



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY, & SEAWALL

**Final Report
December, 2024**



**Submitted to:
Sindh Environmental Protection Agency**

Environmental Impact Assessment For Construction of Road, Walkway & Seawall at Sea Front Between Dolmen Mall and China Port, Clifton, Karachi

**Final Report
December, 2024**



**Proponent
Karachi Development Authority (KDA)**

1st Floor, Civic Center, Gulshan-e-Iqbal, Karachi.
Phone: 021-99232401



**Consultant
Environmental Consultancy and Services**

101, First Floor, Plot No. H-3/B, Sector-5, EBM Causeway,
Korangi Industrial Area, Karachi.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

DISCLAIMER

ECS (Environmental Consultant) has prepared this report in accordance with the information provided by Karachi Development Authority (KDA) for their sole and specific use.

The Consultant accept no responsibility for the consequences of this document being referred to or relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by the KDA.

Any person who uses any information contained therein do so at their own risk.

This report cannot be used in the court of law for any negotiation, standardization, or evidence.

This Environmental Impact Assessment (EIA) report has been prepared for proposed project “Construction of Road, Walkway & Seawall” (CRWSW). Local Government Department, Government of Sindh will sponsor, while the Karachi Development Authority (KDA) will execute the project at Sea Front between Dolmen Mall and China Port, Clifton, Karachi. The location map of the project is provided below.



This Environmental Impact Assessment (EIA) Report has been prepared in compliance with the Sindh Environmental Protection Act (SEPA), 2014 and SEPA Review of EIA/IEE Regulations, 2021 for decision on environmental approval of the proposed project. As per SEPA (Environmental Assessment) Regulations, 2021 the proposed project falls in the Category I (5) of Schedule-III “Large scale public facilities” which means the proposed project requires full-fledged EIA to be conducted at planning stage for complying with SEPA Act, 2014.

The proposed project will include roads, seawall, cycling track, jogging track and green belts. The project will have a total of three roads including a primary dual track road and two dual track link roads. Each track of a primary road will be 14.6 meters wide with four lanes of 3.65 meters. The project will also have 7.3 meters wide service roads and car parking facility at certain locations. A car parking facility is proposed for 300 passenger cars which will be accessible via service roads.

The project will provide quality recreational facilities to the public to undertake walking and jogging in hygienic and safe environment.

The project will enable people to spend their leisure time in aesthetically designed recreational facility to get rid of fatigue and feel fresh. The project will have positive impact on the overall environment.

Karachi is divided into seven districts: Malir, Central, East, West, South, Korangi, and Keamari. The proposed project site falls under South district. The South district is administratively divided into 5 sub-divisions and 2 cantonments.

According to the Census 2017 provided by Pakistan Bureau of Statistics (PBS), total population of District South is 1,769,230. Total male population is 930,691 while female is 831,349 and the average household size is 5.43. The population of District South is entirely urban. Average growth rate between 1998 and 2017 was 0.98%. Based on the census in 1998, the population of South District was 1,468,579.

The climate of project area study area is often referred as an arid or semi-arid with extremely hot summers, mild winters, low rainfall, and high humidