potential dust fall hazards for nearby residents.



Figure 6.2: Highrise basement water proofing with PVC geomembrane

6.2.5 Construction Waste

Typical solid waste generated during construction includes wasted concrete, steel and wooden scaffolding, cement bags, excavated soil, wood remains etc. It is envisaged that the quantum of earth fill material will be enormous since excavation will be deeper down. The waste generated has the potential to cause adverse impact on the surroundings if not properly managed and disposed to approved dumpsites by approved waste contractors. The excavated waste has the potential to block nearby drainage channels that could ultimately cause localized flooding, particularly during the monsoon season. Irregular storage of this waste may pose health hazards to the workers at site and more so to the school going children, residents and other sensitive receptors in the neighborhood. The following measures have been

recommended for management of the excavation procedure and disposal of construction wastes:

Mitigation Measure

- Site will be properly cordoned off by placing curtains all around.
- Unusable wastes will be transported to approved dumpsites.
- Excavated soil will be disposed of through the regular channel of the approved disposal contractor.
- Proper solid waste containers of adequate capacity will be provided to cater to daily waste generation.

6.2.6 Topography and Geology

Falaknaz Tiara, a proposed 44-storey high-rise situated on a compact site, requires meticulous planning and a comprehensive evaluation of soil load-bearing capacity to uphold structural integrity. Given the significant structural loads and the specific sub-soil profile, a pile foundation system has been mandated. This engineering approach ensures optimal stability for the tower while minimizing pressure on the underlying soil strata, thereby preventing adverse environmental impacts.

6.2.7 Air Quality

Construction Phase: Air Quality Impacts and Dynamics

During the development stage of Falaknaz Tiara, air quality degradation will primarily stem from two distinct sources: fugitive dust generated by intensive earthworks and gaseous exhaust produced by heavy construction machinery.

Dust Emission and Particulate Matter (PM) Dynamics: The mobilization of soil, debris pushing, grading, and the movement of heavy vehicles across unpaved surfaces act as primary catalysts for particulate matter emission. The environmental and health risks are particularly acute due to the site's proximity to sensitive receptors, including residential clusters, educational institutions, and healthcare facilities.

- *Health Implications:* The core concern involves particles smaller than 10 microns (PM10) and, more critically, fine particulate matter (PM2.5). These respirable aerosols penetrate deep into the human respiratory system, posing severe long-term health risks.

- *Environmental Nuisance:* Beyond health, dust deposition impacts the local ecosystem and the aesthetic quality of the neighbourhood, potentially leading to community grievances and damage to surrounding property furnishings.
- *Variability Factors:* The volume of dust is highly dependent on the daily scale of activity, soil moisture content, and prevailing meteorological conditions such as wind speed and humidity. The utilization of commercial ready-mix concrete will be prioritized to eliminate the need for on-site batching plants, thereby significantly lowering fugitive emission levels.

Mitigation Strategies for Dust Control

To maintain air quality within permissible limits, the following rigorous protocols will be implemented:

- *Intensive Suppression:* Continuous water sprinkling will be mandated throughout the excavation and earth-moving phases to ensure soil stabilization.
- *Stockpile Management:* All soil and aggregate storage piles will be kept moist through scheduled spraying, with compliance monitored strictly by the Independent Monitoring Consultant (IMC).
- *Logistics Control:* Any vehicle transporting fragile or fine-grained construction materials must be securely covered with tarpaulins to prevent wind-blown emissions during transit.
- *Occupational Health:* To safeguard site personnel, the provision and mandatory use of high-efficiency dust masks (PPE) will be strictly enforced.

Operational Phase: Long-term Emission Profile

Once Falaknaz Tiara is functional, the focus of air quality management shifts to localized emissions resulting from building utilities and resident logistics.

Sources of Operational Pollutants

- *Backup Power Systems:* In the event of grid failure, the operation of stand-by diesel generators will release combustion by-products.
- *Vehicular Traffic:* Concentrated emissions (COx, NOx, SO_2, and PM) will occur at entry/exit points and along the arterial Hussain Dadabhoy Road and Korangi Crossing Road due to the influx of residents and visitors.

Mitigation and Design-Based Controls

The project incorporates engineering and management solutions to neutralize operational emissions:

- *Equipment Optimization:* All generators and utility machinery will undergo periodic tuning and preventative maintenance to ensure peak combustion efficiency and minimal pollutant output.
- *Exhaust Dispersion:* Generators will be equipped with vertical stacks of appropriate height to facilitate the upward dispersion of pollutants, preventing hazardous concentrations at the ground level.
- *Microenvironment Isolation:* The building's architectural design integrates noise and air quality buffers. Mechanical zones will be segregated and fitted with abatement technologies to contain emissions within the facility's microenvironment.
- *Carbon Sequestration and Offsetting:* To balance the project's carbon footprint and water vapor emissions, the proponent will collaborate with the IMC to execute a comprehensive "Green Canopy" initiative. This involves the plantation of dense-canopy trees in adjacent public parks or green belts, enhancing the local carbon sink and improving urban aesthetics.

6.2.8 Construction Noise

The construction phase of the Falaknaz Tiara project, characterized by a G+44 storey structural framework, will involve the extensive use of heavy machinery and industrial equipment, leading to intermittent and fluctuating noise emissions. While these auditory disturbances primarily cause general annoyance during daylight hours, their impact during the night is far more critical, presenting a high risk of sleep disruption for the surrounding community. To contextualize these impacts, it is important to recognize how human hearing responds to sound pressure levels: a change of just 3 dB is distinctly audible to the average person, whereas an increase of 10 dB is perceived as a doubling of the sound's loudness. Given the scale of this development, the ambient noise environment will inevitably be elevated. Without the installation of appropriate perimeter fencing and acoustic coverings to contain sound, these elevated levels pose a significant threat to sensitive receptors in the vicinity, particularly school children, women, and visitors at nearby hospitals.

Current baseline data derived from 24-hour continuous monitoring at the site indicates that average noise levels already exceed 70 dB(A). This existing environment significantly surpasses the legal thresholds established by the Sindh Environmental Quality Standards, which require maximum sound levels to remain within 55 dB(A) for residential and 65 dB(A) for commercial areas during the day, and drop to 45 dB(A) for residential and 55 dB(A) for commercial zones at night. Consequently, the project must adopt rigorous mitigation strategies to align with these regulatory limits and minimize community impact.

Mitigation Measures

To address these challenges, the project will implement strict operational controls over all high-impact equipment to ensure compliance with the SEQS. Mitigation will prioritize reducing noise at the source through the selection of optimally designed machinery, supported by a schedule of diligent maintenance and prompt repairs to prevent mechanical degradation that leads to increased noise. Furthermore, sound emissions from logistics vehicles and backup power generators will be minimized through the mandatory use of high-efficiency silencers and mufflers. Finally, specialized noise-abating devices and acoustic barriers will be deployed across the site wherever technically feasible to further dampen the transmission of sound to the surrounding neighbourhood.

6.2.9 Water Sourcing and Sustainable Management

The procurement and management of water resources for the project have been strategically planned to ensure that construction and operational activities do not adversely affect the availability of water for local communities or the surrounding environment. Despite the anticipated manageable impact, the project is committed to the implementation of rigorous water conservation protocols across all lifecycle stages.

During the initial construction phase, water requirements will be fulfilled primarily via licensed tanker trucks, sourcing water from the Karachi Water & Sewerage Corporation (KW&SC) network. The logistical challenges typically associated with early-stage water supply have been significantly lessened by the utilization of commercial ready-mix concrete, which reduces on-site water demand. For the workforce, high-quality potable water will be procured exclusively from certified bottled water suppliers to ensure health and safety standards are met.

Upon transition to the operational phase, the Falaknaz Tiara Tower is estimated to consume approximately 83,000 gallons of water per day. Although the Proponent has completed all financial and administrative obligations to KW&SC for a dedicated connection, there remains a recognized risk due to the systemic delays surrounding the K-IV water supply project. In light of this regional water scarcity, the Proponent has taken the proactive step of commissioning professional hydrogeologists to perform an extensive groundwater investigation and site survey.

Given the inherent unreliability of the municipal supply in Karachi's urban core, the project emphasizes a transition toward self-sufficiency and sustainable management. This includes the rigorous exploration of wastewater recycling

technologies and the potential for treating groundwater to potable standards, ensuring long-term water security for the development.

Mitigation Measures

To address water scarcity and promote sustainability, the following mitigation measures will be strictly enforced:

- *Comprehensive Monitoring:* Meticulous records of all water consumption will be maintained during both the construction and operational phases to identify usage patterns and potential inefficiencies.
- *Integration of Smart Water Management:* The project will utilize sensor-based, automated control systems to monitor and optimize water flow for irrigation and restrooms. These systems provide real-time data analysis to eliminate unnecessary wastage.
- *High-Efficiency Fixtures:* The installation of water-efficient hardware is mandatory. This includes dual-flush toilets, water-efficient showerheads, and low-flow faucets (restricted to 1.5 gallons per minute), which collectively ensure a significant reduction in domestic water use without affecting user experience.
- *Greywater Recycling Infrastructure:* A dedicated greywater system will be deployed to collect and treat effluent from sinks and showers. This recycled water will be diverted for non-potable uses such as landscape irrigation and toilet flushing, drastically reducing the demand for fresh municipal water.
- *Rainwater Harvesting Systems:* The building design includes integrated collection, filtration, and storage systems for rainwater. This harvested water will serve non-potable requirements, including cooling systems and greenery maintenance.
- *Green Infrastructure Development:* The site will incorporate permeable pavements and green roofs to manage stormwater effectively. These features facilitate natural infiltration, reduce the burden on municipal drainage, and enhance the local microclimate.
- *Occupant Awareness and Education:* Regular awareness campaigns will be conducted for residents and tenants to foster a culture of water conservation and encourage sustainable behavioral patterns.
- *System Integrity Maintenance:* Water supply infrastructure will undergo scheduled inspections to detect and repair leaks immediately, preventing losses due to physical degradation.

- *Waste Stream Management:* Reject water from Reverse Osmosis (RO) units will be professionally treated and managed by SEPA-certified contractors to ensure compliance with environmental discharge standards.



Figure 6.3: Brine Treatment System

6.2.10 Soil Contamination

The contractor shall be mandated to follow the SOPs with regard to handling, storage, transfer, use and final disposal of contaminants, if any by the proponent. The following measures will be adopted during the construction stage to reduce the chances of soil contamination:

Mitigation Measure

- Fuel oils, lubricants, and chemicals will be stored in covered dyked areas, underlain with impervious lining. The construction site(s) will be provided with hard cover or tarpaulin lining to prevent contamination of soil.

- Washing and maintenance of vehicles and equipment will only be carried out at designated areas.
- Regular inspections will be carried out to detect leakages in construction vehicles and equipment.
- Appropriate implements such as shovels, plastic bags and absorbent materials will be made available near fuel and oil storage areas for removal of oil and contaminated soil.
- Contaminated soil will be removed and properly disposed after treatment such as by incineration by SEPA certified contractor.
- Hazardous Substances Rules 2014 will be adhered to for storage, transfer, subsequent handling and final disposal of any chemicals/substances during the operation stage.

6.2.11 Wastewater Generation & Disposal

Construction Phase: Wastewater Management

During the construction phase, effective management of domestic effluent is critical to prevent soil and groundwater contamination on-site and in surrounding areas. Wastewater will be directed into established drainage and sewerage systems.

Mitigation Measures:

- All generated wastewater will be routed to the nearest designated drain or sewerage system.
- Sewage will be kept separate from other waste streams to prevent cross-contamination.

Operation Phase: Wastewater Management

Upon becoming operational, Falaknaz Tiara is projected to generate approximately **Total sewage generation is estimated at 69,258–70,508 gal/day, while the recycled greywater (27,846–28,471 gal/day) will be allocated for landscaping and toilet flushing.**

Minor quantities of hazardous wastewater, such as oily water from maintenance activities, will also be produced.

Wastewater sources will include toilets, washrooms, laundries, and kitchens. To ensure compliance with SEQS values, it is crucial that other hazardous wastes (e.g., paints) are not mixed with this stream. Discharges from kitchens and canteens will be equipped with grease traps to separate oily waste, which will then be responsibly disposed of by SEPA-approved contractors.

A robust, at-source treatment system will be implemented, featuring separate plumbing lines for effective grey and black water segregation:

Grey Water Lines: These will collect effluent from sinks, showers, and kitchens. The goal is to recover this water for non-potable uses, including landscaping irrigation and toilet flushing.

Black Water Lines: Dedicated exclusively to sewage, these lines will direct wastewater to more intensive treatment processes, ensuring adherence to stringent environmental standards.

Comprehensive wastewater management is fundamental to the project's long-term operational sustainability. A well-designed and implemented system will efficiently mitigate potential negative environmental impacts associated with wastewater generation.

Mitigation Measures:

- All generated wastewater will be treated to meet SEQS compliance.
- Waste segregation protocols will be enforced to minimize solid waste ingress into the wastewater stream.
- Water conservation strategies will be actively employed throughout the facility to prevent wastage.

The nutrient content in recycled wastewater can be very beneficial for landscaping without further need to use fertilizer treatments. Consider using this valuable resource to irrigate any landscaping around industrial plant or commercial development. This simple method of wastewater uses cuts costs and helps the environment.

6.2.12 Wastewater Generation and Disposal

Construction Phase: Wastewater Management

During the construction phase of Falaknaz Tiara, the management of domestic effluent is a critical environmental priority to prevent the contamination of soil and local groundwater resources. The influx of labor and onsite technical staff will necessitate robust sanitation facilities. All wastewater generated during this phase will be strategically routed into the project area's established drainage and sewerage infrastructure to ensure zero surface runoff into surrounding areas.

Mitigation Measures

- All domestic wastewater will be collected and directed via temporary plumbing to the nearest designated municipal drain or sewerage connection point.
- Sewage will be strictly managed as a separate stream, ensuring no mixing with construction-related chemical waste or stormwater to prevent complex cross-contamination.

- Portable toilets or temporary septic units will be maintained regularly by authorized vendors until permanent connections are fully operational.

Operation Phase: Wastewater Management

Once Falaknaz Tiara is fully operational, it will generate a substantial volume of wastewater. The total sewage generation is estimated to range between 69,258 and 70,508 gallons per day. A significant portion of this (approximately 27,846 to 28,471 gallons per day) will be recovered as recycled greywater, specifically allocated for non-potable uses such as landscaping irrigation and toilet flushing.

The facility will also produce minor quantities of hazardous liquid waste, including oily water resulting from mechanical maintenance and utility operations. Primary wastewater sources will include residential toilets, washrooms, laundry facilities, and commercial kitchens. To ensure strict compliance with the Sindh Environmental Quality Standards (SEQS), it is mandatory that hazardous substances, such as paints, solvents, or chemicals, are not introduced into the domestic wastewater stream.

Treatment and Segregation Infrastructure: A state-of-the-art, at-source treatment system will be installed, utilizing a dual-plumbing strategy to facilitate the segregation of grey and black water:

- *Grey Water Systems:* Dedicated lines will capture effluent from sinks, showers, and kitchens. This water will undergo specialized treatment to be reclaimed for irrigation and flushing, reducing the project's overall freshwater demand.

- *Black Water Systems:* These lines are reserved exclusively for sewage, channeling high-load wastewater to intensive treatment processes to ensure effluent meets all environmental discharge standards before final disposal.

- *Grease Management:* Kitchens and canteens will be fitted with high-efficiency grease traps to intercept fats, oils, and grease (FOG). The collected oily residue will be removed and disposed of by SEPA-approved contractors to prevent clogging and environmental fouling.

Sustainability Benefits and Resource Recovery: The implementation of this comprehensive wastewater management system is fundamental to the project's long-term sustainability. The recycled wastewater will retain beneficial nutrient content, serving as a natural liquid fertilizer for the project's green belts and landscaping. By utilizing this resource for onsite vegetation, the project will

significantly reduce the need for synthetic fertilizers and lower operational costs while minimizing the environmental footprint.

Mitigation Measures:

- A monitoring regime will be established to ensure all treated effluent consistently meets SEQS parameters before discharge or reuse.
- Strict enforcement of waste segregation protocols will prevent solid debris from entering the plumbing system, thereby reducing the risk of blockages and system failures.
- The facility will adopt water-efficient fixtures and active conservation strategies to minimize the volume of wastewater generated at the source.
- Any hazardous or oily waste collected via traps will be handled exclusively by certified environmental contractors to ensure legal and safe disposal.

6.2.13 Solid Waste Generation and Management

Construction Waste: The project's construction phase is projected to generate various waste streams, primarily including packaging materials, construction scrap, excess building materials, debris, domestic waste from the construction camp, empty containers and drums, and used lubricants and chemicals.

Potential Impacts: Inadequate waste management during construction can lead to significant environmental and health impacts. These include adverse effects on worker health, soil contamination, and the degradation of surface and groundwater quality. Uncontrolled waste generation, lack of recycling, scattering of waste, improper handling, and inappropriate disposal can collectively result in severe environmental degradation. While construction waste is generally less reactive and chemically inert under normal conditions, its handling and storage still pose minor adverse impacts, which can be controlled through effective mitigation measures.

Mitigation Measures: A comprehensive waste management plan will be developed for the construction stage, incorporating the following key elements:

- Segregation at Source: Separate bins will be provided for different waste categories (plastic, paper, metal, glass, wood, cotton) to facilitate sorting.
- Recycling Program: Recyclable materials will be separated at the source and sold to SEPA-certified waste contractors for processing.

- Non-Hazardous Waste Disposal: Non-hazardous, non-recyclable wastes, such as kitchen waste, will be disposed of at landfill sites managed by municipal authorities or approved waste managers/contractors.
- Containment: No waste will be dumped outside the project site boundary.
- Hazardous Waste Management: Hazardous wastes will be separated, stored in designated, restricted-access areas with proper marking, and disposed of by approved waste contractors.
- Material Reuse/Disposal: Surplus construction materials, including partially filled chemical and paint containers, will be returned to suppliers. Inert construction wastes will be either used onsite as fill material or sold as scrap.
- Record Keeping: Detailed records of all waste generated, disposed of, recycled, or reused during construction will be maintained in a Waste Tracking Register.
- Personnel Training: Training will be provided to all personnel on waste identification, segregation, and management protocols.

Operation Phase Waste Management

During the operation phase, Falaknaz Tiara will generate solid waste from both residential and commercial units. The primary waste types will include food waste, paper, packaging materials, plastic bottles, and glass. Improper management and disposal of this waste pose a significant environmental threat, affecting occupants, visitors, and the surrounding environment.

Waste Generation Estimates: Based on general urban waste generation benchmarks:

- *Residential Units:* Waste generation is estimated to be approximately0.6 kg per person per day. This figure includes food waste, paper, plastic, and other household refuse.
- *Commercial Units:* Waste generation in commercial units is highly variable depending on the type of business, but a general estimate can range from0.5 to 2.0 kg per employee or user per day, or significantly higher volumes per establishment, primarily comprising packaging, paper, and general office/retail waste.

Current Challenges in Karachi:

Solid waste management remains a persistent challenge in Karachi. Despite various proposals and implementations, a comprehensive and lasting solution has been elusive. The Sindh Solid Waste Management Board (SSWMB) is currently pursuing a holistic approach, integrating multiple strategies to partially alleviate the severe impact of waste management issues in the city.

Mitigation Measures

To minimize the negative impacts of solid waste disposal during the operation phase, the following measures will be implemented:

- Grease Interceptors: Grease interceptors will be installed at all kitchen drains to effectively trap oil and grease, preventing their entry into the wastewater system.
- Centralized Collection: Solid waste will be collected efficiently via garbage chutes, leading to dedicated collection sites.
- Source Segregation: All solid waste will be segregated into organic and recyclable categories at the source to facilitate effective processing.
- Professional Management: A dedicated waste management contractor will be responsible for the handling and disposal of all solid waste.
- Implementation of Waste Management Plan: The developed solid waste management plan will be fully implemented, with established and organized facilities for waste collection, storage, and transportation.

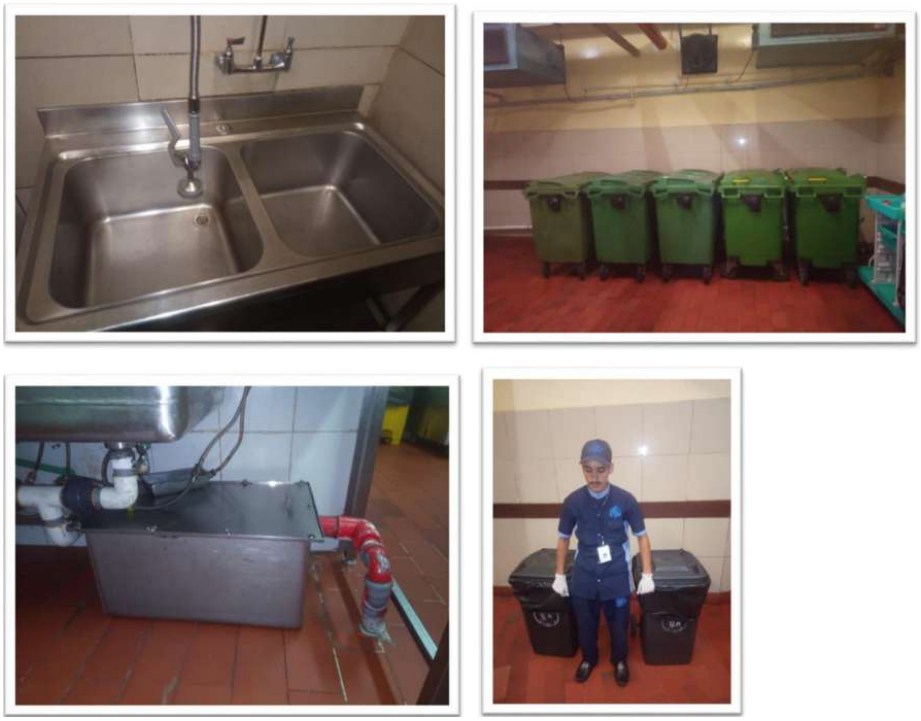


Figure 6.4: Waste Management System (Conceptual)

6.2.14 Traffic Impact Assessment & Proposed Mitigation Strategies

The Traffic Impact Assessment undertaken for the proposed Falaknaz Tiara mixed-use development indicates that the project is unlikely to result in significant adverse traffic impacts on the adjacent road network, provided that the proposed access, parking, and traffic management measures are fully implemented. The development is located at Plot No. 25-B, Sector 30, Korangi, Karachi, along the mid-block section of Hussain Dadabhoy Road / Korangi

Crossing Road. As no signalized or unsignalized junction is located immediately adjacent to the site frontage, the assessment focused on the mid-block road segment directly serving the development, together with the internal circulation system, parking provision, vehicle access gates, and queue formation at entry and exit points.

Baseline traffic conditions were established through a classified mid-block traffic count survey, with the PM peak hour identified as the governing traffic condition. The 2026 base year PM peak volume is recorded as 10,382 vehicles per hour, increasing to approximately 11,746 vehicles per hour in the 2031 design year after application of an annual growth rate of 2.5%. The observed traffic stream is characterized by a strong motorcycle component, particularly in the west-to-east PM peak direction, and this factor has been appropriately reflected in the capacity and microsimulation assessment. The study confirms that the PM peak remains the critical period for evaluating operational performance and potential impacts.

Traffic operations were assessed using HCM delay-based Level of Service criteria and Eclipse SUMO microsimulation for the 2026 base case, 2031 without-development scenario, and 2031 full-built scenario. The results show that the mid-block section continues to operate at Level of Service A in all assessed scenarios, with mean per-vehicle delays remaining well below the 10-second threshold. In the 2031 PM peak, the without-development and full-built scenarios show no material deterioration in operating conditions, indicating that the addition of project-generated traffic does not create a measurable adverse impact on the adjacent mid-block roadway under the tested assumptions.

The proposed development generates traffic from both residential apartments and commercial showroom uses. Residential trips are distributed across AM and PM peak periods, while commercial trips are considered primarily during the PM peak. Total site movements are assigned across three access gates serving basement parking, upper-level parking, and the rear-side access route. The three-gate arrangement distributes site traffic efficiently, reduces concentration at any single driveway, and provides operational flexibility for separating residential, visitor, service, and commercial movements where required by site management.

The parking assessment confirms that on-site parking provision is adequate. The project provides 482 project car parking spaces against a calculated requirement of 436 spaces, resulting in a surplus of 46 spaces, in addition to 190 dedicated visitor parking spaces and 498 motorcycle parking spaces. This level of provision is considered sufficient to accommodate resident, visitor, and commercial parking demand within the development boundary, thereby

reducing the risk of parking spillover onto Hussain Dadabhoy Road / Korangi Crossing Road or nearby local streets.

Queue length analysis at the proposed access gates further demonstrates that the access system has adequate processing capacity. Based on an assumed gate processing time of 5 seconds per vehicle, each gate has an estimated service capacity of 720 vehicles per hour. The degree of saturation remains low, approximately 0.21 in the AM peak and 0.24 in the PM peak, with negligible average queue lengths. Minor momentary queues may occur due to random vehicle platooning, but sustained queuing or spillback onto the public road is not expected under normal operating conditions.

Mitigation Measures

Based on the assessment, the overall traffic impact of the proposed development is considered low and manageable. evertheless, the following mitigation and management measures are recommended for inclusion in the EIA commitments:

- *Access and Gate Management:* Maintain all three access gates in operational condition during peak periods. Ensure that gate processing remains efficient to prevent any obstruction of the public carriageway and implement security-gate staffing during peak hours.

- *On-Site Circulation and Signage:* Provide clear internal directional signage and lane markings for resident, visitor, motorcycle, and commercial parking areas. Designated on-site areas must be established for visitor drop-off, deliveries, and service activities.

- *Operational Controls:* Prohibit informal roadside parking as well as loading and unloading along the site frontage. It is essential to maintain adequate sight distance and ensure that driveway approaches remain unobstructed.

- *External Coordination:* Coordinate with relevant traffic and municipal authorities should future changes in corridor traffic conditions necessitate additional frontage management measures.

Detailed report on Traffic Impact Assessment is attached at Annex.

To effectively mitigate and manage potential traffic impacts during the construction phase, the following detailed measures will be rigorously implemented:

- *Optimized Haulage and Delivery Schedule:* To significantly reduce daytime traffic congestion and minimize disruption to regular commuter flows and local residents, all heavy construction vehicle movements, including the

delivery of materials and the removal of spoil or waste, will be primarily confined to late-night hours. Specifically, these activities will be scheduled to occur between [e.g., 10:00 PM and 5:00 AM], when ambient traffic volumes are at their lowest. Any critical deliveries or necessary vehicle movements outside of these hours will require prior approval and will be managed under strict traffic control protocols to minimize impact.

- *Prohibition of Pressure Horns:* To prevent excessive noise pollution and avoid disturbing local communities, particularly during late-night operations, the fitting and use of pressure horns on all project vehicles are strictly prohibited. Vehicle operators are mandated to use standard horns only when absolutely necessary for safety warnings, in accordance with applicable traffic regulations. This measure aims to maintain a quieter environment around the construction site.

- *Regulated Vehicle Speed Enforcement:* Strict speed limits will be imposed and rigorously enforced for all project vehicles operating both within the designated construction site and on all public access roads leading to and from the site. Clear and prominent signage indicating these speed limits will be strategically placed. All drivers of project vehicles will receive mandatory briefings on safe driving practices and adherence to posted speed limits. This measure is crucial for enhancing safety for construction personnel, pedestrians, and other road users, as well as for minimizing dust generation and reducing noise levels caused by speeding vehicles. Monitoring mechanisms will be employed to ensure compliance.

- *Comprehensive Traffic Management Plan (TMP):* A detailed and dynamic Traffic Management Plan will be developed, implemented, and continuously monitored throughout the entire construction duration. This plan will encompass:

    - *Designated Access and Egress Routes:* Clearly defined and approved primary and secondary routes for all construction vehicles, strategically selected to bypass sensitive areas such as residential zones, school vicinities, and high-traffic commercial districts wherever feasible.

    - *Temporary Traffic Control Measures:* Deployment of appropriate temporary traffic control devices, including advanced warning signs, directional signage, barricades, cones, and flashing lights, to safely guide both vehicular and pedestrian traffic around the construction zone and any temporary obstructions.

    - *On-site Traffic Controllers:* Stationing of trained and certified flag persons or traffic controllers at key access points, busy intersections,

and temporary road diversions to manage traffic flow efficiently, especially during periods of heavy vehicle movement or critical construction activities.

- *Stakeholder Communication:* Establishing clear channels for regular communication with local traffic authorities, emergency services, and the public to disseminate timely information regarding significant traffic pattern changes, temporary road closures, or anticipated delays.

- *Emergency Vehicle Access:* Ensuring that unimpeded access for emergency vehicles is maintained at all times through careful planning and coordination.

The TMP will undergo periodic reviews and updates based on evolving site conditions, observed traffic patterns, and feedback from local stakeholders and regulatory bodies.

- Dedicated Parking and Staging Areas: Sufficiently sized and clearly delineated parking areas will be provided both within the construction site boundaries and in designated adjacent locations. These facilities will be organized to accommodate different categories of project vehicles, including:

  - *Worker Parking:* Secure and easily accessible parking for construction personnel's private vehicles.

  - *Heavy Equipment Staging:* Designated zones for the temporary parking and staging of heavy machinery, specialized equipment, and plant.

  - *Loading and Unloading Bays:* Specific, well-marked bays designed for the efficient loading and unloading of material delivery trucks, positioned to minimize interference with public thoroughfares.

All designated parking areas will be adequately illuminated, regularly maintained, and clearly signed to ensure orderly vehicle placement and safe access.

- *Strict Prohibition of Roadside Parking:* Parking of any project-related vehicles, including worker vehicles, delivery trucks, or idle equipment, alongside public roads or within unauthorized areas is strictly prohibited at all times. This stringent measure is critical to maintaining unhindered traffic flow, ensuring clear lines of sight for all road users, preventing obstructions, and upholding local traffic ordinances. Non-compliance with this directive will result in immediate corrective action and may lead to

disciplinary consequences for the responsible vehicle operators and contractors.

With these mitigation measures in place, the proposed development is expected to operate without causing significant deterioration in traffic flow, road safety, parking conditions, or access performance at the adjacent mid-block section. The project is therefore considered acceptable from a traffic and transportation perspective, subject to continued implementation of the recommended access, parking, and traffic management controls during construction completion, commissioning, and operational phases.

6.2.15 Fire Hazards and Life Safety

Given the critical nature of fire safety in high-rise developments, the proponent has integrated comprehensive life safety strategies informed by contemporary fire incidents. The design follows a multidisciplinary approach: architects have detailed evacuation routes, fire stairs, refuge areas, and fire-rated internal separations; structural engineers have specified fire-retardant materials for structural integrity; and MEP consultants have engineered active systems for robust detection and management.

Mitigation Measures

The following integrated safety measures have been implemented:

- **Active Life Safety Systems:** The infrastructure incorporates automatic sprinklers, standpipes, fire detection and alarm systems, fire suppression mechanisms, and lobby/stairwell pressurization.
- **Fire Detection and Alarm Systems:**
    - Localized smoke and heat detection.
    - Comprehensive sprinkler detection with zoned flow switches.
    - Strategically placed manual call points.
    - Voice-activated evacuation signaling.
- **Fire Suppression Systems:**
    - Full-coverage automatic sprinkler systems.
    - Standardized fire standpipe and hose systems.
- **Fire Management and Control:**

- Advanced smoke management and pressurization systems.
- Redundant emergency electric power and automatic elevator recall.
- Integrated communication/alarm notification systems.
- A dedicated Central Fire Command Center.

- **Active Smoke Control Measures:**
  - Sprinkler-based fire control.
  - Pressurization of designated escape routes.
  - Installation of electromagnetic door closures.
  - Active depressurization of the fire floor (extracting at 12 air changes per hour).
  - Automatic shutdown of air handling units on non-affected floors.

Technical Specifications and Standards

- *Pressurization and Ventilation:* Emergency staircases utilize pressurization systems designed in accordance with NFPA 92 standards. These systems, along with smoke control fans, are linked directly to the automatic fire alarm. The pressurization units are roof-mounted and feature duty/standby redundancy. Airflow is modulated via variable speed fans to accommodate pressure changes caused by opening doors.
- *Lobby Protection:* Elevator lobbies are maintained under slight pressure during normal operation for ventilation. In emergencies, air supply is increased to ensure necessary pressurization levels to prevent smoke ingress.
- *Water-Based Suppression:* The building features a comprehensive automatic sprinkler system fed by dedicated pumps. Following NFPA 14 guidelines, a combined standpipe system (Class I-II standards) serves both sprinklers and hose systems. Class III standpipe outlets are located at every floor level within required stairways.
- *Compliance and Monitoring:* All building areas are protected by automatic sprinklers designed per NFPA 13 and local codes. The system includes zone

valves connected to an analog addressable fire alarm and detection network.

- *Water Storage:* To prevent water stagnation, fire water storage is integrated with domestic water tanks, ensuring a fresh and reliable supply for emergency use.

6.2.16 Energy Consumption and Management

During the construction phase, onsite power requirements will be met through diesel-powered generators. For the operational phase, the primary power source will be the K-Electric grid. To ensure continuity of operations during grid failures or emergencies, a backup diesel generator will be integrated into the facility's infrastructure. The reliance on non-renewable energy sources for power generation entails significant economic costs and environmental impacts, specifically the emission of greenhouse gases and pollutants such as COx, SOx, and NOx. Consequently, energy efficiency and the implementation of best management practices in architectural design are essential to minimize the project's carbon footprint.

Mitigation Measures

- Generators must be mounted on isolated or stand-alone foundations equipped with high-quality anti-vibration pads or packing to minimize structural noise.
- Exhaust systems for generators must be engineered to channel emissions away from sensitive receptors, ensuring they do not create a nuisance for the surrounding neighborhood.
- Generator installation locations shall follow a strict priority order: basement, rooftop, ground floor, and finally front or back offsets. Selection must prioritize the minimization of communal disturbance.
- The project proponent is required to provide a centralized standby power solution for the entire building; individual tenant or resident generator installations are strictly prohibited.
- Adherence to a rigorous preventative maintenance schedule is mandatory to optimize fuel efficiency, extend equipment lifespan, and reduce pollutant discharge levels.

6.2.17 Materials Selection

General specification/details have been worked out in respect of type of structures, concrete, and all other materials required for the Construction of Falaknaz Tiara Project. The following measures will be adopted to ensure sustainable development of the Project:

Mitigation Measures

- The structures and materials will, in the construction stage, conform to recommended standards and follow standard practice of civil works.
- Materials including paving stones, crush, gravel and sand will be brought from commercial quarries located in Sindh province. Environmentally sound materials and goods will be selected, with priority being accorded to products meeting national and international standards.
- Traditionally well-tried materials and components will be selected and selection of construction materials would be based on sustainable source.
- The production, use and disposal of building materials during the construction stage of Falaknaz Tiara will utilize considerable amount of energy and resources; all attempts will be made towards efficient consumption and minimization of wastage of water, energy and materials
- Best practice of energy efficiency will be adopted in the building design. The Project building would be constructed with high level of thermal insulation
- The environmental impacts arising from selection of building materials and components would take account of the environmental issues during the materials selection process, and introduce Recycling strategies such as Reuse and Reduction of Wastewater.

6.2.18 Disturbance to Wildlife

The project site does not have any wildlife habitat or endangered species. Therefore, no significant impacts are envisaged on the wildlife during the project construction and operation phase.

6.2.19 Socio-economic Environment: Potential Impacts and Mitigation

The Health, Safety, and Environment (HSE) framework is a foundational element of the Environmental Management Plan (EMP). Ensuring the project's environmental performance requires the proponent to strictly adhere to EMP

guidelines, while the contractor must enforce Standard Operating Procedures (SOPs) for all construction activities.

Historical data indicates that construction hazards often arise when workers are left to manage their own safety. Accidents are frequently localized to unprotected sites and involve personnel lacking proper safeguards. Consequently, HSE protocols must address even minor potential impacts to prevent escalation. Key social and safety concerns during construction typically include:

- Inadequate communication with stakeholders regarding project timelines.
- Poor site cordoning, allowing unauthorized access.
- Non-compliance with Personal Protective Equipment (PPE) requirements by the crew.
- Lack of specialized hazard awareness training for various project stages.
- Supervisory negligence in enforcing established HSE procedures and SOPs.

In dense urban environments, safety risks are significantly magnified. To mitigate these, strict compliance with HSE procedures is mandatory, and all incidents resulting from non-compliance must be meticulously recorded to protect both the workforce and the general public. The contractor is responsible for maintaining comprehensive HSE and SOP records and must implement the following measures:

- *Traffic Management: Establish alternative routes and detours to distribute traffic flow, ensuring local residents and associations are notified of all diversions.*
- *Public Communication: Utilize media outlets, including newspapers and local cable TV, to broadcast work schedules and alternative routing information.*
- *Site Transparency: Install clear information boards at the site detailing the project name, costs, schedules, contractor contact information, and grievance redressal mechanisms.*
- *Site Security: Prevent public entry by installing robust barricades and warning signs, supported by 24/7 security personnel.*

- *PPE Enforcement: Provide and mandate the use of all necessary PPE, including helmets, gloves, boots, masks, and safety harnesses for high-altitude work.*
- *Standardization: Document and display codes of conduct and SOPs for every construction phase.*
- *Expert Oversight: Retain a dedicated Environmental, Health, and Safety (EHS) expert on-site.*
- *Training: Conduct mandatory on-site health and safety training for all personnel.*
- *Incident Reporting: Maintain regular records and ensure prompt reporting of any accidents to the relevant authorities.*
- *Community Coordination: Work closely with traffic authorities and community organizations to minimize temporary inconveniences.*
- *Infrastructure Maintenance: Keep service roads in optimal condition and deploy personnel to manage traffic flow effectively.*

Socio-economic Benefits: The project is expected to be a significant driver of local employment. Approximately 400 jobs will be created during the construction phase, with continued opportunities during operations. These roles include facility management for Falaknaz Tiara, staff for individual unit and shop owners, security teams, and domestic support.

The majority of this workforce will be sourced locally, representing a major positive impact. Table 6.1 details these benefits across both macro and micro environments, highlighting how the project will elevate the commercial status and lifestyle of the local community while promoting broader economic growth.

Table 6.1: Nature and Degree of Positive Socioeconomic Impacts

Nature of Positive Impact	Degree of Impact	Description
I. Construction Phase		
Job Opportunities	Positive	Creation of unskilled, semi-skilled, and skilled labor positions and service provider roles.
Broad Economic Impact	Positive	Stimulates local businesses through the procurement of materials and specialized services.
II. Operation Phase		

Job Opportunities	Major Positive	Long-term employment across managerial, supervisory, and support staff levels.
Quality of Life	Major Positive	Establishes a secure environment for social, cultural, and commercial engagement.
Environmental Enhancement	Major Positive	Improves the macroenvironment through the development of public parks and greenbelts as part of corporate social responsibility.

6.2.20 Cultural Resources

There are no protected or otherwise cultural or archaeological sites in the corridor of impact of the project site and hence no impact of the project will occur on cultural or archaeological resources. However, close coordination will be maintained with all relevant stakeholders during the planning and construction phase of the project.

6.2.21 Environmental Impact Assessment and Screening

The following environmental screening checklist evaluates the potential impacts of the Falaknaz Tiara Project on various ecosystem components.

Screening Questions	Yes	No	Remarks
A. Project Siting			
Is the project area...?			
Densely Populated?	√		The project aligns with the SBCA densification plan.
Heavy with Development Activities?		√	Current densification policies have facilitated such developments.
Adjacent to or Within Environmentally Sensitive Areas?		√	Located outside the identified corridor of impact.
Cultural Heritage Site?		√	Located outside the identified corridor of impact.
Protected Area?		√	Located outside the identified corridor of impact.
Wetland?		√	Located outside the identified corridor of impact.
Mangrove?		√	Located outside the identified corridor of impact.
Estuarine?		√	Located outside the identified corridor of impact.
Buffer Zone of Protected Area?		√	Located outside the identified corridor of impact.
Special Area for Protecting Biodiversity?		√	Located outside the identified corridor of impact.

Bay?		√	Located outside the identified corridor of impact.
B. Potential Environmental Impacts			
Will The Project Cause...?			
Impacts on the sustainability of sanitation, solid waste systems, and urban service interactions?		√	The proponent has contributed significantly to the augmentation of local utility services.
Deterioration of environmental conditions due to rapid urban growth and waste generation overloading natural/manmade systems?	√		Road densification has not fully accounted for centripetal pressures, risking localized congestion. A strategic, cumulative solution is required.
Degradation of land and ecosystems (wetlands, coastal zones, forests)?		√	No such degradation is envisaged.
Dislocation or involuntary resettlement of people?		√	No resettlement is required.
Dislocation of indigenous or disadvantaged communities?		√	No indigenous communities are affected.
Degradation of cultural property or loss of heritage/tourism revenue?		√	No impact on cultural property is envisaged.
Occupation of floodplains or steep hillsides by squatters/low-income groups?		√	No such occupation or exposure to health hazards is expected.
Water resource depletion or degradation of surface/groundwater quality?		√	Not envisaged; strict conservation and management practices will be implemented.
Air pollution due to urban emissions?		√	Impacts are expected to be minor.
Social conflicts between local and external construction workers?		√	No conflicts are expected.
Road blocking and temporary flooding due to rainy season excavation?		√	Not expected; mitigation through management practices will be applied if necessary.
Noise and dust from construction activities?		√	Impacts will be minor, localized, and minimized through best management practices.
Traffic disturbances due to material transport and waste removal?		√	Major activity will use state-of-the-art technology and managed access routes via standard BMPs.
Temporary silt runoff due to construction?		√	Not anticipated; mitigation measures will be ready if the situation arises.
Public health hazards (smog, thermal inversion, occupational pollution)?		√	Not envisaged; management will follow the Environmental Management Plan (EMP).

Water depletion or quality degradation?		√	Water availability constraints will be managed through conservation and BMPs.
Over-extraction of groundwater (subsidence, salinization, lowering water table)?		√	Excessive use will be avoided through strict conservation practices.
Contamination of water resources due to improper waste disposal?		√	Integrated solid and liquid waste disposal systems will prevent contamination.
Pollution of receiving waters and depletion of marine/fishery resources?		√	Disposal systems will be implemented to safeguard all receiving water bodies.
Overall Rating		**√**	**No significant impacts identified.**

7. Environmental Management Plan (EMP)

7.1 Introduction

The Environmental Impact Assessment (EIA) for the Falaknaz Tiara Project evaluates the potential environmental consequences associated with its construction and operational phases. This comprehensive study analyzes both beneficial and adverse outcomes at every stage of development. To address identified negative impacts, the EIA proposes a suite of mitigation strategies, including physical engineering controls, management protocols, rigorous monitoring, and financial compensation where applicable. These interventions are informed by environmental sensitivity analysis, historical data, international case studies, legal frameworks, and specialist consultations.

For any residual impacts that persist after mitigation or areas where predictive uncertainty exists, specific monitoring programs have been established. These measures draw upon expert recommendations and global best practices for similar development projects. To ensure these strategies are executed effectively, a detailed Environmental Management Plan (EMP) is provided in this section. This EMP aligns with the statutory requirements set forth in the Pakistan Initial Environmental Examination and Environmental Impact Assessment Review Procedures, 2014.

7.2 Objectives

The EMP provides a delivery mechanism to address adverse impacts, to enhance project benefits and to introduce standards of good practice to be adopted for all project works. The primary objectives of the EMP are to:

- Outline mitigation measures recommended in the EIA and define the responsibility and timing for the implementation of these measures;
- Develop a monitoring mechanism and identify parameters that can confirm the implementation of the mitigation of these measures;
- Define roles and responsibilities of the project proponent for the implementation of EMP and identify areas where these roles and responsibilities can be shared with other stakeholders and
- Define the requirements necessary for documenting compliance with the EMP and communicating it to all concerned regulatory agencies.

For each impact, or activity, which could give rise to an impact, the following information is presented:

- Mitigation measure that will be implemented;

- The person(s) responsible for ensuring full implementation of the mitigation measure;
- The parameters that will be monitored to ensure effective implementation of the mitigation measure;
- The timing for the implementation of the action, to ensure that the objectives of the mitigation are fully met.

7.3 Structure of the EMP

The EMP consists of the following section.

- Legislation and guidelines.
- Organizational structure and roles and responsibilities;
- Mitigation management's matrix
- Environmental monitoring programme
- Change management plan
- Training Programme

7.4 Legislation and Guidelines

The EIA provides a comprehensive analysis of all relevant legislation and guidelines pertaining to the project (Chapter 3). Milson Properties commits to conducting both the construction and operational phases in strict accordance with these regulatory frameworks, seeking expert guidance whenever necessary. Furthermore, Milson Properties will ensure that all key project management personnel are thoroughly familiar with these legal requirements. Detailed Sindh Environmental Quality Standards (SEQS) regarding municipal and industrial effluents, specific industrial gaseous emissions, motor vehicle exhaust, and noise levels are documented in Chapter 2.

7.5 Organizational Structure and Roles and Responsibilities

7.5.1 Organizational Structure

The proposed project includes the following main organization:

- Milson Properties as the project proponent and owners of the EMP.
- The construction contractor as well as contractor required during the operational phase (e.g. waste contractor) as the executors of the EMP.

These organizations will have the following roles and responsibilities during the project activities.

7.5.2 Roles and Responsibilities

7.5.2.1 General

Project Proponent: As project proponents, Milson Properties will be responsible for ensuring the implementation of the EMP. A person holding a senior position will be responsible for the overall environmental performances during the proposed project. The person will be responsible for ensuring the implementation of the EMP by Milson Properties and all project contractors. The proponent's Site Representative (SR) will be responsible of implementation of the EMP and liaison with project contractor and stakeholders at site regarding environmental issues during the construction phase. Further the person holding a senior position in Milson Properties will also be responsible for monitoring EMP's compliance and provided technical support in environmental issues.

Project Contractors: For the proposed project, Milson Properties will appoint construction contractor for different field operations. Various contractor will also be hired during the operation phase of the building (e.g. waste contractors) The contractors will be responsible for implementation of, or adherence to, all provisions of the EIA and the EMP and with any environmental and other codes of conduct required by Milson Properties. Overall responsibility of the contractor's environmental performances will rest with the person holding the highest management position within the contractor's organization reporting to their management. The contractor's site managers will be responsible for the effective implementation of the EIA and the EMP. The contractor's HSE officers will have functional responsibilities to ensure implementation of or adherence to the EMP.

7.5.3 Planning and Design of the Operations

Details of project Activities: Details of the project activities are provided in section 2 of the EIA report. Following approval of the EIA, any changes to the proposed activities will be handled through the change Management Plan provided in this EMP.

Approvals: Obtaining Approval from SEPA will not relieve the proponent of other legal obligation and hence Milson Properties and project contractors will obtain all other relevant clearance and necessary approvals required by the Government of Sindh and Relevant departments prior to commencing the respective operations.

Contractual Provision: 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 contractor with Milson Properties.

7.5.4 Implementation of the Operation

Co-ordination with Stakeholders: Milson Properties will ensure that co-ordination with the regulators and other stakeholders on environmental & social matters is maintained throughout construction & operation phase of the project.

Monitoring: Milson Properties and the contractors will ensure that monitoring of the project activities is carried out throughout the project. The Milson Properties' site representative will monitor all project activities during the construction and operation phase. He will keep a record of all non-conformances observed and report these along with actions to Milson Properties management in Karachi for further action. The site representative will also report any impacts anticipated along with his recommendation for further action.

Emergency Procedures: Milson Properties and the contractors will prepare contingency plans to deal with any emergency situation that may arise during the construction and operation e.g. major oil spills, medical evacuation & communicate these to the regulatory agencies if required by these agencies.

Approvals: The project contractor will be responsible for obtaining all relevant approvals such as approvals for waste contractors, water source & others as specified in Mitigation Management Matrix.

Trainings: The project contractors will be responsible for the selection and training of their staff capable of completing the project activities properly and efficiently. The contractors will be responsible for providing training to their staff members according to the training programme. The training programme is discussed briefly in section 7.7.3.

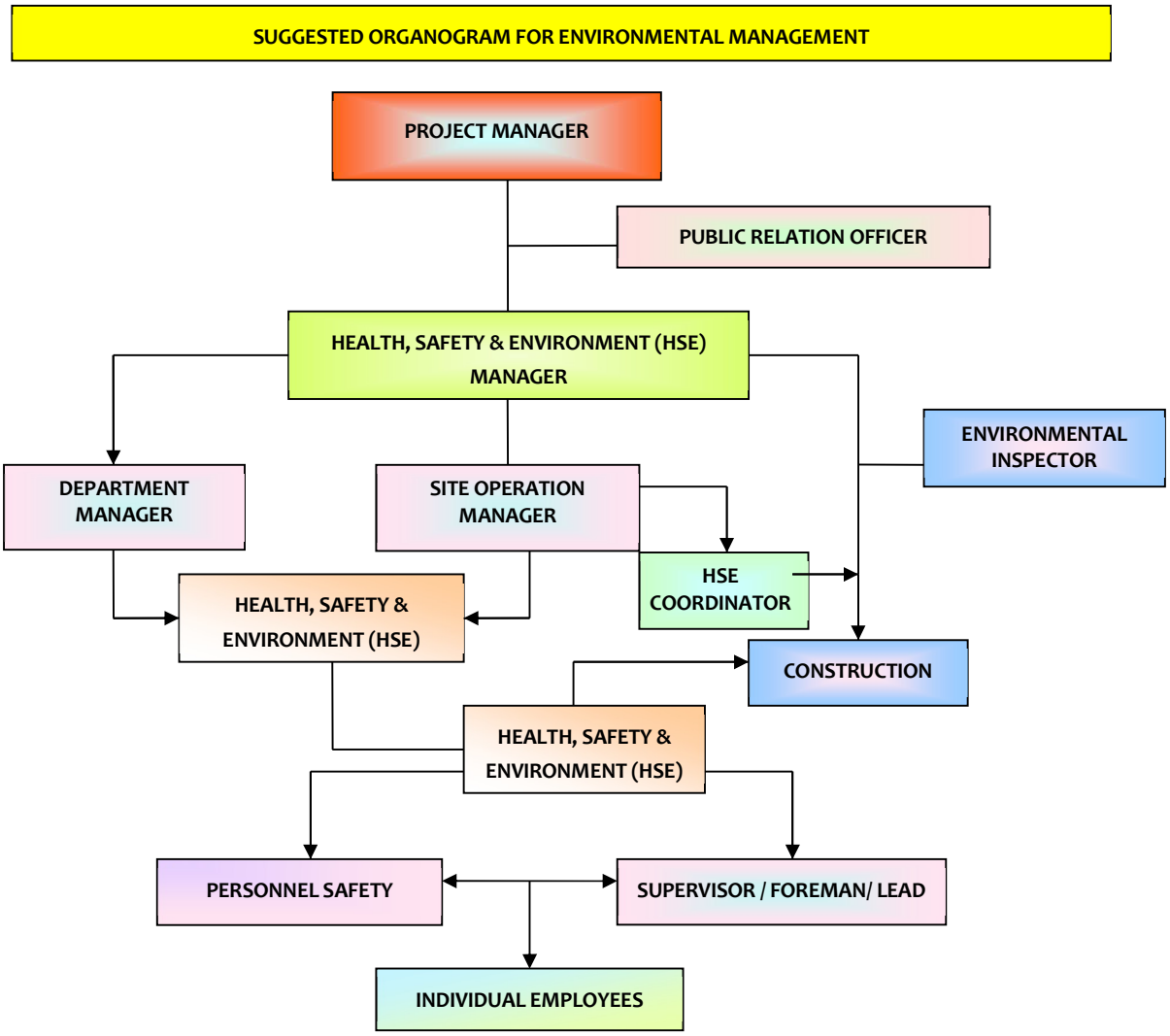
7.5.5 Communication and Documentation

Milson Properties and the contractor will ensure that the communication and documentation requirements specified in the EMP are fulfilled during the construction and operation phase.

Change Management: The EIA for the proposed operation recognizes that changes in the operation or the EMP may be required during the project activities and therefore provides a Change Management Plan to manage such

changes. Overall responsibility for the preparation of change management statements will be with Proponent's site representative.

Restoration: Milson Properties along with the construction contractor will be responsible for the final restoration of work areas.



7.5.6 Maintenance of the EMP

EMP needs to be revised on timely basis to keep up-to-date as per the requirements comes up regularly. Therefore, outlining the responsibilities and activities associated with the maintenance of the EMP is essential. The responsibilities of the Construction Contractor should be detailed and

procedures for requesting EMP revisions should also be outlined. EMP revision procedures must include requirements for notification of the appropriate government and municipal agencies so that their role is also played in the overall management process.

7.5.7 Environmental Health and Safety Management System (EHSMS)

A robust Environmental, Health, and Safety Management System (EHSMS) is fundamental to addressing EHS concerns by defining mitigation strategies and industry-best management practices. This system facilitates a comprehensive framework for assessing, monitoring, identifying, and controlling all potential hazards and risks emerging throughout the construction and operational stages of the proposed project. It is imperative that a definitive Health and Safety Plan (HSP), incorporating established Health and Safety Rules, is strictly implemented and enforced. This plan must clearly delineate roles, responsibilities, and anticipated outcomes regarding EHS management to ensure that project-related activities do not result in significant adverse impacts on the environment or public health.

The proponent bears the primary responsibility for safeguarding the health and safety of both the workforce and the general public during all project phases. By leveraging expert personnel and the EHSMS, all potential health and safety risks will be rigorously identified and evaluated. Subsequently, these findings will guide the development of comprehensive planning, organizational structures, and standardized operating procedures tailored to the various facilities and activities of the project.

7.5.8 Health and Safety during Construction Phase

Worker Health & Safety Management Plan will also be outlined to implement mitigation measures and best management practices. The plan should be implemented to ensure that no significant adverse worker's health and safety issues arise from activities associated with the construction of the project.

Potential hazards for workers in construction include:

- Falls (from heights);
- Trench collapse;
- Scaffold collapse;
- Electric shock and arc flash/arc blast;
- Failure to use proper personal protective equipment; and
- Repetitive motion injuries.

7.5.9 Health and Safety during Operation Phase

Falaknaz Tiara Tower is a high-rise development, occupational health & safety issues need to be addressed managed effectively to ensure safety of its occupants in particular and the neighborhood in general.

7.5.10 Emergency Response Plan

Emergency may be defined as a sudden event causing or has the potential to cause serious human injury and/or environmental degradation of large magnitude. The best "cure" for an emergency is, of course, "prevention". The probable emergency situation can be:

- Serious fire or explosion
- Major gas leakage.
- Major Spillage
- Natural calamity such as heavy rain, flooding, dust storm or earthquake, cyclone, etc.
- Bomb threat or any sabotage/terrorist activity
- Any other incident involving all or large part of the premises and its workers.

Emergency Response Management is provided by a small team of senior managers (the "Control Committee") who in turn will direct all response activities through the Emergency Response Unit.

7.5.10.1 Objectives

The main objective of this plan is to establish the general guidelines for the actions to be taken in the event of fires, explosion, emergencies, accidents, disasters and sabotage, aimed at minimizing their effects and consequences, in order to protect:

- The lives of own or third-party personnel present in the building's facilities.
- The lives of the occupants of the Project
- The lives of the nearby residents & communities coming into the direct influence of the building's area.
- The lives of the ecological systems located in the surroundings of the Project.

7.5.10.2 Emergency Response Manuals

Based on the Risk Assessment the proponent should prepare written emergency preparedness and response plans/procedures for the building to

cover emergency situations that could occur. It may be required that Emergency Response Manuals will be developed for various situations arising.

Emergency Contact Numbers			
S. #	**Description**	**Image**	**Contact #**
01	Fire Brigade		16,
02	Ambulance		2022, 1015
03	Civil Hospital		
04	Police Station		15,
05	K Electric		
06	SSGC		1199
07	Air Port		114
08	Railway		117

7.5.11 Environmental Compliance Reporting, Documentation and Trainings

The management will be responsible for the regular audit and review of the environmental management and monitoring plan. This will include both on-site auditing and review of performance reports. Additional onsite inspections and investigations will be undertaken in the event of significant environmental incidents. These will be undertaken in conjunction with the IMC.

The management will participate in the audits & inspections and investigations. The management will also be responsible for regular review of the environmental performance of the site and site personnel, and for the reporting on the implementation of commitments made in the EMP.

In particular, there will be:

- Periodic audit reports.
- A review and improvement of the EMP.

Management recognizes that periodic external compliance audits and inspections will be made through a third-party consultant (IMC) to monitor, assess and validate the level of performance and compliance pursuant to the commitments made in the accepted Environmental Management Plan. The monitoring reports shall also be submitted to Sindh Environmental Protection Agency (SEPA) on regular intervals.

Training: It an important step for the implementation of the EMP. All the employees will require to be trained to work appropriately on EMP. EHS Manager will organize trainings in consultation with HSE Officer. It will make sure that employees understand the Environment, Health and Safety issues. Trainings should be arranged on regular basis with notification that it should be attended all respective employees.

HSE Officer will determine the training requirements during both phases. Induction will be the basis of all training courses for contractor & subcontractor during construction phase.

Trainings identified in EMP are given below:

- Site induction course
- Training for emergency response and preparedness
- Training for familiarization with site environmental controls

Specific environmental training for relevant employees e.g. daily checks to maintain controls, waste minimization, etc.

7.5.12 Mitigation Management Matrix

The Mitigation Management Matrix will be used as a management & monitoring tool for implementation of the mitigation measures required by the EIA. Mitigation management matrix for construction and operation is provided in the table 7.1. The matrix lists down the following:

- The mitigation measure recommended in the EIA.

- The person/organization directly responsible for adhering to or executing the required mitigation measures.
- The parameters which will be monitored to ensure compliance with the mitigation measures;
- The timing at which the mitigation or monitoring has to be carried out.

It is highlighted that although responsibilities for executing and monitoring mitigation measures have been delegated to different persons, Milson Properties will hold the primary and overall responsibility for ensuring full implementation of the EMP.

7.5.13 Environmental Monitoring Programme

The objective of the environmental monitoring during the construction & operation phase will be as follows:

- To check compliance of the contractors with the EMP by monitoring activities of the project on a daily basis. This will be called compliance monitoring.
- To monitor impacts of the operation in which there has been a level of uncertainty in prediction such as impacts of noise, water abstraction etc. and to recommend mitigation measures if the impacts are assessed to be in excess of or different from those assessed in the EIA. The aim will be attained through effects monitoring.
- To achieve these objectives, the following monitoring programme will be implemented.

7.5.14 Compliance Monitoring

Compliance monitoring will be carried out to ensure compliance with the requirements of the EIA and to document and report all non-compliances. The mitigation management matrix provided in the EMP will be used as a management and monitoring tool. The contractor's HSE Officer will be responsible for monitoring the compliance of their organization with the relevant EMP requirements. Proponent's site representative will monitor the contractor's compliance and will also ensure that during construction each activity system and plan is in place for effective compliance monitoring. The site representative will make regular checks on the contractor's works; keep records of all non-compliances observed during the execution of the project activities; & the details of all remedial actions taken to mitigate the project impacts.

7.5.15 Effects Monitoring

The effects monitoring requirements have been detailed in Table 7.2. An independent monitoring consultant (IMC) will be responsible to carry out the required effects monitoring during the construction and operation phase.

7.5.16 Environmental Reporting

7.5.16.1 Final Monitoring Report (Construction Phase)

After completion of construction phase, a final monitoring report will be prepared by site representative. The report will include the following:

- Introduction.
- Details of the Project Activities.
- Natural Resource used during the Project.
- List of Non-compliances recorded.
- Effects of the Project on Communities and Physical Resources.
- Photographic Records
- Approvals provided during the project
- Change managements statements
- Trainings
- Conclusions

7.5.16.2 Annual Environmental Monitoring Reports (Operation Phase)

The project proponent shall prepare annual environmental monitoring reports describing the conduct of the operation phase for project along with details of the effects monitoring conducted annually during the operation phase of the project. The report shall be submitted to SEPA.

7.5.17 Change Management Plan

The EIA for the proposed project recognizes that changes in the operation or the EMP may be required during the construction and operation and therefore provides a Change Management Plan to manage such changes. The management of changes is discussed under two separate headings, Additions to the EMP and Changes to the Operation and the EMP.

7.5.17.1 Changes to the EMP

The EIA and the EMP have been developed based on the best possible information available at the time of the EIA study. However, it is possible that during the conduct of the proposed operation additional mitigation measures

based on the findings of environmental monitoring during the operation may have to be included in the EMP. In such cases following actions will be taken:

- A meeting will be held between Milson Properties and the concerned project contractors. During the meeting, the proposed addition to the EMP will be discussed and agreed upon by all parties.
- Based on the discussion during the meeting, a change report will be produced collectively, which will include the additional EMP clause and the reasons for the addition.
- The report will be signed by all parties and will be filled at the site office: A copy of the report will be sent to Milson Properties and contractor head offices.
- All relevant project personnel will be informed of the addition.

7.5.17.2 Changes to the Operation

The change management system recognizes three orders of changes:

First Order: A first order change is one that leads to a significant departure from the project described or the impacts assessed in the EIA and consequently require a reassessment of the environmental impacts associated with the change. Example of first order change includes change in location of proposed project. Action required in this case will be that the environmental impacts of the proposed change will be reassessed by Milson Properties and sent to the SEPA for approval.

Second Order: A second order change is one that does not result in the change in project description or impacts that are significantly different from those detailed in the EIA. Example of second order changes includes extension in the site area. Action required for such changes will be that Milson Properties will reassess the impact of the activity on the environment & specify additional mitigation measures if required and report the changes to SEPA.

Third Order: A third order change is one that does not result in impacts above those already assessed in the EIA, rather these may be made site to minimize the impact of an activity such as:

- Increase in project workforce;
- Change in layout plan.

The only action required for such changes will be to record the change in the Change Record Register.

7.5.18 Environmental Training and Capacity Building

A comprehensive environmental training program shall be integrated into the project's Environmental Management System (EMS). This initiative aims to foster general environmental awareness among all project personnel, ensuring alignment with sustainability goals.

7.5.18.1 Program Objectives

The primary goal of the training program is to guarantee that the requirements stipulated in the Environmental Management Plan (EMP) are thoroughly understood and implemented across all project phases. These sessions serve as a vital communication channel for disseminating specific environmental restrictions and mitigation measures identified in the Environmental Impact Assessment (EIA) and EMP.

7.5.18.2 Organizational Roles and Responsibilities

Contractors hold the primary responsibility for delivering environmental training to all staff regarding potential project-related environmental risks. They are tasked with organizing these sessions, developing schedules, and ensuring the mandatory attendance of all relevant personnel.

7.5.18.3 Training Implementation Framework

Training sessions covering environmental awareness, EIA findings, and EMP protocols will be conducted throughout the project lifecycle.

Training Documentation: Contractors must maintain a detailed training log, which shall record the following information for each session:

- Training Topic
- Date, Time, and Venue
- Lead Trainer/Instructor
- List of Participants and Attendance Records

Training Needs Assessment (TNA): Beyond the scheduled sessions, additional or specialized training will be triggered based on the following criteria:

- Induction of a significant percentage of new staff or personnel.

- Recurrence of specific non-compliance issues, necessitating refresher courses.
- Occurrence of any environmental incident or accident, regardless of severity.
- Mobilization of new contractors or sub-contractors.
- Commencement of high-risk or novel project activities and processes.

Instructional Materials: Contractors are responsible for developing tailored training modules. These materials must cover general environmental sensitivity, specific EIA/EMP requirements, and operational restrictions. Content must be customized to suit the specific roles and technical levels of the targeted staff groups.

Table 7.1: Environmental Management Plan (EMP)

S.#	Impact and Mitigation Measures	Responsibilities	Monitoring	Timing
1	**Land Use and Soils**			
1.1	The construction activities will be planned to minimize disturbance to soil	Milson Properties, CC	Monitoring compliance	During construction phase
1.2	To the extent possible, equipment and materials would be staged in areas that have already been disturbed	Milson Properties, CC	Monitoring compliance	During construction phase
1.3	Movement of construction equipment will be restricted to work areas only to avoid unnecessary disturbance to soil	CC	Monitoring compliance	During construction phase
1.4	Routes of water tankers, dumper trucks and other project vehicles will be monitored for any signs of soil disturbance & road damage	CC	Monitoring compliance	During construction phase
1.5	Area showing signs of unstabilised soil conditions will be compacted and watered	Milson Properties, CC	Monitoring compliance	During construction phase
1.6	The assessment of settlement within affected zone due to dewatering	CC	Monitoring compliance	During construction phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	will be conducted prior to dewatering			
1.7	The affected zone of settlement, if identified will be monitored regularly during dewatering activity	Milson Properties, CC	Monitoring compliance	During construction phase
1.8	Proper drainage will be provided to construction camp, construction site, especially near excavations and around proposed facility	CC	Monitoring compliance	During construction phase
1.9	Vehicle speed will be regulated and monitored to avoid excessive dust emissions	CC	Monitoring compliance	During construction phase
1.10	Total land uptake by the project and associated facilities will be kept to the minimum	Milson Properties, CC	Monitoring compliance	During construction phase
1.11	Periodic trainings will be provided to drivers on mitigation measures related to off-road travel and speed limits	Milson Properties, CC	Check training records	During construction phase
1.12	The Project will have a storm water collection system so that the storm water effluent has minimal sediment load	Milson Properties, CC	Monitoring compliance	During design and construction phase
2	**Air Quality**			
2.1	**Dust Emissions**			
2.1.1	Water will be sprinkled daily or when there is an obvious dust problem on all exposed surfaces to suppress emission of dust. Frequency of Sprinklings will be kept such that the dust remains under control, particularly when wind is blowing towards the receptors	CC	Monitoring compliance	During construction phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
2.1.2	Dust emissions from soil piles and aggregate storage stockpiles will be reduced by appropriate measures. These may include: → Keeping the material moist by sprinkling of water at appropriate frequency → Erecting windshield walls on three sides of the piles such that the wall project 0.5m above the pile, or → Covering the pile, for example with tarpaulin or thick plastic sheets, to prevent emissions. → Locating stock piles out of the wind direction	CC	Monitoring compliance	During construction phase
2.1.3	All roads within the proposed Project will be paved as early as possible after the commencement of construction work. Until the roads are paved, they will be sprinkled regularly to prevent dust emission. Other temporary tracks within the site boundary will be compacted and sprinkled with water during the construction works.	Milson Properties, CC	Monitoring compliance	During construction phase
2.1.4	Project traffic will maintain a maximum speed limit of 20km/hr on all unpaved roads within the proposed site area.	Milson Properties, CC	Check speed of vehicles	During construction phase
2.1.5	Construction materials that are susceptible to dust formation will be transported only in	CC	Monitoring compliance	During construction phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	securely covered trucks to prevent dust emission during transportation.			
2.1.6	The exposure of construction workers to dust will be minimized by provision of dust masks.	CC	Check for dust masks	During construction phase
2.2	**Vehicle Equipment and Exhaust.**			
2.2.1	All vehicles, generators and other equipments used during the construction will be properly tuned and maintained in good working condition in order to minimize emission of pollutants.	Milson Properties, CC	Maintenance records of vehicles and equipments	During construction phase
2.2.2	The stack height of the generators during operation phase will be vented through vertical stacks to minimize exposure at ground level	CC	Monitor compliance	During construction phase
2.3	**Generator Emissions**			
2.3.1	The option of using natural gas as fuel in the back-up generators should be explored.	Milson Properties, Generator Vendor	Monitor compliance	During design phase
2.3.2	The generator will be properly tuned and maintained in good working condition in order to minimize exhaust emissions	Milson Properties	Check maintenance records	During operation phase
2.3.3	The diesel generator should be used for a very short duration with the power switched back to the main power supply as quickly as possible.	Milson Properties	Monitoring compliance	During operation phase
2.3.4	NOx emission reduction techniques should be employed on a regular basis	Milson Properties	Monitor NOx emissions	During operation phase
3	**Construction Noise**			

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
3.1	Reduce equipment noise at source by proper design, maintenance and repair of construction machinery and equipment	Milson Properties, CC	Check maintenance records	During construction phase
3.2	Minimize noise from vehicles and power generators by use of proper silencers and mufflers.	Milson Properties, CC	Monitor compliance	During construction phase
3.3	Use noise-abating devices wherever needed and practicable.	Milson Properties, CC	Monitor compliance	During construction phase
4	**Water Sourcing**			
4.1	A complete record of water consumption during construction and operation phase will be maintained	Milson Properties, CC	Check water consumption records	During construction and operation phase
4.2	If a new water well is to be installed, it will be designed to abstract water preferably from deep aquifer not being used by local communities	Milson Properties, CC	Monitor compliance	During construction phase
4.3	Water conservation program will be initiated to prevent wastage of water.	Milson Properties, CC	Monitor compliance	During construction and operation phase
4.4	The water supply lines will be checked and repaired for leaks in order to reduce wastage of water.	Milson Properties, Maintenance Contractor	Check maintenance records	During operation phase
4.5	Recycle grey water for use for toilet flushing	Milson Properties	Monitor compliance	During operation phase
4.6	Ensure that water efficient sanitary fittings are used throughout the development e.g. low flush toilets, water	Milson Properties, CC	Monitor compliance	During construction and operation phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	efficient shower heads, and aerators on faucets			
5	**Soil Contamination**			
5.1	Fuels, lubricants, and chemical will be stored in covered bounded areas, underlain with impervious lining	Milson Properties, CC	Monitor compliance	During construction phase
5.2	Maintenance of vehicles and equipment will only be carried out designated areas. The area will be provided with hard surface or tarpaulin will be spread on the ground to prevent contamination of soil	Milson Properties, CC	Monitor compliance	During construction phase
5.3	Vehicles will only be washed at designated areas.	CC	Vehicle Inspection record	During construction phase
5.4	Regular inspections will be carried out to detect leakage in construction vehicles and equipment	Milson Properties, CC	Check inspection / maintenance records	During construction phase
5.5	Appropriate arrangements, including shovels, plastic bags and absorbent materials, will be available near fuel and oil storage areas	CC	Monitor compliance	During construction phase
5.6	Contaminated soil will be removed and properly disposed after treatment such as incineration etc.	Milson Properties, CC	Monitor compliance	During construction phase
6	**Traffic**			
6.1	Heavy traffic during construction phase will come to the project site during late night hours.	Milson Properties, CC	Traffic record	During construction phase
6.2	Project vehicles shall not be fitted with pressure horns	CC	Monitor compliance	During construction phase
6.3	During construction, regulate speed of vehicles	Milson Properties, CC	Monitor compliance	During construction phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
6.4	Designated parking areas will be provided for different type of project vehicles within and around the project site	Milson Properties, CC	Monitor compliance	During construction phase
6.5	Manage vehicle movement to avoid traffic jam and long queues	Milson Properties, CC	Monitor compliance	During construction and operation phase
6.6	Prepare, implement and monitor the traffic management plan	Milson Properties	Monitor compliance	During construction and operation phase
6.7	Vehicles to use designated parking areas during operational phase.	Milson Properties	Monitor compliance	During operation phase
6.8	Parking of vehicles alongside the road should be prohibited at all time.	Milson Properties	Monitor compliance	During construction and operation phase
7	**Wastewater Generation**			
7.1	**Wastewater Generation During Construction**			
7.1.1	Wastewater generated at the campsites will be stored temporarily in septic systems comprising of septic tanks from where it will be routed to a nearest drain/sewerage system.	Milson Properties, CC	Monitor compliance	During construction phase
7.1.2	At the time of restoration, septic tanks will be dismantled in place and backfilled with at least 1m of soil cover above the surrounding natural surface level	CC	Monitor compliance	After the completion of construction phase
7.2	**Wastewater Generation During Operation**			
7.2.1	The grey water will be recycled to be re-used again in toilets and kitchens etc.	Milson Properties	Monitor compliance	During operation phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
7.2.2	Black water will be temporary stored in septic tanks and will be discharged into a nearby out fall sewer via trunk sewer	Milson Properties, CC	Monitor compliance	During design, construction & operation phase
7.2.3	Waste segregation measures would be employed to minimize entry of solid waste into the wastewater stream	Milson Properties	Monitor compliance	During operation phase
7.2.4	Water conservation strategies will be employed to avoid wastage of water	Milson Properties	Monitor compliance	During operation phase
8	**Solid Waste Generation and Management**			
8.1	**Solid Waste Generation and Management During Construction**			
8.1.1	Separate bins will be placed for different types of wastes- plastics, paper, metal, glass, wood, and cotton.	Milson Properties, CC	Monitor compliance	During construction phase
8.1.2	Recyclable material will be separated at source. The recyclable waste will be sold to waste contractors for recycling	Milson Properties, CC	Monitor compliance	During construction phase
8.1.3	Non-hazardous non-recyclable wastes such as construction camp kitchen wastes will be disposed off in landfill site through municipal administration or approved waste contractor.	Milson Properties, CC	Monitor compliance	During construction phase
8.1.4	No waste will be dumped at any location outside the proposed site boundary.	Milson Properties, CC	Monitor compliance	During construction phase
8.1.5	All hazardous waste will be separated from other wastes. Hazardous wastes will be stored in designated areas with restricted access and	Milson Properties, CC	Check hazardous waste disposal records	During construction phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	proper marking. Hazardous wastes will be disposed of through approved waste contractors.			
8.1.6	Surplus construction materials including partially filled chemical and paint containers will be returned to suppliers. Inert construction wastes will be disposed of onsite as fill material or sold as scrap to contractors.	Milson Properties, CC	Check waste records	During construction phase
8.1.7	Records of all waste generated during the construction period will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register	Milson Properties, CC	Check waste record register	During construction phase
8.1.8	Training will be provided to personnel for identification, segregation, and management of waste	Milson Properties, CC	Check training records	During construction phase
8.2	**Solid Waste Generation and Management During Operation**			
8.2.1	Waste generation will be minimized by adopting waste management strategy of reduce, reuse and recycle	Milson Properties	Monitor compliance	During operation phase
8.2.2	A waste management plan will be prepared, implemented and monitored for the safe collection, storage and treatment/disposal of the building waste	Milson Properties	Monitor compliance	During operation phase
8.2.3	Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged	Milson Properties	Check waste tracking register	During operation phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	on a Waste Tracking Register			
8.2.4	Training will be provided to personnel for identification, segregation, and management of waste	Milson Properties	Check training records	During operation phase
8.2.5	All inert and non-hazardous construction wastes will be disposed to the existing tipping sites within or outside of the city limits	Milson Properties, Waste Contractor	Monitor compliance	During operation phase
8.2.6	Hazardous wastes will be disposed through waste management contractors who will identify suitable disposal options for these wastes such as recycling, metal recovery, incineration or bioremediation etc.	Milson Properties, Waste Contractor	Monitor compliance	During operation phase
8.2.7	Various waste containers for waste collection should be placed at appropriate locations in the building	Milson Properties	Monitor compliance	During operation phase
8.2.8	Waste storage areas should be located within the facility and sized to the quantities of waste generated, with the following design considerations: Hard, impermeable floor with drainage, and designed for cleaning/disinfection with available water supply, Secured by locks with restricted access designed for access and regular cleaning by authorized cleaning staff and vehicles Protected from sun, and inaccessible to animals/Rodents Equipped with appropriate lighting	Milson Properties, CC	Monitor compliance	During operation phase

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
	and ventilation Segregated from food supplies and preparation areas Equipped with supplies of protected clothing, and spare bags/containers			
9	**Seismicity**			
9.1	No specific mitigation measures other than to construct the facility in accordance with UBC Zone 2B	Milson Properties, Structure Design Consultant, CC	Monitor compliance	During project design phase
10	**Sustainability**			
10.1	Best practice of energy efficiency will be incorporated in the building design	Milson Properties, CC	Monitor compliance	During project design phase
10.2	Buildings to be constructed with high levels of thermal insulation	Milson Properties, CC	Monitor compliance	During project design phase
10.3	Ensure that HVAC system, refrigeration equipment and fire suppression equipment do not contain HCFC's or Halons	Milson Properties, CC	Monitor compliance	During project design phase
11	**Socio-Economic Impacts**			
11.1	Deliveries should be programmed to arrive and routed to minimize disturbance to sensitive receptors	Milson Properties, CC	Monitor compliance	During construction phase
11.2	Designated parking areas will be provided for different type of project vehicles within and around project site	Milson Properties, CC	Monitor compliance	During construction & operation phase
11.3	Areas earmarked for amenity and commercial infrastructure will not be used for other purposes after construction	Milson Properties	Monitor compliance	During construction & operation phase
11.4	Employment preference will be given to residents of the project area	Milson Properties, CC	Monitor compliance	During construction

Table 7.1: Environmental Management Plan (EMP)				
S.#	**Impact and Mitigation Measures**	**Responsibilities**	**Monitoring**	**Timing**
				& operation phase
11.5	Local contractors will be given preference for hiring equipment and machinery during operation	Milson Properties, CC	Monitor compliance	During construction & operation phase
11.6	Ensure maximum quantity of water to be treated and reused in order to lessen its burden on the existing sewerage system.	Milson Properties	Monitor compliance	During design, construction & operation phase
11.7	Locals, surrounding business and city government are kept on the same page during all stages of the development of the project.	Milson Properties	Monitor compliance	During construction phase
11.8	A complaint register will be maintained on site during construction to record complaints of the nearby residents.	Milson Properties	Provision of complaint register	During construction phase

Table 7.2: Environmental Monitoring Plan					
Ambient Air Quality Sampling Plan					
Phase	**Parameters**	**Locations**	**Frequency**	**Duration**	**Standards**
Construction	SOx, NOx, CO, O_3, Smoke, PM_{10}	At the interface of project site and receptors	Twice Monthly	Continuous for 8 hours* in a full working day	NAAQS (USEPA)
Operation	SOx, NOx, CO, O_3, Smoke, PM_{10}	At the interface of project site and receptors	Quarterly	Continuous for 8 hours* in a full working day	SEQS (Pak EPA)
Drinking Water Quality Sampling Plan					
Stages	**Parameters**	**Locations**	**Frequency**	**Duration**	**Standards**
Construction	Heavy metals, TDS, TSS, pH,	Ground water source	Monthly	Grab sampling	WHO drinking water

Table 7.2: Environmental Monitoring Plan					
	Total Coliform, Faecal Coliform	and other sources			quality guidelines
Operation	Heavy metals, TDS, TSS, pH, Total Coliform, Faecal Coliform	Drinking water sources	Quarterly	Grab sampling	WHO drinking water quality guidelines
Wastewater Quality Sampling Plan					
Stages	**Parameters**	**Locations**	**Frequency**	**Duration**	**Standards**
Construction	BOD, COD, DO, TSS, TDS, pH, NO_3, SO_4, Oil & Grease)	Camp site discharge points into drains	Twice Monthly	Grab sampling	SEQS (Pak EPA)
Operation	BOD, COD, DO, TSS, TDS, pH, NO_3, SO_4, Oil & Grease)	Effluent from wastewater treatment plant	Twice Monthly	Composite sampling / Grab sampling	SEQS (Pak EPA)
Noise Level Sampling Plan					
Stages	**Parameters**	**Locations**	**Frequency**	**Duration**	**Standards**
Construction	Decibels [dB(A)Scale]	At the interface of project site & receptors	Twice Monthly	Continuous for 8 hours in a full working day	WHO Noise Guidelines
		7 m from the equipment at construction site			
Operation		At the interface of project site & facing road	Quarterly		SEQS for Noise (Pak EPA)
		7 m from the equipment at construction site			
Solid Waste					

Table 7.2: Environmental Monitoring Plan					
Stages	**Parameters**	**Locations**	**Frequency**	**Duration**	**Standards**
Construction	Waste generation rate, waste composition; recyclables and non-recyclables, hazardous waste	At main solid waste collection point from where the waste is transported from site	Monthly	24-hour sample collected during week days	EPA
Operation	Waste generation rate, waste composition; recyclables and non-recyclables, hazardous waste	At waste transfer facility of the project site prior to off-site disposal	Quarterly	24-hour sample collected during week days and holidays	EPA

Table 7.3: Sample Forms for Ambient Air Quality Monitoring Record						
Items		*Measured Value (Mean)*	*Measured Value (Max.)*	*SEQS*	*Remarks (Measurement Point, Frequency, Method, etc.)*	*Comments**
SO_2	Annual Average			80 µg/m³		
	24 hours			120 µg/m³		
NO_2	Annual Average			40 µg/m³		
	24 hours			80 µg/m³		
NO	Annual Average			40 µg/m³		
	24 hours			40 µg/m³		
CO	8 hours			5.0 mg/m³		
	1 hour			10 mg/m³		
Lead Pb	Annual Average			1.0 µg/m³		
	24 hours			1.5 µg/m³		
O_3	1 hour			130 µg/m³		
Suspended	Annual Average			360 µg/m³		
SPM	Annual Average			360 µg/m³		
	24 hours			500 µg/m³		

Respirable particulate matter PM_{10}	Annual Average			120 µg/m³		
	24 hours			150 µg/m³		
Respirable particulate matter $PM_{2.5}$	Annual Average			40 µg/m³		
	24 hours			75 µg/m³		

* (H=High, L=Low)

Table 7.4: Stack Emissions

CO, SO_x, NO_x, Smoke

Location	*S.#*	*Parameters*	*Date*	*Time (Hrs: Min)*	*Result (mg/Nm³)*	*SEQS (mg/Nm³)*	*Comments**
	1	CO				800	
	2	SO_x				1700	
	3	NO_x				600	
	4	Smoke				40% or 2 Ringlemann Scale or equivalent smoke number	
	5	PM_{10}				500	

* (H=High, L=Low)

Table 7.5: Sample Forms for Waste Water Quality Monitoring Record

Item	*Unit*	*Measured Value (Mean)*	*Measured Value (Max.)*	*SEQS*	*Remarks (Measurement Point, Frequency, Method, etc)*
pH	pH			6-10	
TSS (Total Suspended Solids)	mg/L			150	
TDS (Total Dissolved Solids)	mg/L			3500	
BOD5	mg/L			80	
COD	mg/L			150	
Oil and Grease	mg/L			10	
Phenols	mg/L			0.1	
Chloride	mg/L			1000	
Cyanide	mg/L			2	
Sulphate	mg/L			600	
Sulphide	mg/L			1.0	
Ammonia	mg/L			40	
Fluoride	mg/L			10	
Pesticides	mg/L			0.15	
Cadmium	mg/L			0.1	
Chromium	mg/L			1.0	

Copper	mg/L			1.0	
Lead	mg/L			0.5	
Mercury	mg/L			0.01	
Selenium	mg/L			0.5	
Nickel	mg/L			1.0	
Total Toxic metals	mg/L			2.0	
Zinc	mg/L			5.0	
Arsenic	mg/L			1.0	
Barium	mg/L			1.5	
Iron	mg/L			8.0	
Silver	mg/L			1.0	
Manganese	mg/L			1.5	
Boron	mg/L			6.0	
Chlorine	mg/L			1.0	
An-ionic detergents	mg/L			20	
Temperature	°C			40°≤ 3°	

Table 7.6: Sample Form for Noise Quality Monitoring Record

Location	*S. #*	*Date*	*Time (Hrs: Min)*	*Analysis Result [dB(A)Scale*	*SEQS [dB(A)Scale]**	*Comments***
	1				55 (Day) / 45 (Night)	
	2				55 (Day) / 45 (Night)	
	3				55 (Day) / 45 (Night)	
	4				55 (Day) / 45 (Night)	
	5				55 (Day) / 45 (Night)	
	6				55 (Day) / 45 (Night)	
	7				55 (Day) / 45 (Night)	
	8				55 (Day) / 45 (Night)	

** (H=High, L=Low)

Table 7.7: Sample Form for Drinking Water Quality Monitoring Record

Location	*Date*	*Parameters*	*Sindh Environmental Quality Standards (mg/l)*	*Analysis Result (mg/l)*	*Comments**
		Color	< 15 TCU		
		Taste	Non-objectionable/ Acceptable		
		Odor	Non-objectionable /Acceptable		
		Turbidity	< 5 NTU		
		Total Hardness as $CaCO_3$	< 500 mg/l		
		TDS	<1000		
		pH	6.5-8.5		

Table 7.7: Sample Form for Drinking Water Quality Monitoring Record					
		Aluminum (Al) mg/l	≤ 0.2		
		Antimony (Sb)	≤ 0.005		
		Arsenic (As)	≤ 0.05		
		Barium (Ba)	0.7		
		Boron (B)	0.3		
		Cadmium (Cd)	0.01		
		Chloride (Cl^-)	< 250		
		Chromium (Cr)	≤ 0.05		
		Copper (Cu)	2		
		Phenolic compounds	<0.0002		
		Cyanide ($CN)^-$	≤ 0.05		
		Fluoride (F)	≤ 1.5		
		Lead (Pb)	≤ 0.05		
		Manganese (Mn)	≤ 0.5		
		Mercury (Hg)	≤ 0.001		
		Nickel (Ni)	≤ 0.02		
		Nitrate ($NO_3)^-$	≤ 50		
		Nitrite ($NO_2)^-$	≤ 3		
		Selenium (Se)	≤ 0.01		
		Residual Chlorine	0.2-0.5 At consumer end 0.5-1.5 at source		
		Zinc (Zn)	5.0		
		All water intended for drinking (E.Coli or Thermo tolerant Coliform bacteria)	0.0 cfu/ 100 ml		
		Treated water entering the distribution system (Ecoli or thermo tolerant coliform and total coliform bacteria)	0.0 cfu/ 100 ml		
		Treated water in the distribution system (E.coli or thermo tolerant coliform and total coliform bacteria)	0.0 cfu/ 100 ml		

(cfu=Coliform Unit), * (H=High, L=Low)

Table 7.8: Sample Form for Solid Waste Monitoring Record

(Domestic/residential/commercial solid wastes)

Location: _____, Date: _____, Source: _____ (domestic/commercial)

Total Quantity (kg)	*Components*	*Weight (as discarded)*	*% by weight (as discarded)*	*Recyclables*	*Non-recyclables*	*Organic waste*
	Food/kitchen waste					
	Plastics					
	Metals					
	Paper					
	Textile/Rugs					
	Cardboard					
	Glass					
	Rubber					
	Other					
Total						

Generation Rate:

For domestic or residential units Total waste generated = _____ kg/capita/day

No of persons in units

For commercial units Total waste generated = _____ kg per unit area

Total floor area of unit

Summary:

- Total Waste Generated (as collected) = _____ kg
- Recyclable waste quantity = _____ kg
- Non-Recyclable waste quantity = _____ kg
- Organic waste quantity = _____ kg
- %age of Recyclables = _____ %
- %age of Non-recyclables = _____ %
- %age of Organic waste = _____ %
- Total waste sent for recycling = _____ kg
- Total waste sent for landfill = _____ kg

Comments:

_____

Table 7.9: Sample Form for Solid Waste Monitoring Record (Hazardous solid wastes)

Location: _____, Date: _____, Source: _____ (domestic/commercial)

Total Quantity (kg)	*Hazardous waste Components*	*Weight (as discarded)*	*% by weight (as discarded)*	*Characteristics (corrosive, toxic, explosive, etc.)*	*Non-recyclables (requiring disposal)*	*Recyclables*
Total						

Generation Rate:

Whichever of the following applies:

For domestic or residential units $\frac{\text{Total waste generated}}{\text{No of persons in units}}$ = _____ kg/capita/day

For commercial units $\frac{\text{Total waste generated}}{\text{Total floor area of unit}}$ =_____ kg per unit area

Summary:

- Total Waste Generated (as collected) = _____ kg
- Recyclable waste quantity = _____ kg
- Non-Recyclable waste quantity = _____ kg
- %age of Recyclables = _____ %
- %age of Non-recyclables = _____ %
- Total waste sent for recycling = _____ kg
- Total waste sent for disposal = _____ kg

Comments:

_____

7.6 Standard Operating Procedures (During Construction phase)

7.6.1 Wastewater/ Storm water management

(1) Purpose of Wastewater/storm water Management

The purpose of the adopted procedure is to provide guidelines and simplify the process of categorizing, quantifying, managing, and disposing of wastewater wherever and whenever arising during the project's construction phase. Wastewater management is a critical component of operating policies. Wastewater management includes the proper disposal / recycling and reuse of the wastewater generated during construction and operation phase.

(2) Scope

Wastewater as part of construction operation will be managed as per this procedure. An integrated wastewater management system for Falaknaz Tiara project is essential to reduce wastewater.

Substitute techniques must be investigated, including source reduction, recycling and reuse wherever possible with a view towards maximizing the benefits and minimizing the cost of each method of wastewater management.

(3) Procedure

Main concern to manage the wastewater is listed below:

- Eliminate wastewater production wherever possible.
- Minimize wastewater production.
- Recycle or Reuse
- Wastewater disposal in an environmentally safe manner through adequately designed facility
- Proper drainage of Storm water

a) **Wastewater Minimization:** Generation of wastewater will be minimized through the following steps taken by working personnel at the facility:

- Through efficient use of raw water (minimizing the wastewater).
- Reuse of wastewater after treatment.

b) **Storage and Handling:** Wastewater shall be stored/retained in specifically designed facility or storage tanks till proper treatment at sewage treatment plant is sought and subsequently disposed of.

c) **Segregation:** Wastewater used in construction will be segregated from wastewater originating from latrines used by construction staff.

d) Recycling: Reuse of wastewater is a best way to reduce the quantity of the wastewater that requires subsequent treatment and disposal. Construction wastewater may be reused in construction activity because it is generally Non-hazardous.

e) Treatment: Wastewater originates from latrines used by construction staff requires treatment through retention in septic tanks and through primary and secondary treatment processes.

f) Disposal: Proper disposal should be done following the treatment through discharge into water bodies or sewerage system where available.

(4) Wastewater Management Options

- All storm water run-off from construction sites will be inspected for the sediment load and may be directed to sedimentation basins to remove suspended solids (e.g., silt);
- Sewage may be collected and temporarily stored in tank(s) until it is transported to a designated wastewater treatment facility;
- Standard mobile sewage tankers may be engaged to collect and transport sewage from portable latrines and temporary storage tanks;
- Direct discharge will only be considered as a contingency option.

7.6.2 Solid Waste Management Plan

(1) Purpose

The purpose of this procedure is to provide guidelines and simplify the process of categorizing, managing and disposing of solid wastes. Waste management includes the proper handling, collection, storage, manifesting, transportation, and disposal/recycling of the solid waste generated. The procedure is designed to assist in the management's wide effort to provide protection to the environment and to comply with environmental laws and regulations regarding proper waste management.

(2) Scope

The waste management plan has been developed to ensure that the Management of solid waste generated as a result of the construction is consistent, efficient, and in conformance with the laws and regulations.

With respect to monitoring, the waste management sets out the following objective:

- To monitor and inspect waste management-related facilities and activities directly resulting from executing the scope of the contract in order to ensure compliance with the WMP. Guidelines for proper handling, categorization, recording, minimization, recycling and disposal of all types of waste associated with company operations and projects are part of this procedure.

(3) Definitions

a) Waste: Any material, for which no further use is intended, is considered a waste. It can be solid, semi-solid or liquid. Additionally, abandoned materials and materials intended to be recycled are considered wastes. It is very important to understand this concept, because even though something is going to be recycled, it must be managed as a waste until it is actually recycled.

b) Hazardous Waste: Waste is categorized as a hazardous waste if it has one or more of the following properties:

- Ignitability (flash point less than 60°C);
- Corrosivity (pH less than or equal to 2.0, or greater than or equal to 12.5);
- Reactivity (inherently unstable under ordinary conditions or when exposed to water);
- Irritability (when in contact with body causes inflammation)
- Toxicity (may cause risk of injury to health of organisms or the environment.)

c) Non-hazardous Waste: The wastes are categorized as non-hazardous wastes, if they do not possess any of the hazardous characteristics as defined above. However, non-hazardous waste may still present hazards to employees who handle them. All recommended safety and handling practices must be followed.

(4) Procedure

Priorities to manage the waste are listed below:

- Eliminate waste production whenever and wherever possible. Use the material only for its intended purpose on site
- Minimize waste production
- Reuse
- Dispose of waste through properly designed waste disposal facility.

a) Waste Minimization: To minimize waste, the following steps shall be taken by all personnel working on sites (during construction phase):

- Only the needed amount of materials shall be ordered. Before purchasing hazardous material, all alternatives for non-hazardous material should be explored.
- Prior consideration shall be given to the sizes of containers available when ordering products that could potentially generate waste. The intent is to avoid unused products and/or their containers from becoming wastes that require special handling.

b) Waste Categorization: All wastes generated at facilities shall be categorized in two major categories (i.e. Hazardous wastes and Non-hazardous wastes) as per the definitions in section above. Each category has different types of requirement for handling, storage and disposal.

c) Labelling

- Name of the waste (e.g., waste oil, solvents, paints).
- Waste category (e.g., toxic, ignitable).
- Facility name and address (disposal site, etc.).
- Date of waste accumulation: (date when waste was placed in drum).
- Wastes are segregated and located in designated areas to optimize control; storage areas.

d) Segregation: The scheme of segregation is as follow:

- All hazardous waste if found shall be segregated from other types of hazardous wastes as well as non-hazardous wastes at the point of generation of waste.
- Food waste shall be collected in separate containers.
- All containers must be clearly labeled. The label must clearly mention the name or type of waste. Also, if the waste is hazardous, it should be clearly labeled on the container along with its hazardous characteristics (e.g. flammable, toxic, radioactive, etc.). This is important to workers and to emergency response teams, who need to know what they are dealing with. Missing or unreadable labels must be replaced.

e) Storage and Handling

- Waste shall be temporarily stored at waste storage facility that will be sent for recycling or off-site disposal shall be temporarily stored at designated site(s) within the building premises.
- The oily sludge, contaminated soil shall be stored in containers
- All other wastes awaiting disposal shall be kept in closed containers/boxes separately. Care must be taken to prevent wastes giving rise to secondary environmental problems, such as odors or soil and groundwater contamination through rainwater leaching.

- All stored wastes must be clearly labeled with type of waste and warning signs.
- Daily estimates of hazardous and non-hazardous waste and volumes generated on site.
- Waste segregation, waste storage containers, general housekeeping and the provision of adequate resources will be monitored.
- All workers handling wastes shall use proper PPE.

f) Reuse

Construction waste can be reused in other construction projects & excavated material can be reused in backfilling.

g) Disposal

Disposal becomes the only available alternatives, if reuse and recycling options are exhausted. A material should be classified as a waste for disposal only if no other useful purpose can be identified and if the material cannot be beneficially reused or recycled. The choice of a suitable disposal option for any waste depends on both environmental and economic considerations. The final disposal can only be off-site disposal facilities due to limited space available.

It requires properly designed and well-operated commercial waste disposal facilities such as sanitary landfill. All such facilities should be explored and evaluated for possible future use.

(5) Recording & Reporting

The management has to record the information about source, composition, quantity, and final disposal of the waste. This information is needed for regulatory compliance, risk assessment and setting reduction targets and objectives as well as corporate statistics. The routine track of waste shall be recorded.

7.6.3 Air and Noise Emissions

(1) Purpose

The purpose of this guideline is:

- To monitor contents of polluting substances in the atmospheric air;
- To control observance of approved limiting permissible emissions at man-made sources;
- To monitor natural sources and a number of man-made sources of emission at work sites at the construction phase;
- To identify sources of noise emissions and control noise pollution;
- To monitor noise emissions.

(2) Scope

Scope of work includes:

- Evaluation of present ambient air quality and noise level at existing area.
- Evaluation of impact of traffic movement at the proposed site and noise level.
- Evaluation of impacts on roads and in the adjacent area due to construction.
- Evaluation of impacts of air emissions and noise from various stationary sources.
- Recommendations for mitigation techniques to redress the expected impacts both for design phase.

(3) Definitions

Air pollution may be referred to as contamination of pollutants dispersed in air affecting ambient air quality that may be deleterious to life and property.

In common use the word noise means unwanted sound or noise pollution. Excessive noise permanently damages hearing, but a continuous low-level sound can be dangerous too.

(4) Procedure

Air emissions (continuous or non-continuous) from facilities such as power generators are comprising of principal gases (greenhouse gases) which typically include carbon monoxide (CO), carbon dioxide (CO_2), water vapors and other gases such as nitrogen oxides (NOx), and, in case of sour gases, sulphur dioxide (SO_2). Air quality impacts should be estimated by the use of baseline air quality assessments and atmospheric dispersion models to establish potential ground level ambient air concentrations during facility design and operations planning. These studies should ensure that no adverse impacts to human health and the environment result. All reasonable attempts should be made to maximize energy efficiency and design facilities to minimize energy use. The overall objective should be to reduce air emissions and evaluate cost-effective options for reducing emissions that are technically feasible.

Also, vehicular emissions and noise due to traffic movement in and around the complex facility may of concern to be mitigated and monitored. Atmospheric conditions that may affect noise levels include humidity, wind direction, and wind speed. Vegetation, such as trees, and walls can reduce noise levels. Installation of acoustic insulating barriers can be implemented, where necessary.

(5) Noise and Air Emissions Management Options

Noise and air emissions monitoring includes;

- Monitoring of air and noise emissions.
- Pollution control technology assessment,
- Emission inventory development,
- Development of parametric monitoring, periodic monitoring, and compliance assurance monitoring.

(6) Air and Noise Quality Monitoring

Refer attached Environmental Monitoring Plan for details of air and noise quality monitoring at the Falaknaz Tiara project site during construction phase.

a) **Performance Indicator:** Monitoring results of ambient air shall show the concentration of pollutant in ambient air.
b) **Record and Comments:** Record would be kept with the laboratory report attached.

7.7 Standard Operating Procedures (During Operational Phase)

7.7.1 Wastewater Management

(1) Purpose of Wastewater Management

The purpose of this procedure is to provide guidelines and simplify the process of categorizing, managing, and disposing of wastewater wherever and whenever arising during the project's operational phase. Wastewater management includes the proper disposal/recycling & reuse of the wastewater generated during operation phase.

(2) Scope

Wastewater generation as part of operational activity will be managed as per this procedure. An effective wastewater management system for Falaknaz Tiara building is essential to reduce wastewater. Substitute techniques must be investigated, including source reduction, recycling and reuse wherever possible with a view towards maximizing the benefits and minimizing the cost of each method of wastewater management.

(3) Definitions

a) **Wastewater:** All water arising after use/consumption from the Project which can encompass a wide range of potential contaminants and concentrations.

b) Hazardous Wastewater:

- All wastewater comes in the category of hazardous wastewater. If it has one or more of the following properties:
- Oily water
- Toxicity (wastewater containing laboratory testing chemicals, antibiotics etc.)
- Concentration of contaminants too high above safe acceptable limits

c) Non-hazardous Wastewater: All wastewaters are categorized as non-hazardous wastes, if they do not possess any of the hazardous contaminant mainly comprising of consumed water arising from washing area and sanitary wastewater.

(4) Procedure

Main concern to manage the wastewater is listed below:

- Eliminate wastewater production wherever possible.
- Minimize wastewater production.
- Recycle or Reuse
- Wastewater disposal in an environmentally safe manner through adequately designed facility

a) Wastewater Minimization: Generation of wastewater will be minimized through the following steps taken by working personnel at the facility:

- Through efficient use of raw water (minimizing the wastewater).

b) Storage and Handling: Wastewater shall be stored/retained in specifically designed facility or storage tanks till appropriate treatment is sought and subsequently disposed of.

c) Segregation: Hazardous wastewater shall be segregated from Non-hazardous wastewater.

d) Recycling: Recycling of Non-hazardous wastewater is a best way to reduce the quantity of the total wastewater that requires subsequent treatment and disposal. Non-hazardous wastewater may be used in the cooling plants and for horticulture purposes.

e) Treatment

- Treatment of wastewater through retention in septic tanks and through primary and/or secondary treatment processes.
- Some of the wastewater may be reused as mentioned in recycling of wastewater. The treated water should comply with Sindh Environmental Quality Standards (SEQS).

f) Disposal

Proper disposal should be done following the treatment through discharge into water bodies or sewerage system where available.

(5) Drinking Water Quality and Wastewater Monitoring Plan

Refer attached Environmental Monitoring Plan for details of drinking water quality and wastewater monitoring plan.

a) Performance Indicator

Monitoring results of water quality shall show the extent of contamination in the drinking water and shall regulate and maintain the quality of potable water for establishing its suitability for human consumption as per WHO guidelines for drinking water quality.

Monitoring results of wastewater quality shall show the concentration of pollutants in the sewage water and potential for contamination of ground water if not disposed of properly.

b) Record and Comments

Record of analysis reports shall be maintained.

7.7.2 Solid Waste Management Plan

(1) Purpose

The purpose of this procedure is to provide guidelines and simplify the process of categorizing, managing, and disposing of solid wastes. Waste management is a critical component of management's operating policies. Waste management includes the proper handling, collection, storage, manifesting, transportation, and disposal / recycling of the solid waste generated.

(2) Scope

The waste management plan has been developed to ensure that the Management of solid waste generated as a result of operation is consistent, efficient, and in conformance with the laws and regulations.

(3) Definitions

a) **Waste:** Any material, for which no further use is intended, is considered a waste. It can be solid, semi-solid or liquid. Additionally, abandoned materials and materials intended to be recycled are considered wastes. It is very important to understand this concept, because even though something is going to be recycled, it must be managed as a waste until it is actually recycled.

b) Hazardous Waste: Waste is categorized as a hazardous waste if it has one or more of the following properties:

- Ignitability (flash point less than 60°C);
- Corrosivity (pH less than or equal to 2.0, or greater than or equal to 12.5);
- Reactivity (inherently unstable under ordinary conditions or when exposed to water);
- Irritability (when in contact with body causes inflammation)
- Toxicity (may cause risk of injury to health of organisms or the environment.)

c) Non-hazardous Waste: The wastes are categorized as non-hazardous wastes, if they do not possess any of the hazardous characteristics as defined above. However, non-hazardous waste may still present hazards to employees who handle them. All recommended safety & handling practices must be followed.

(4) Procedure

Priorities to manage the waste are listed below:

- Eliminate waste production whenever and wherever possible.
- Minimize waste production
- Reuse
- Dispose of waste through properly designed waste disposal facility.

a) Waste Minimization: To minimize waste, the following steps shall be taken by all personnel working on sites:

- Only the needed amount of materials shall be ordered. Before purchasing hazardous material, all alternatives for non-hazardous material should be explored.
- Prior consideration shall be given to the sizes of containers available when ordering products that could potentially generate waste. The intent is to avoid unused products and/or their containers from becoming wastes that require special handling.

b) Waste Categorization: All wastes generated at facilities shall be categorized in two major categories (i.e. Hazardous wastes and Non-hazardous wastes) as per the definitions in section above. Each category has different types of requirement for handling, storage and disposal.

c) Labelling

- Name of the waste (e.g., chemical waste, solvents, paints, biomedical etc.).
- Waste category (e.g., toxic, ignitable).

- Facility name and address (disposal site, etc.).
- Date of waste accumulation: (date when waste was placed in drum).
- Wastes are segregated and located in designated areas to optimize control; storage areas.

d) Segregation: As there are no hazardous wastes envisaged in the project therefore segregation among the waste will be done as per their matter.

The scheme of segregation is as follow:

- All hazardous waste if found shall be segregated from other types of hazardous wastes as well as non-hazardous wastes at the point of generation of waste.
- Laboratory chemical waste is also to be segregated into chlorinated and non-chlorinated solvents.
- Non- hazardous waste consists of containers, shipping cartons, bags, reject, broken bottles, rejected cartons, labels, strips, corrugated boxes, paper etc.

e) Storage and Handling

- All waste from floor and equipment is to be collected using vacuum cleaners.
- All containers must be properly and clearly labeled. The label must clearly mention the name or type of waste. Also, if the waste is hazardous, it should be clearly labeled on the container along with its hazardous characteristics (e.g. flammable, toxic, radioactive, etc.). This is important to workers and to emergency response teams, who need to know what they are dealing with. Missing or unreadable labels must be replaced.
- Non-hazardous waste shall be temporarily stored at waste storage facility that will be sent for recycling or off-site disposal shall be temporarily stored at waste storage facilities available at different sites such as junkyard, scrap yard, pits, etc.
- All other wastes awaiting disposal shall be kept in closed containers/boxes separately. Care must be taken to prevent wastes giving rise to secondary environmental problems, such as odors or soil and groundwater contamination through rainwater leaching.
- Daily estimates of hazardous and non-hazardous waste and volumes generated on site.
- Waste segregation, waste storage containers, general housekeeping and the provision of adequate resources will be monitored.
- All workers handling wastes shall use proper PPE.

f) Recycling: Non-hazardous waste can be recycled and reuse to minimize the quantity of waste requiring disposal. Some of the wastes (like one side

printed paper) can be reused within the facilities while others can only be recycled at off-site recycling centres.

g) **Disposal:** Disposal becomes the only available alternatives, if reuse and recycling options are exhausted. Onsite burning or dumping of waste is strictly prohibited.

A material should be classified as a waste for disposal only if no other useful purpose can be identified and if the material cannot be beneficially reused or recycled. The choice of a suitable disposal option for any waste depends on both environmental and economic considerations. The final disposal can only be off-site disposal facilities due to limited space available.

The waste shall be disposed of through a contractor.

(5) Recording & Reporting

The management has to record the information about source, composition, quantity, and final disposal of the waste. This information is needed for regulatory compliance, risk assessment and setting reduction targets and objectives as well as corporate statistics.

The routine track of waste shall be recorded. It is the responsibility of the proponent to assign a suitable person to sign off the record of waste tracking before the waste is dispatched outside.

7.7.3 Air and Noise Emissions

(1) Purpose

The purpose of this guideline is:

- To monitor contents of polluting substances in the atmospheric air;
- To control observance of approved limiting permissible emissions at man-made sources;
- To monitor natural sources and a number of man-made sources of emission at work sites during operational phase;
- To identify sources of noise emissions and control noise pollution;
- To monitor noise emissions.
- The air emissions from backup generators should comply with the SEQS for air emissions and reported as per SEPA reporting requirements.

(2) Scope

Scope of work include

- Evaluation of present ambient air quality and noise level at existing area.

- Evaluation of impact of traffic movement at the proposed site and noise level.
- Evaluation of impacts on roads and in the adjacent area during operational phase.
- Evaluation of impacts of air emissions and noise from various stationary sources.
- Recommendations for mitigation techniques to redress the expected impacts both for design phase and operational phase.

(3) Definitions

Air pollution may be referred to as contamination of pollutants dispersed in air affecting ambient air quality that may be deleterious to life and property.

In common use the word noise means unwanted sound or noise pollution. Excessive noise permanently damages hearing, but a continuous low-level sound can be dangerous too.

(4) Procedure

Air emissions (continuous or non-continuous) from facilities such as power generators, etc. are comprising of principal gases (greenhouse gases) which typically include carbon monoxide (CO), carbon dioxide (CO_2), water vapors and other gases such as nitrogen oxides (NOx), and, in case of sour gases, sulphur dioxide (SO_2). Air quality impacts should be estimated by the use of baseline air quality assessments and atmospheric dispersion models to establish potential ground level ambient air concentrations during facility design and operations planning. These studies should ensure that no adverse impacts to human health and the environment result. All reasonable attempts should be made to maximize energy efficiency and design facilities to minimize energy use. The overall objective should be to reduce air emissions and evaluate cost-effective options for reducing emissions that are technically feasible. Also, vehicular emissions and noise due to traffic movement in and around the plant is to be mitigated and monitored.

Atmospheric conditions that may affect noise levels include humidity, wind direction, and wind speed. Vegetation, such as trees, and walls can reduce noise levels. Installation of acoustic insulating barriers can be implemented, where necessary.

(5) Noise and Air Emissions Management Options

Noise and air emissions monitoring includes;

- Air dispersion modeling and monitoring of air and noise emissions.
- Indoor air quality management
- Pollution control technology assessment,

- Emission inventory development,
- Development of parametric monitoring, periodic monitoring, & compliance assurance monitoring.

(6) Air and Noise Quality Monitoring

Refer attached Environmental Monitoring Plan for details of air and noise quality monitoring at the Falaknaz Tiara project site during operation phase.

a) **Performance Indicator:** Monitoring results of ambient air shall show the concentration of pollutant in ambient air.

b) **Records & Comments:** Records of monitoring reports shall be maintained

8. Conclusion and Recommendations

8.1 Conclusion

The Environmental Impact Assessment (EIA) for the proposed Falaknaz Tiara project has examined the likely environmental, social, health, safety, traffic, utility, and operational implications associated with the construction and operation of the mixed-use high-rise development at Plot No. 25/B, Sector No. 30, Korangi, Karachi. Based on the assessment, the project is considered environmentally manageable, provided that the mitigation measures, monitoring requirements, and Environmental Management Plan (EMP) presented in this report are implemented effectively throughout the project cycle.

The assessment confirms that the proposed development is consistent with the applicable regulatory framework, including the Sindh Environmental Protection Act, 2014, the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021, and relevant Sindh Environmental Quality Standards (SEQS). The project falls within the category requiring a full EIA because of its high-rise residential and commercial character and built-up area; therefore, commencement of construction shall remain subject to formal environmental approval and compliance with all conditions imposed by SEPA.

The major potential impacts identified for the construction phase include dust generation, noise, construction waste, traffic disruption, occupational health and safety risks, wastewater from construction activities, and temporary pressure on local infrastructure. During the operational phase, key issues will include water demand, sewage generation, solid waste handling, energy use, traffic movement, parking management, emergency preparedness, fire safety, and maintenance of environmental controls. These impacts are not expected to be irreversible or unmanageable if the recommended mitigation measures and monitoring protocols are diligently applied.

The provision of on-site wastewater treatment, adequate parking, dedicated firefighting storage and systems, stormwater drainage, solid waste management arrangements, energy conservation measures, and planned environmental monitoring will contribute significantly to reducing the project's environmental footprint. The project also has potential positive impacts, including improved housing and commercial facilities, employment opportunities during construction and operation, enhanced local economic activity, and improved urban land utilization in a developed area of Karachi.

It is concluded that the proposed Falaknaz Tiara project may proceed from an environmental perspective, subject to obtaining all statutory approvals and implementing the Environmental Management Plan in letter and spirit. Continuous environmental monitoring, timely reporting, community grievance redressal, and strict compliance with SEPA approval conditions will be essential to ensure that the project remains environmentally responsible, socially acceptable, and operationally sustainable.

8.2 Recommendations

- The project proponent shall obtain environmental approval from SEPA and all other required NOCs before initiating construction activities.
- The Environmental Management Plan shall be treated as a binding implementation document and incorporated into contractor agreements, construction supervision procedures, and operational management systems.
- A qualified Environmental, Health and Safety (EHS) officer shall be appointed before site mobilization to supervise compliance, maintain monitoring records, and coordinate with regulatory authorities.
- Dust suppression measures, including water sprinkling, covering of loose material, wheel washing, and proper material storage, shall be implemented during excavation, transportation, and construction works.
- Construction equipment, generators, and vehicles shall be properly maintained to control emissions, noise, vibration, and fuel leakage. Noise-generating activities should be scheduled to minimize disturbance to nearby receptors.
- Construction waste, debris, excavated material, and hazardous waste shall be segregated, stored safely, and disposed of only through approved and authorized disposal channels.
- Occupational health and safety procedures shall be strictly enforced, including use of personal protective equipment, worker training, emergency response drills, safe working platforms, barricading, signage, and fall-prevention systems.
- A traffic management plan shall be implemented during construction to regulate delivery timings, avoid road blockage, maintain safe entry and exit, and reduce disruption along Hussain Dadabhoy Road/Korangi Crossing Road.
- The on-site Sewage Treatment Plant shall be installed, commissioned, operated, and maintained by trained personnel to ensure treated effluent meets applicable SEQS requirements before reuse or discharge.
- Recycled treated wastewater should be prioritized for landscaping, flushing, and other non-potable uses to reduce pressure on freshwater resources.

- Solid waste generated during operation shall be collected through the designated garbage chute and storage system, segregated where practical, and transferred regularly through authorized municipal or private waste management services.
- Fire protection systems, hydrants, alarms, pumps, pressurized staircases, evacuation routes, and emergency lighting shall be tested periodically and maintained in accordance with applicable safety standards.
- A structured environmental monitoring program shall be implemented for ambient air quality, noise, wastewater quality, solid waste handling, generator emissions, and occupational health and safety performance.
- Records of environmental monitoring, incidents, corrective actions, waste disposal, equipment maintenance, and training shall be maintained and made available to SEPA or other competent authorities when required.
- A community grievance redressal mechanism shall be established to receive, document, investigate, and resolve complaints related to dust, noise, traffic, safety, waste, or other project-related concerns.
- The proponent shall ensure periodic review and updating of the EMP to reflect project progress, regulatory requirements, stakeholder feedback, and lessons learned during construction and operation.

Subject to the implementation of the above recommendations and continued regulatory oversight, the project is expected to achieve its development objectives while minimizing adverse environmental and social impacts and supporting sustainable urban growth in Karachi.

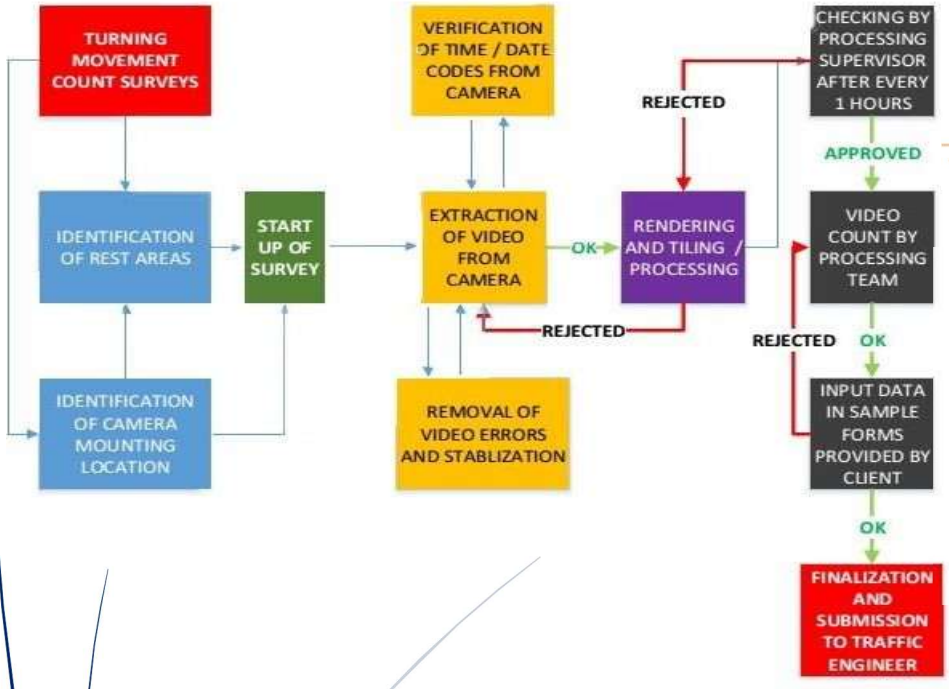
Annexures

August 2026









MILSON PROPERTIES



TRAFFIC IMPACT ASSESSMENT

FALAKNAZ TIARA

PLOT NO. 25/B, SECTOR NO. 30, KORANGI KARACHI

EHS Services

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MILSON
PROPERTIES

Traffic Impact Assessment

FALAKNAZ TIARA

Plot No. 25/B, Sector No. 30, Korangi Karachi

Final Report
August 2026

MILSON PROPERTIES

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Traffic Impact Assessment

FALAKNAZ TIARA

Plot No. 25/B, Sector No. 30,
Korangi Karachi

Final Report

Date:
August 2026

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Executive Summary

This Traffic Impact Assessment (TIA) has been prepared for the proposed Falaknaz Tiara mixed-use residential and commercial development at Plot No. 25-B, Sector 30, Korangi, Karachi, as part of the project's Environmental Impact Assessment (EIA). The development comprises three residential towers positioned above a commercial showroom podium and dedicated parking levels, with a net proposed built-up area of 601,512.82 sq ft.

The site is located mid-block on Hussain Dadabhoy Road / Korangi Crossing Road, with no junction immediately adjoining the site frontage. Accordingly, the study focuses on the mid-block road section fronting the development and assesses external and internal circulation, parking adequacy, swept path performance, and queue formation at the proposed site access gates.

Key findings

Existing conditions: A classified mid-block traffic count identified a combined PM peak-hour volume of 10,382 vph during 19:00–20:00. This volume was factored to the 2026 base year and projected to 11,746 vph for the 2031 design year using an annual growth rate of 2.5%.

- *Traffic impact assessment:* Eclipse SUMO microsimulation was undertaken for the Base 2026, 2031 Without-Development, and 2031 Full-Built scenarios. The analysis indicates LOS A conditions at the mid-block section in all assessed cases, with delay remaining within the ≤ 10 seconds per vehicle threshold.
- *Parking:* The development provides 482 project parking spaces against a calculated requirement of 436 spaces, resulting in a surplus of 46 spaces. In addition, 190 dedicated visitor parking spaces and 498 motorcycle spaces are provided, with motorcycle provision matching the calculated requirement.
- *Queue length:* M/D/1 queueing analysis for the three site access gates indicates degrees of saturation of 0.21 during the AM peak and 0.24 during the PM peak. Average queues are negligible, at ≤ 0.2 m, based on an assumed gate processing time of 5 seconds per vehicle.

1. Project Understanding

1.1 Project Background and Significance



Falaknaz Tiara is a proposed mixed-use residential and commercial high-rise development located at Plot No. 25-B, Sector 30, Korangi, Karachi, along the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road. The project comprises three residential towers, designated Towers A, B, and C, arranged above a common podium containing ground-floor showrooms and three dedicated parking levels. The site has a plot area of 90,018 sq ft (10,002 sq yd) and a net proposed built-up area of 601,512.82 sq ft.

This Traffic Impact Assessment (TIA) has been commissioned by Falaknaz Group as part of the Environmental Impact Assessment (EIA) prepared for the project. Considering the scale of the development, its frontage on Korangi Crossing Road, and its connection to a secondary road, the assessment places particular emphasis on the operational performance of the proposed vehicular access points, the adequacy of on-site parking provision, and the efficiency of internal circulation.

Because the development is located mid-block and no signalized or unsignalized junction lies immediately adjacent to the site frontage, the traffic effects generated by the project are expected to be most evident along the road section directly fronting the development. At downstream junctions, the additional trips disperse into comparatively higher background traffic flows. The scope of this study therefore focuses on the mid-block segment of Hussain Dadabhoy Road / Korangi Crossing Road immediately adjoining the site, with specific consideration of external and internal circulation, parking adequacy, access-gate queueing, and swept path performance for the adopted design vehicle.

1.2 Objectives and Scope of Study

1.2.1 Introduction

The primary objective of this Traffic Impact Assessment is to evaluate the transportation-related effects of the proposed Falaknaz Tiara development on the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road, and

to confirm whether the proposed access, circulation, and parking arrangements can accommodate forecast demand without adversely affecting the adjacent public road network.

1.2.2 Existing Conditions Assessment

To establish a baseline for existing traffic volumes and road geometry along the mid-block segment of Hussain Dadabhoy Road / Korangi Crossing Road fronting the development, thereby providing a reference condition against which future traffic impacts can be assessed.

1.2.3 Trip Generation, Distribution and Assignment

To estimate the peak-hour vehicular trips generated by the proposed residential and commercial components of the development, and to distribute and assign these trips to the proposed site access points and the adjacent mid-block road section.

1.2.4 Traffic Impact Assessment

To assess the impact of development-generated traffic on the mid-block road segment through calibrated microsimulation modelling in Eclipse SUMO, comparing the future base condition with the future full-built project scenario for the 2031 design horizon year.

1.2.5 Access Design and Swept Path Analysis

To review the geometric adequacy of the proposed site access and internal driveway arrangements, and to verify that the adopted SUV design vehicle can maneuver safely within the development without conflict.

1.2.6 Parking Analysis

To assess the adequacy of the proposed on-site parking supply, comprising 482 project parking bays, 190 dedicated visitor bays, and 498 motorcycle bays, against the projected demand generated by the residential and commercial showroom components of the development.

1.2.7 Queue Length Analysis

To evaluate peak-hour queue formation at the proposed access and driveway points, and to determine whether the internal access configuration is sufficient to prevent queue spillback onto Hussain Dadabhoy Road / Korangi Crossing Road.

1.3 Site Location

Falaknaz Tiara is located at Plot No. 25-B, Sector 30, Korangi, Karachi (24.827394°N, 67.085720°E), along the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road. The site is situated opposite DHA Phase VII Extension and in proximity to the KPT Interchange. It is bounded by a wide primary road along one frontage, a secondary road along the adjacent frontage, and adjoining land along the remaining boundary.

The surrounding road network includes Korangi Road, Khayaban-e-Ittehad in DHA Phase 6, Shaheed-e-Millat Road, and the KPT Interchange.

Together, these routes accommodate a mixed traffic stream comprising private vehicles, motorcycles, public transport, and commercial/service vehicles serving the Korangi, DHA, and Clifton corridors. As no junction lies immediately adjacent to the site frontage, the development's traffic effects are concentrated at the road section directly fronting the site, which forms the primary study area for this assessment.



Figure 1: Site Location

1.4 Description of Facility Access Points

The proposed development is served by three vehicular access points, identified in this assessment as Gate 1, Gate 2, and Gate 3.

- Gate 1, located at the west corner of the development on the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road, provides vehicular access to the basement parking level.

- Gate 2, located at the east corner of the development on the same mid-block section, provides vehicular access to the above-ground parking levels (1st to 3rd floor).

- Gate 3, located on the northern side of the development, is accessed via a back street connecting to the project road mid-block section, rather than directly from Hussain Dadabhoy Road / Korangi Crossing Road.

This three-gate arrangement provides the basis for the trip assignment presented in Section 5.5.3 and the queue length assessment presented in Chapter 7.



Figure 2: Facility Access Points

1.5 Land Use Details

The proposed development has a gross built-up area of 1,247,058.50 sq ft, distributed across four principal land-use categories: parking, retail showrooms at the ground floor and basement, recreation/amenity space, and residential apartments within Towers A, B, and C. The development includes one basement level, three above-ground parking floors from the 1st to 3rd levels, a 4th-floor amenity/recreation level, and residential floors beginning at the 5th level and extending up to the 44th floor in Tower B. Tower A extends to the 34th floor,

while Tower C extends to the 39th floor. Table 1 presents the floor-by-floor land-use area breakdown reconciled from the approved building plan schedule.

Table 1: Floor-by-Floor Land Use Area Summary (sq. ft)

Floor	Land Use	Parking	Retail	Amenity	Residential
Basement	Parking + Retail (Showroom)	42,644.83	40,024.10	—	—
Ground Floor	Retail (Showroom /Passage/Arcade)	—	82,542.91	—	—
1st Floor	Visitor Parking	79,935.00	—	—	—
2nd Floor	Project Parking	79,935.00	—	—	—
3rd Floor	Project Parking	79,935.00	—	—	—
4th Floor	Recreation / Amenity	—	—	23,142.47	—
5th–34th (×30)	Apartments (Tower A+B+C)	—	—	—	694,274.10
35th–37th (×3)	Apartments (Tower B+C)	—	—	—	52,731.27
38th Floor	Apartments Lvl-1 (Tower B+C)	—	—	—	16,261.45
39th Floor	Apartments Lvl-2 (Tower B+C)	—	—	—	16,261.45
40th–42nd (×3)	Apartments (Tower B)	—	—	—	22,948.86
43rd Floor	Apartments Lvl-1 (Tower B)	—	—	—	6,831.03
44th Floor	Apartments Lvl-2 (Tower B)	—	—	—	6,831.03
Roof (A+B+C)	Roof	—	—	—	2,760.00
Total	—	282,449.83	122,567.01	23,142.47	818,899.19

The grand total of 1,247,058.50 sq ft reconciles with the gross built-up area stated above. This represents the gross area before service, circulation, and balcony-area deductions applied in the FAR calculation, which result in the net proposed area of 601,512.82 sq ft. Floor ranges, such as "5th – 34th," indicate levels with identical land use and area as shown in the approved schedule; detailed floor-level information is available in the source drawing set.

2. Study Methodology

2.1 Overview

This chapter presents the methodological framework adopted for the Falaknaz Tiara Traffic Impact Assessment. The assessment has been structured as a six-stage process, beginning with site reconnaissance and existing traffic data collection, followed by traffic forecasting, trip generation and assignment, operational assessment, parking and swept path review, and access-gate queue analysis. Each stage is developed sequentially, with the output of one stage forming the basis for the next stage of analysis.

2.2 Six-Stage Study Process

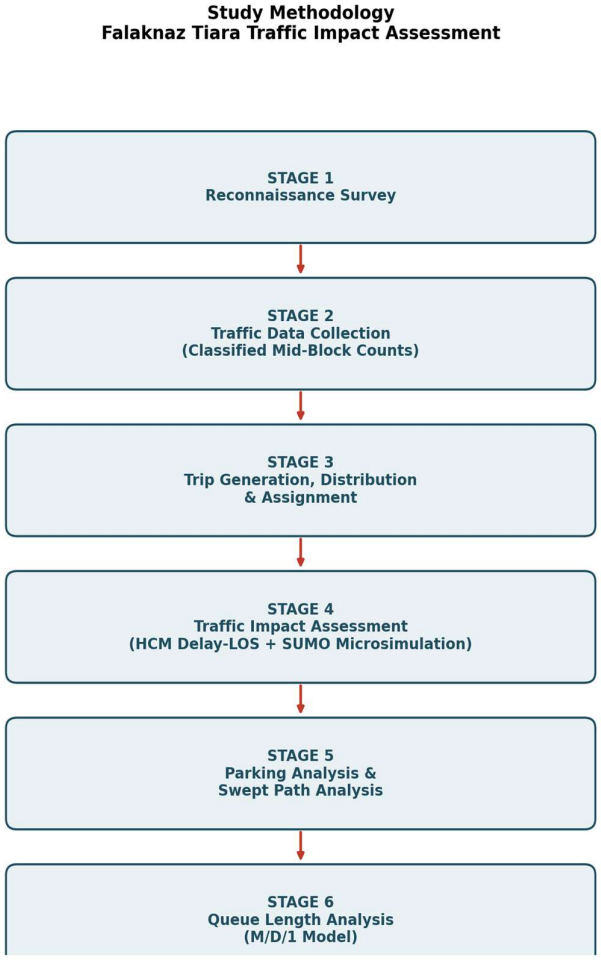


Figure 3: Study Methodology Flow

Stage 1: Reconnaissance Survey: A site visit was undertaken to confirm the mid-block study scope, verify the absence of adjacent junctions, and record the prevailing road geometry and operational characteristics of the frontage road (Chapter 3).

Stage 2: Traffic Data Collection: Classified mid-block vehicle counts were reviewed and factored to establish base-year and design-year traffic volumes for the study road section (Chapters 3 and 4).

Stage 3: Trip Generation, Distribution, and Assignment: Development trip rates were applied to the residential and commercial land-use components, and the resulting trips were distributed by direction and assigned to the proposed site access gates (Chapter 5.5).

Stage 4: Traffic Impact Assessment: The operational performance of the study road section was evaluated using HCM delay-based Level of Service criteria and Eclipse SUMO microsimulation for the Base 2026, 2031 Without-Development, and 2031 Full-Built scenarios (Chapter 5).

Stage 5: Parking and Swept Path Analysis: Proposed parking supply was compared against calculated demand, and the maneuverability of the adopted design vehicle was reviewed within the internal circulation and parking areas (Chapter 6).

Stage 6: Queue Length Analysis: An M/D/1 queueing assessment was undertaken for the three proposed access gates under AM and PM peak demand conditions to determine whether queue spillback is likely to occur (Chapter 7).

3. Existing Conditions Assessment

3.1 Introduction

This chapter establishes the baseline traffic conditions at the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road directly fronting the Falaknaz Tiara development. As the site is positioned mid-block and no junction lies immediately adjacent to the frontage, existing traffic conditions have been characterized through a classified vehicular count at the study road section rather than through junction turning-movement counts. The resulting traffic volumes define the 2026 base-year condition and provide the reference against which the future without-development and full-built scenarios are assessed in subsequent chapters using Highway Capacity Manual (HCM) Level of Service criteria and Eclipse SUMO microsimulation.

3.2 Reconnaissance Survey

A reconnaissance survey of the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road was undertaken to confirm the local traffic setting and verify the operational scope of the assessment. The survey confirmed the absence of any signalized or unsignalized junction directly adjoining the site frontage and recorded the existing road geometry, carriageway configuration, and observed traffic operations. Since the nearest junctions are located beyond the immediate frontage, the project's most direct traffic effects are expected to occur along the mid-block section adjacent to the site. This finding supports the mid-block-focused scope defined in Chapter 1.



Figure 4: Reconnaissance Survey

3.3 Traffic Data Collection

3.3.1 Survey Methodology and Vehicle Classification

A classified vehicle count survey was undertaken at the mid-block section of Hussain Dadabhoy Road/Korangi Crossing Road. Bidirectional traffic movements, comprising West-to-East and East-to-West flows, were recorded in 15-minute intervals. Vehicles were classified into twelve categories: Motorcycle (MC), Car/Taxi, Van/Pickup, Rickshaw/Chinchi, Coach/Coaster/Minibus/Hiace, Large Bus, 2-Axle Truck, 3-Axle Truck, 4-Axle Truck, 5-Axle Truck, and Other Machinery.

3.3.2 Survey Period

The survey was conducted in 2020 over an 18-hour period, from 7:00 AM to 1:00 AM the following day. Data were recorded in 15-minute intervals to capture the morning and evening peak periods, as well as off-peak and late-evening traffic conditions.

3.4 Traffic Survey Results

3.4.1 Flow Characteristics

The survey results indicate a clear directional and temporal variation in traffic flows. The West-to-East direction experiences a pronounced evening peak dominated by motorcycles, while the East-to-West direction shows a more moderate morning peak and a comparatively flatter evening profile. Motorcycles represent the dominant vehicle class during the West-to-East PM peak and form a substantial share of directional traffic. This traffic composition is consistent with the industrial and mixed-use character of the Korangi corridor and is relevant to the vehicle-equivalency treatment applied in the capacity analysis presented in Chapter 5.

3.4.2 Traffic Volume

Peak-hour volumes were identified through a rolling one-hour analysis based on four consecutive 15-minute survey intervals. The 2020 surveyed peak-hour volumes were factored to the 2026 base year using an annual growth rate of 2.5% over six years, resulting in a growth factor of 1.1597. The corresponding 2026 base-year volumes are summarized below.

Table 2: Peak Hour Traffic Volumes - Mid-Block Section, Korangi Crossing Road

Direction	Peak Period	2026 Base Year (vph)
West to East	AM (9:00–10:00)	2,584
East to West		4,273

West to East	PM (19:00–20:00)	7,255
East to West		3,127

The 18-hour survey recorded 56,779 vehicles in the West-to-East direction and 50,001 vehicles in the East-to-West direction, resulting in a combined surveyed volume of 106,780 vehicles.

The PM peak hour from 19:00 to 20:00 represents the governing operating condition for the mid-block section. The combined PM peak volume exceeds the AM peak by approximately 52%, making it the critical design hour for the capacity and microsimulation analyses presented in later chapters.

3.5 Vehicle Classification and Analysis Methodology Note

The recorded survey results comprise raw classified vehicle counts and have not been converted to passenger car equivalents at this stage. Given the significant motorcycle share observed during the West-to-East PM peak, and the absence of a motorcycle-specific passenger car equivalent value within standard HCM methodology, a documented regional motorcycle equivalency will be applied as a stated deviation in the Chapter 5 capacity analysis. The raw classified counts are retained for direct input to the Eclipse SUMO microsimulation model, where each vehicle class is represented discretely rather than through aggregate passenger car equivalent conversion.

4. Future Traffic Analysis / Estimation

4.1 Introduction

This chapter presents the future traffic forecast for the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road. The 2026 base-year traffic volumes established in Chapter 3 have been projected to the 2031 design horizon year to define the future without-development condition. These forecast background volumes provide the basis for comparison with the full-built development scenario assessed in Chapter 5.

4.2 Growth Rate Application

An annual traffic growth rate of 2.5% has been applied to the 2026 base-year volumes for the five-year period from 2026 to 2031. This results in a growth factor of 1.1314, calculated as 1.025^5, and has been used to derive the 2031 design-year background traffic volumes.

Table 3: Peak Hour Volume Projection — 2020 to 2031

Period	2026 Base Year (vph)	2031 Design Year (vph)
AM Peak (Combined)	6,857	7,758
PM Peak (Combined)	10,382	11,746

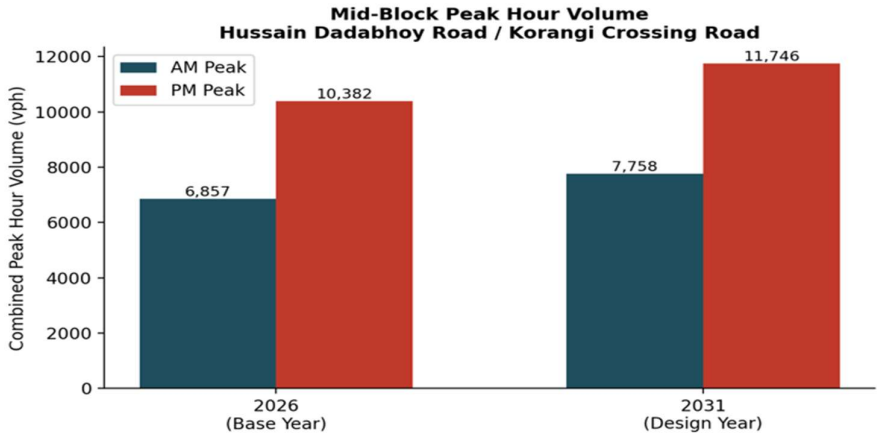


Figure 5: Mid-Block Peak Hour Volume Growth, 2026–2031

4.3 Design Year Conditions

The 2031 design-year PM peak remains the governing operating condition for the mid-block road section, consistent with the base-year findings presented in Chapter 3. The PM peak continues to be influenced by the motorcycle-heavy West-to-East directional flow. These 2031 without-development volumes establish the future background condition against which the full-built microsimulation scenario is compared in Chapter 5.

5. Traffic Impact Assessment

(HCM & SUMO Microsimulation)

5.1 Introduction

This chapter evaluates the operational performance of the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road fronting the proposed Falaknaz Tiara development. The assessment uses Eclipse SUMO microsimulation outputs for three scenario tiers: Base Case 2026, Future 2031 Without Development, and Future 2031 Full-Built. Each scenario has been modelled for the AM and PM design hours identified in Chapter 3, with results reported separately for the project-road segment in the west-to-east and east-to-west directions.

5.2 Level of Service Methodology

As established in Chapter 1, no signalized or unsignalized junction lies directly adjacent to the development frontage. Accordingly, Level of Service has been assessed for the mid-block study section using HCM delay-based LOS thresholds conventionally applied to unsignalized control delay. For this assessment, the mean per-vehicle time loss recorded at each mid-block detector has been used as a practical proxy for delay.

Table 4: HCM Unsignalized Delay-Based LOS Thresholds

LOS	Delay (s/veh)
A	≤ 10
B	> 10–15
C	> 15–25
D	> 25–35
E	> 35–50
F	> 50

5.3 SUMO Microsimulation Results

Table 5: Mid-Block Delay and LOS by Scenario

Scenario	Direction	Delay (s/veh)	LOS
Base 2026 AM	Project road (W-E)	3.79	A
Base 2026 AM	Project road (E-W)	3.07	A
Base 2026 PM	Project road (W-E)	3.77	A
Base 2026 PM	Project road (E-W)	3.03	A
2031 w/o Dev AM	Project road (W-E)	3.07	A
2031 w/o Dev AM	Project road (E-W)	3.11	A
2031 w/o Dev PM	Project road (W-E)	3.78	A
2031 w/o Dev PM	Project road (E-W)	3.06	A
2031 Full-Built AM	Project road (W-E)	3.05	A

2031 Full-Built AM	Project road (E-W)	3.08	A
2031 Full-Built PM	Project road (W-E)	3.77	A
2031 Full-Built PM	Project road (E-W)	3.06	A

The microsimulation results indicate that all twelve modelled direction-period combinations operate at LOS A on a delay basis. No material increase in delay is observed between the 2031 Without-Development and 2031 Full-Built PM scenarios on the project road, with the west-to-east movement changing from 3.78 seconds per vehicle to 3.77 seconds per vehicle. This indicates that the forecast development traffic does not materially affect the operational performance of the mid-block frontage road under the assessed conditions.

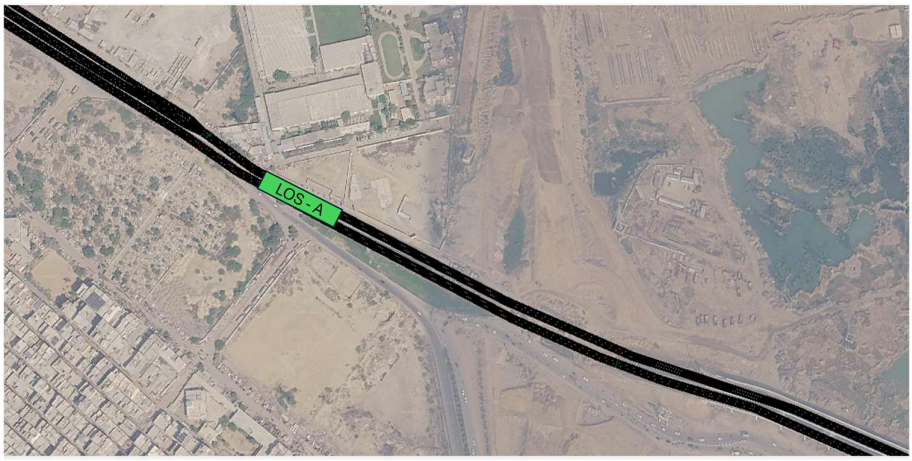


Figure 6: Base 2026 AM



Figure 7: Base 2026 PM

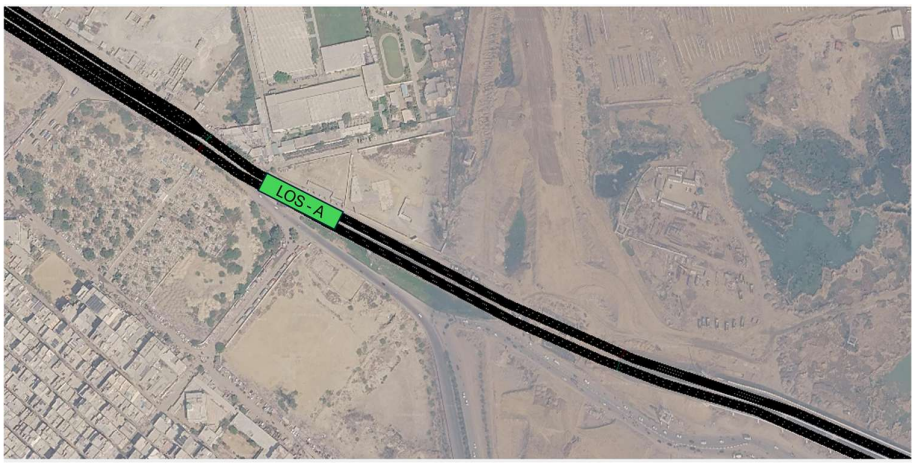


Figure 8: 2031 w/o Dev AM



Figure 9: 2031 W/O DEV AM

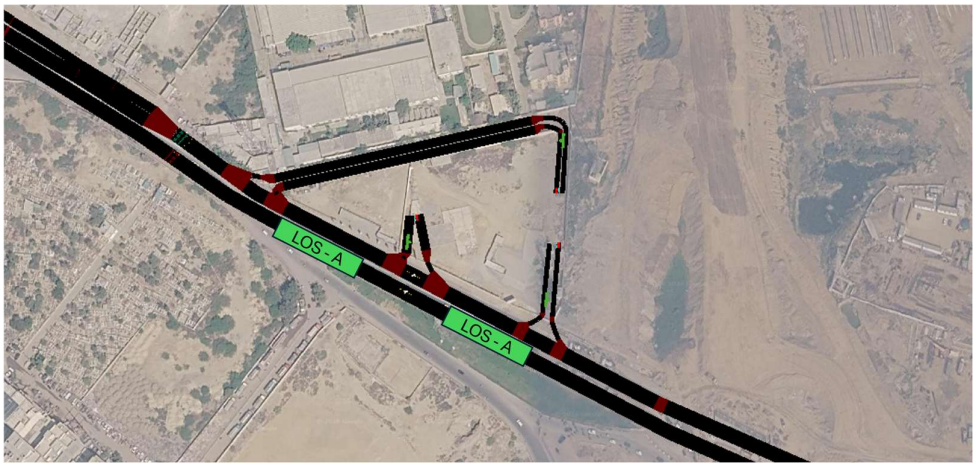


Figure 10: 2031 Full-Built AM

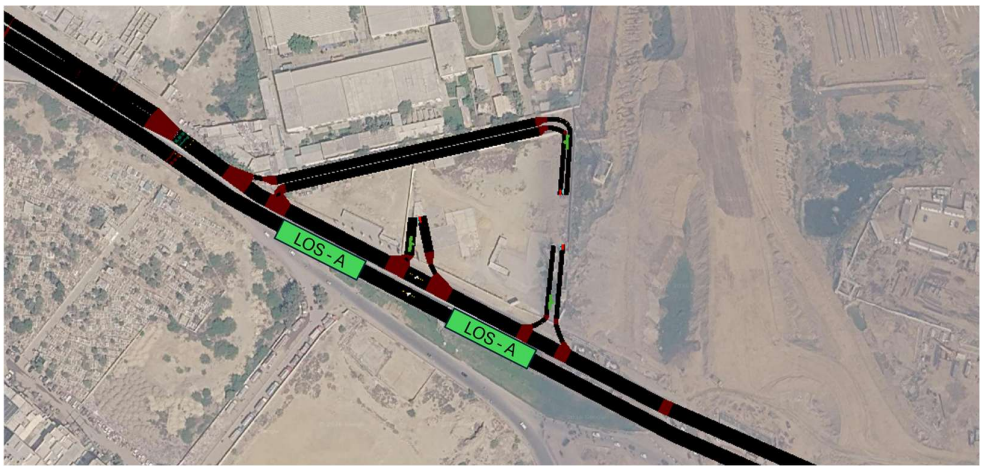


Figure 11: 2031 FULL-BUILT PM

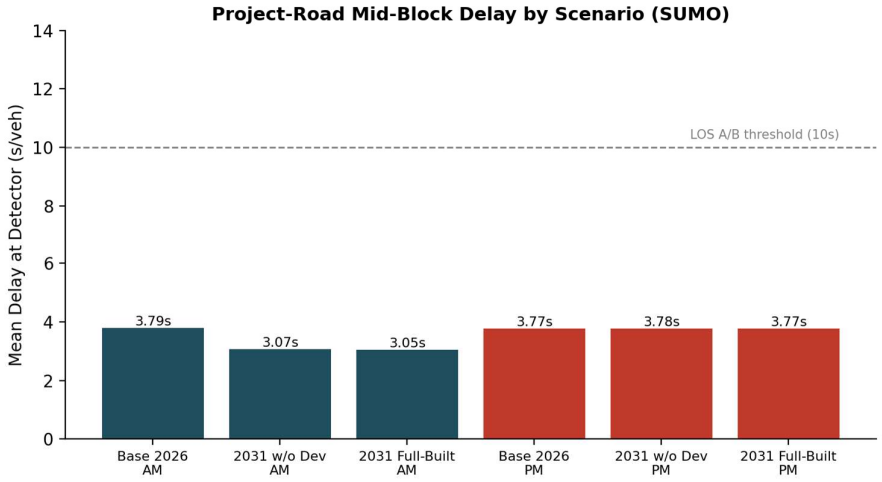


Figure 12: Project-Road Mid-Block Delay by Scenario

5.4 Trip Generation, Distribution and Assignment

5.4.1 Trip Generation

Trip generation for the proposed development has been estimated for the principal traffic-generating land uses, comprising the residential apartment component and the commercial showroom component. The calculations are based on the unit count and gross floor area established in Chapter 1, with the resulting peak-hour trip estimates summarized in Table 6.

Table 6: Development Trip Generation

Land Use	Quantity	Rate	Total Trips
Apartments	412 units	0.67	614.93
Commercial	103,448.86 sq ft	333	310.66

No AM commercial trip generation has been assumed for the showroom component, as ground-floor showroom activity is expected to be negligible during the morning period when compared with the residential component. The PM peak therefore governs the commercial trip generation assessment.

5.4.2 Directional Distribution

Directional distribution factors have been applied to the generated trips to estimate peak-hour entries and exits. For the residential apartment component, a 75% entry / 25% exit split has been applied during the AM peak and a 45% entry /

55% exit split during the PM peak. For the commercial component, an 80% entry / 20% exit split has been applied during the PM peak. The resulting peak-hour entry and exit volumes are presented in Table 7.

Table 7: Peak Hour Entry/Exit Volumes

Land Use	AM Entry	AM Exit	PM Entry	PM Exit
Apartments	461	154	277	338
Commercial	—	—	249	62
Total Site	461	154	526	400

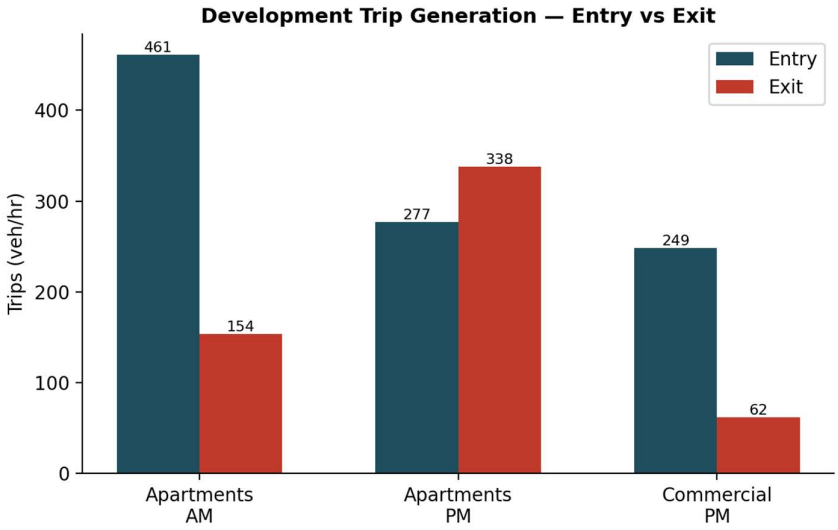


Figure 13: Development Trip Generation — Entry vs. Exit by Land Use

5.4.3 Trip Assignment to Site Access Points

The proposed development is served by three vehicular access gates. For the purposes of this assessment, total site-generated trips have been distributed equally across Gate 1, Gate 2, and Gate 3. This approach provides a balanced operational loading for the access system and reflects the intended use of the three-gate configuration.

Table 8: Trip Assignment by Access Gate				
Gate	**AM Entry**	**AM Exit**	**PM Entry**	**PM Exit**
Gate 1	154	51	175	133
Gate 2	154	51	175	133
Gate 3	154	52	175	134
Total	462	154	525	400

The assigned per-gate traffic volumes form the basis for the access-gate queue length assessment presented in Chapter 7.

6. Parking Analysis and Swept Path Analysis

6.1 Parking Analysis

The parking analysis evaluates whether the proposed Falaknaz Tiara development provides sufficient on-site parking to accommodate the demand generated by its residential apartments and commercial showroom components. As a mixed-use development, the project is expected to generate parking demand from residents, visitors, and commercial users, each with different activity patterns and peak accumulation periods. Given the site's frontage on the mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road, adequate on-site parking provision is essential to avoid spillover onto the public carriageway and to maintain efficient internal circulation. This chapter therefore compares the proposed parking supply, as shown in the submitted building plan, against the calculated SBCA-based parking requirement and reviews the maneuverability of the adopted design vehicle within the proposed parking and circulation areas.

6.2 Parking Demand

6.2.1 Required Parking

The parking requirement has been calculated in accordance with the SBCA Sindh High Density Development Board Act 2010 standards, as reflected in the building plan schedule for Plot No. 25/B, Sector No. 30, Korangi, Karachi. The adopted standards apply area-based car parking ratios to the commercial and residential components of the development, with an allowance for motorcycle substitution as summarized below:

- Commercial showroom area: 103,448.86 sq ft ÷ 1,000 sq ft per car = 104 cars
- Residential area: 498,063.96 sq ft ÷ 1,200 sq ft per car = 415 cars
- Total car-equivalent demand before substitution: 519 cars
- Less 16% motorcycle substitution: 83 cars
- Net car parking requirement after motorcycle substitution: 436 cars
- Motorcycle parking requirement: 83 × 6 = 498 motorcycles

Table 9: Required Parking (as per SBCA)

Category	Required
Cars	436
Motorcycles	498

6.2.2 Provided Parking

Table 10: Provided Parking		
Level	**Cars**	**Notes**
Basement	102	Project parking
1st Floor	190	Visitor parking (separate pool)
2nd Floor	190	Project parking
3rd Floor	190	Project parking
Total Project Parking	482	Basement + 2nd + 3rd
Total incl. Visitor	672	1st Floor
Motorcycle	498	Provided, all levels

The proposed project car parking supply totals 482 spaces, compared with the calculated requirement of 436 spaces. This provides a surplus of 46 spaces, equivalent to approximately 10.5% above the required provision. Motorcycle parking provision totals 498 spaces, which matches the calculated motorcycle requirement. In addition, 190 dedicated visitor parking spaces are provided on the 1st floor as a separate parking pool and are not counted as part of the project parking requirement. This visitor parking provision corresponds to the 50% visitor-parking area enhancement applied in the FAR calculation discussed in Chapter 1.

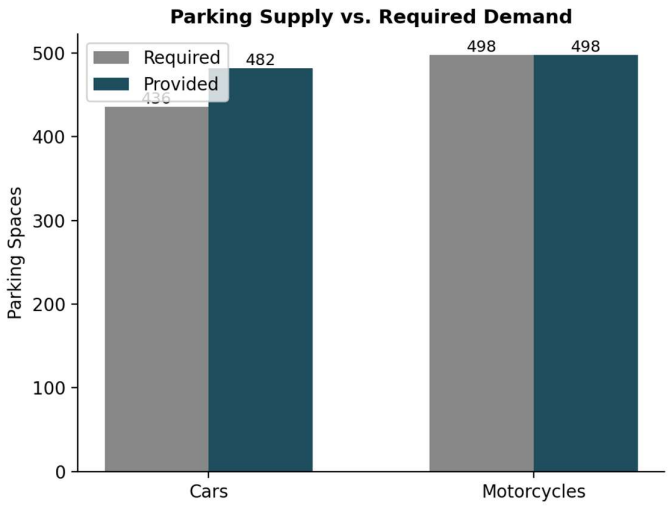


Figure 14: Parking Supply vs. Required Demand

6.3 Swept Path Analysis

6.3.1 Introduction

Swept Path Analysis (SPA) has been undertaken to assess the maneuverability of the adopted design vehicle, represented by a Toyota Land Cruiser, within the proposed development. The assessment covers the basement level, ground floor, upper parking levels from the 1st to 3rd floors, and the site access / driveway points identified as DR-1 and DR-2. The purpose of the analysis is to verify that the design vehicle can enter the site, circulate through the internal driveways, negotiate turns, access parking areas, and exit safely without encroaching into opposing circulation lanes, pedestrian areas, ramps, columns, or other fixed structural elements.



Figure 15: Basement Level Swept Path Analysis



Figure 16: Ground Level Swept Path Analysis

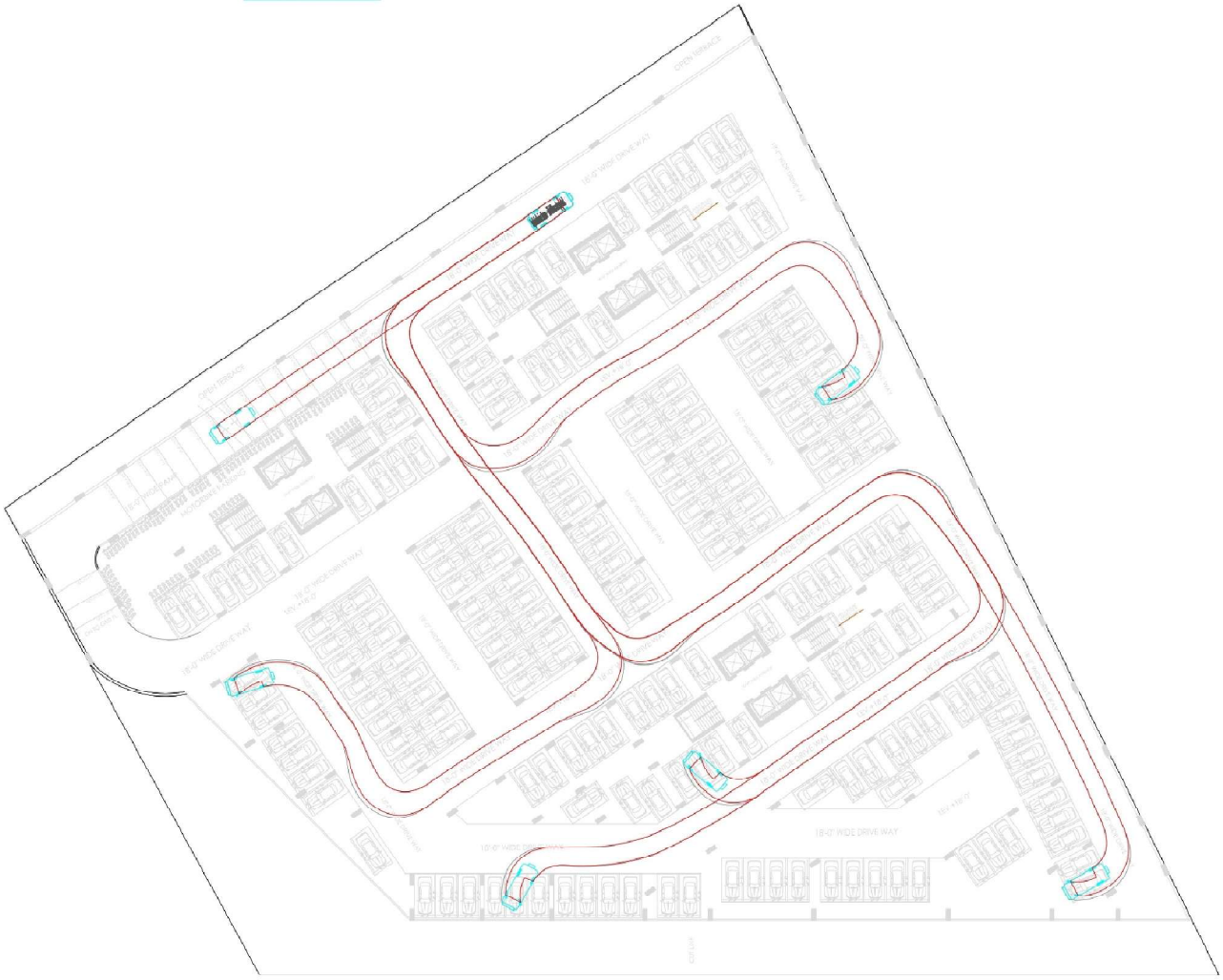


Figure 17:First Floor Swept Path Analysis



Figure 18: Second Floor Swept Path Analysis



Figure 19: Third Floor Swept Path Analysis

7. Queue Length Analysis

7.1 Methodology

A queue length assessment has been undertaken to evaluate the operational performance of the proposed development access gates during the AM and PM peak periods, using the per-gate trip assignment established in Section 5.5.3. The assessment determines whether the available processing capacity at each gate is sufficient to accommodate forecast development traffic while avoiding excessive queue formation and preventing spillback onto Hussain Dadabhoy Road / Korangi Crossing Road.

Each access gate has been treated as a single-server queueing system, in which vehicles arrive randomly and are processed individually at a security checkpoint. Because the gate processing time is assumed to be effectively constant, the analysis has been undertaken using the M/D/1 queueing model. This model assumes Poisson vehicle arrivals and deterministic service times, and is commonly applied to access-controlled facilities, security checkpoints, toll plazas, and gated developments.

The following assumptions have been adopted for the queue length assessment:

- Three independent access gates have been assessed: Gate 1, Gate 2, and Gate 3, consistent with the trip assignment presented in Section 5.5.3.
- Each gate has been assumed to operate with one processing lane.
- Average vehicle processing time has been assumed as 5 seconds per vehicle.
- AM peak demand has been adopted as 154 vehicles per hour per gate, as derived in Section 5.5.3.
- PM peak demand has been adopted as 175 vehicles per hour per gate, as derived in Section 5.5.3.
- Average passenger-car spacing within a queue has been assumed as 6.0 m per vehicle.

7.2 Gate Capacity Assessment

The service capacity of each gate has been derived from the adopted average processing time using $\mu = 3600 / t_s$, where t_s represents the processing time in seconds per vehicle. For a processing time of 5 seconds per vehicle, the resulting service capacity is $\mu = 3600 / 5 = 720$ vehicles per hour per gate. The degree of saturation is then calculated as $v/c = \lambda / \mu$, where λ represents the arrival rate in vehicles per hour.

Table 11: Gate Operating Conditions		
Parameter	**AM Peak**	**PM Peak**
Arrival Rate (veh/hr)	154	175
Service Capacity (veh/hr)	720	720
Degree of Saturation (v/c)	0.21	0.24

The results indicate that each gate operates at less than 25% of its available processing capacity. This demonstrates a substantial operational reserve under the adopted processing-time assumption.

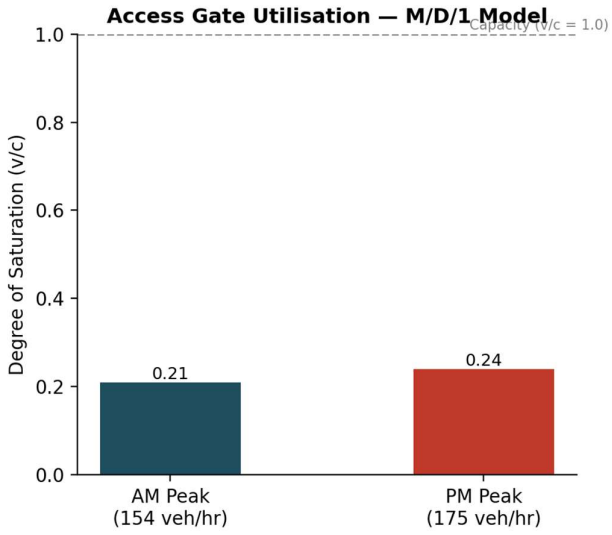


Figure 20: Access Gate Utilisation (v/c)

7.3 Queue Assessment

Under the M/D/1 queueing model, the average queue length is calculated using $Lq = \rho^2 / [2(1-\rho)]$, where ρ represents the degree of saturation or utilization ratio.

Table 12: AVERAGE QUEUE LENGTH BY PEAK PERIOD			
Peak Period	**Utilisation (ρ)**	**Avg. Queue (veh)**	**Avg. Queue Length**
AM (154 veh/hr)	21%	0.03	0.2 m
PM (175 veh/hr)	24%	0.04	0.2 m

Because the arrival rate remains significantly below the available service capacity during both peak periods, vehicles are processed faster than they arrive on average, and persistent queue formation is not expected. Short, temporary queues of one or two vehicles may occur due to random arrival variation or vehicle platooning; however, these queues are expected to dissipate quickly. Based on an assumed standing vehicle spacing of 6.0 m, the anticipated maximum operational queue is approximately one vehicle, or about 6 m, which is not expected to interfere with upstream traffic operations on the adjoining mid-block road segment.

7.4 Conclusion

The queue length assessment confirms that the proposed access-gate facilities provide sufficient processing capacity to accommodate forecast development traffic during both the AM and PM peak periods at each of the three access gates identified in Section 5.5.3. The calculated degree of saturation remains well below typical operational thresholds, and no significant queue accumulation or spillback is anticipated under the adopted processing-time assumption. Accordingly, the proposed three-gate access configuration is considered adequate to support the future operational requirements of the development without the need for additional processing lanes.

8. Conclusion And Recommendations

8.1 Overall Conclusion

This Traffic Impact Assessment concludes that the proposed Falaknaz Tiara mixed-use residential and commercial development can be accommodated by the adjoining mid-block section of Hussain Dadabhoy Road / Korangi Crossing Road without causing a material deterioration in traffic operating conditions. The assessment has considered existing and future background traffic volumes, development-generated trips, parking supply, internal circulation, swept path performance, and access-gate queueing under the design-year assessment framework.

The operational assessment indicates that the study road section continues to operate at LOS A across all modelled scenarios, including the Base 2026 condition, the 2031 Without-Development condition, and the 2031 Full-Built condition. The Eclipse SUMO microsimulation results show that the forecast development traffic does not materially increase delay on the project-road frontage, with mid-block delay remaining well within the HCM LOS A threshold of 10 seconds per vehicle.

8.2 Key Findings

- The development site is located mid-block, with no signalized or unsignalized junction immediately adjoining the site frontage; therefore, the assessment appropriately focuses on the road section directly fronting the development.
- The combined 2026 base-year PM peak-hour volume is 10,382 vph, and the corresponding 2031 design-year background volume is 11,746 vph, based on an annual growth rate of 2.5%.
- Development-generated traffic has been assigned across the three proposed access gates, providing a balanced distribution of entering and exiting vehicles during the AM and PM peak periods.
- The 2031 Full-Built microsimulation scenario continues to operate at LOS A in both directions of the project-road section, with delays remaining within acceptable limits.
- The proposed development provides 482 project car parking spaces against a calculated requirement of 436 spaces, resulting in a surplus of 46 spaces. The 498 motorcycle spaces provided also match the calculated motorcycle requirement.
- The additional 190 visitor parking spaces on the 1st floor provide a separate visitor parking pool and further support the development's parking management strategy.
- Swept Path Analysis confirms that the adopted Toyota Land Cruiser design vehicle can circulate through the proposed access, driveway, and parking

areas without unacceptable encroachment into opposing lanes, pedestrian areas, ramps, columns, or other fixed elements.

- The M/D/1 queueing assessment indicates low gate utilisation, with v/c ratios of 0.21 in the AM peak and 0.24 in the PM peak. Average queue lengths remain negligible, and no queue spillback onto Hussain Dadabhoy Road / Korangi Crossing Road is anticipated.

8.3 Recommendations

- The proposed three-gate access arrangement should be retained to distribute site traffic efficiently and reduce concentration at any single access point.
- Clear internal wayfinding, directional arrows, and lane markings should be provided within the basement, ground-floor, and upper parking levels to support safe and efficient circulation.
- Parking management should ensure that the 190 visitor spaces remain available for visitor use and are not absorbed into long-term resident or operational parking.
- Gate operations should maintain the assumed processing efficiency of approximately 5 seconds per vehicle through appropriate staffing, access-control technology, and operational management during peak periods.
- Access points and internal ramps should be kept free from obstruction to preserve the circulation paths verified through the swept path analysis.
- During project operation, management should monitor peak-period access conditions and adjust gate staffing or access-control procedures if unusual peak queues are observed.

8.4 Final Statement

Subject to implementation of the proposed access, parking, and circulation arrangements as assessed in this report, the Falaknaz Tiara development is considered acceptable from a traffic operations perspective. The project is not expected to create significant adverse impacts on the adjacent mid-block road section, and the proposed parking supply, gate capacity, and internal circulation arrangements are adequate for the forecast development demand.

MASTER PLAN DEPARTMENT
SINDH MASTER PLAN AUTHORITY

9TH FLOOR, CIVIC CENTER, UNIVERSITY ROAD, GULSHAN-E-IQBAL, KARACHI-75300, PAKISTAN

No. MPD/Com/SMPA/2026/ 288/L Dated: 3-8-2026

The Deputy Director,
One Window Cell / Architectural & Planning,
Sindh Building Control Authority,
Karachi.

Diary & Dispatch Section
S.M.P.A. (HQ)
Outward No 288/L
Dated: 3-8-2026

SUBJECT: **VERIFICATION OF PLOT NO. 25-B, MEASURING 10002.00 SQUARE YARDS, SECTOR NO. 30, KORANGI TOWNHIP, KARACHI.**

Reference: **Letter No. SBCA/DD/OWC/Arch. & Planning , dated:.**

Reference to Subject noted above, it to inform that the Plot No. 25-B, measuring 10002.00 Sq. Yards, Korangi Township, Karachi, was converted from Industrial to Commercial with the approval of Competent Authority viz the than Senior Director, MPD, SMPA, vide this office letter No. SMPA/MPD/Com/2016/2024/906/L, dated: 02-04-2024, and the case has been re-examined and found that the case has not come in the orders of Honorable Supreme Court of Pakistan in C.P No. 815-K of 2016, dated 22-01-2019.

The letter of NOC attached herewith, for taken necessary action as per rule / law / policy as per desired.

DD ARCH & PLANN SBCA
DIARY NO 402/L
DATED 03/08/26

Assistant Director
MASTER PLAN DEPARTMENT
SINDH MASTER PLAN AUTHORITY

CamScanner

SINDH MASTER PLAN AUTHORITY

9TH FLOOR CIVIC CENTER GULSHA-E-IQBAL KARACHI-75300 (PAKISTAN)
PHONE # 99231159 / FAX: 99232023

Diary & Dispatch Section
S.M.P.A. (HQ)
Outward No 906/L
Dated 02-04-24

No. SMPA/MCD/Com/2016/3054/906/L Dated. 02-04-24

1. **The Director,**
   Directorate of Land Management,
   Karachi Development Authority,
   Karachi.

2. **M/s TPL Technology Zone Phase-I (Pvt.) Ltd,**
   through its Director Mr. Ali Jameel, Karachi.

Subject: **N.O.C. FOR CHANGE OF LAND USE OF PLOT NO. 25-B, MEASURING 10002.00 SQ. YDS, SECTOR NO. 30, KORANGI TOWN SHIP, KARACHI. FROM INDUSTRIAL TO COMMERCIAL.**

Reference: **letter No. Nil, dated: Nil, received in this office vide dairy No. 160/L, dated: 17-01-24.**

With reference to the above cited application on the subject. I am directed to inform that Competent Authority has allowed the change of land use of Industrial plot No. 25-B, measuring 10002.00 sq.yards, Sector NO. 30, Korangi Town Ship, Karachi. The NOC for change of land use from Industrial to Commercial for Shops / Offices / Flats / Banks / Show Rooms use is hereby granted as per KB & TP Regulation-2002 (Amended upto date) with the following terms and condition which must be strictly adhered to:

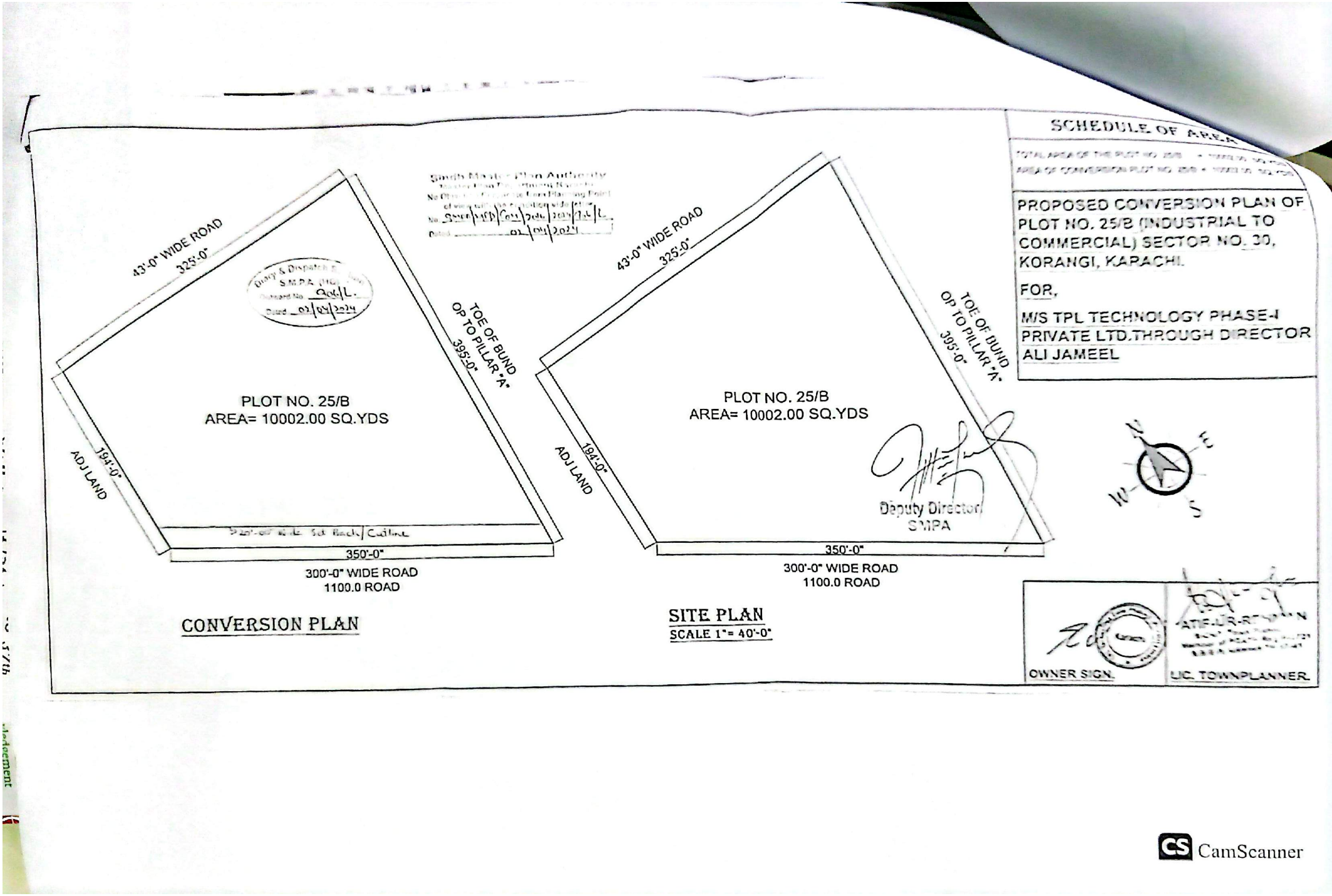
1. Subject to the clear title of land.
2. Subject to the approval of lessor.
3. Subject to the payment of relevant dues, if any, and clearance from the relevant authorities.
4. In case of arising any dispute, litigation regarding land in question or the Authority from any corner the same will be sorted out by the owner himself and SMPA shall take no responsibility in any manner for the same.
5. In case of any misinterpretation of facts, found at a later stage, this approval shall be withdrawn without any notice.
6. Building Plans shall be submitted for approval to SBCA. The Relevant and applicable Rules and Regulations contained in KP&TPR-2002 amended upto date.
7. Right of way / Road network of 1100 road, it should be maintained at site accordingly.
8. Cutline / Setback duly mark on the plan i.e.20'-00". It should be maintained at site accordingly
9. This approval is subject to the conditions agreed by the owner / applicant in affidavit / undertaking submitted by the applicant.
10. All other terms and conditions applicable on the conversion of plots shall strictly be observed.
11. Proper drainage system would be designed to take care-of the natural drainage passing through this area.
12. The building plan shall got approved from the SBCA.

Three copies of conversion plan duly signed and stamped is enclosed.

DEPUTY DIRECTOR
MASTER PLAN DEPARTMENT
SMPA

Copy to:

1. The Director General, Sindh Buildings Control Authority
2. PS to Sr. Director Master Plan, Sindh Master Plan Authority.


SCHEDULE OF AREA
PROPOSED CONVERSION PLAN OF PLOT NO. 25/B (INDUSTRIAL TO COMMERCIAL) SECTOR NO. 30, KORANGI, KARACHI.
FOR,
M/S TPL TECHNOLOGY PHASE-I PRIVATE LTD.THROUGH DIRECTOR ALI JAMEEL
43'-0" WIDE ROAD
325'-0"
TOE OF BUND OP TO PILLAR "A"
395'-0"
PLOT NO. 25/B
AREA= 10002.00 SQ.YDS
ADJ LAND
194'-0"
350'-0"
300'-0" WIDE ROAD
1100.0 ROAD
CONVERSION PLAN
SITE PLAN
SCALE 1"= 40'-0"
Deputy Director
SMPA
OWNER SIGN.
LIC. TOWNPLANNER

SINDH BUILDING CONTROL AUTHORITY
ONE WINDOW CELL

File No: Korangi/PC-3/OWC/Arch:&Planning/2021/2026 / 102 Dated: 31/01/2026

(ARCHITECTURAL CONCEPT PLAN)
(NOT VALID FOR CONSTRUCTION)

M/S. Milson Properties (BL-4170)
Muhammad Ali Jameel (Owner/Attorney)
CNIC : 42301-2108221-5,
Address: Plot No. COM-6, Sector-40, Falaknaz Excellency, Scheme-33, Karachi.

Area of Total plot: 10002.00 sq.yds
Gross covered area: 1247058.50 Sq.fts
Net area after exemptions: 601512.82 Sq.fts
Category: Commercial

Professional Team:-

1. **Lic. Arch: Furqan Mussarat (AL-01-831)**
2. **Lic. Engr: Tahir Nisar (SE-06-307)**
3. **Lic. Site Engr: Shuja-uddin (Civil/35986)**
4. **Membership of ABAD: (F.M. 2790)**

Subject:- **ACCEPTANCE OF ARCHITECTURAL CONCEPT PLAN IN RESPECT OF PROPOSED BUILDING PLAN ON PLOT NO. 25-B, SECTOR-30, KORANGI TOWNHSIP, KARACHI.**

Reference:- **REV-20241011-8, dated: 08-11-2024**

The Competent Authority has been pleased to accept the Architectural Concept Plan (Not Valid for Construction) at converted commercial plot admeasuring of 10002.00 Sq.yds for Basement (ARS + Parking + Showrooms + Services) + Ground Floor (Showrooms + Services) + 1st Floor (Visitor Parking + Services) + 2nd to 3rd Floors (Project Parking + Services) + 4th Floor (Recreation Area + Services) + 5th to 34th Floors – Tower-A, Tower-B, Tower-C (Flats) + 35th to 37th Floors – Tower-B, Tower-C (Flats) + 38th and 39th Floors – Tower – B (Flats) + 38th to 39th Floor – Tower – C (Duplex) + 40th to 42nd Floors – Tower-B (Flats) + 43rd to 44th Floors – Tower-B (Duplex) + Roof (Solar Panel + Battery Room + Services) only on the basis of Circular issued by DG SBCA vide no. SBCA/PS-CE/2022/44, Dated:14-06-2022 & vide Circulation No. SBCA/PS-CE/2024/07, Dated:24-01-2024 & & No. SO(HTP-I)/SBCA /7-29/2024, Dated:11-09-2024 and relevant title documents and NOC's with the following conditions: -

1. **This approval is granted on the basis of title verification & status of land in response to the letter No.KDA/DLM/AD.BP/2025/423/L, Dated:02-07-2025, from the Assistant Director (B.P) Land Management, KDA.**
2. **This approval is granted on the basis of change of land use /commercialization issued by Sindh Master Plan Authority (Defunt MPD) vide No. SMPA/MPD/COM/2016 /2024/ 906/L, dated:02-04-2024, and reviewed by SMPA through portal still awaited.**
3. **This Architectural Concept Plan is for Basement (ARS + Parking + Showrooms + Services) + Ground Floor (Showrooms + Services) + 1st Floor (Visitor Parking + Services) + 2nd to 3rd Floors (Project Parking + Services) + 4th Floor (Recreation Area + Services) + 5th to 34th Floors – Tower-A, Tower-B, Tower-C (Flats) + 35th to 37th Floors – Tower-B, Tower-C (Flats) + 38th and 39th Floors – Tower – B (Flats) + 38th to 39th Floor – Tower – C (Duplex) + 40th to 42nd Floors – Tower-B (Flats) + 43rd to 44th Floors – Tower-B (Duplex) + Roof (Solar Panel + Battery Room + Services) only.**
4. **Parking in Basement, Ground Floor, 1st Floor, 2nd Floor & 3rd Floor and Recreation Area at 4th Floor shall not be misused under any circumstances.**
5. **This approval is granted with the condition that Air Raid Shelter provided as per provision of KB&TPR-2002 is for the use of allottees in emergency condition and shall not be sale by owner/builder under any circumstance.**
6. **The building plan for the above mentioned plot attached herewith is hereby approved order Notification No. SO(HTP-I)/SBCA/7-29/2024, Dated: 11-09-2024 and you are Permitted to carry out construction on the said plot accordingly.**

Continued on Page/2

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7. This NOC is issued on the basis of minutes of 26th meeting of Authority held on 19-05-2026 at S. No. 70, vide letter No. SBCA/Secretary (Authority)/2026/96, Dated:20-05-2026.
8. This approval is granted with the condition that owner/builder shall design / provide the provision of Broadband wiring which is MANDATORY as per Clause 25-1.9.3 of KB&TPR-2002.
9. This approval is granted with the condition that owner/Builder shall mandatory design/provide the provision for utilization of at-least 5% for Solar Energy.
10. In case of any complaint / dispute or any court matter the SBCA shall not be the party and shall not be the responsible.
11. Landscape shall be provided as per KB&TPR-2002 (amended upto date).
12. Subject to condition that all constructional activities, supervision etc. shall jointly be the responsibility of professionals and owner / builder.
13. In order to achieve better quality concrete of required strength for Safe, Sound and Stable Structure, Builder shall use Ready Mix Concrete from the batching plant as defined in these regulations.
14. NOC for Sale/Advertisement shall be obtained from (PSA &C) Section and case must be submitted before issuance of final construction permit by SBCA.
15. NOC / Clearance from Structure Section of SBCA to obtained before Final Construction permits.
16. In case of any compliant / evidence regarding Sale / Booking of units without Sale NOC, this Architectural Concept Plan (Not Valid for Construction) will be withdrawn and Builder License shall be cancelled by the Authority.
17. In case of any misrepresentation / concealment of facts or construction started without getting construction permit under Section 6 (1) of SBCA 1979, this approval will be withdrawn / cancelled without any notice.
18. The owner/builder shall submit MEP drawings for record purpose before final construction permit.
19. The owner is required to produce NOC for Height Clearance, Strategic Plans Division NOC before Final Approval.
20. The owner/builder shall obtain NOC for SEPA regarding IEE/EIA before start of construction in concerned District Director.
21. SBCA reserve the right to obtain all fees / charges / taxes / dues remaining to owner / builder subsequently.(if applicable)

You are therefore, advised to comply above and submit the Structure requirements for further process in accordance with these rule regulations.

Deputy Director
One window Cell / Architectural & Planning
Head Quarters, SBCA

Copy for information to: -

1. Director, (District Korangi), SBCA.
2. Director, Structure Section, SBCA.
3. Director, IT, SBCA.
4. Chairman, ABAD.
5. Secretary to DG, SBCA.

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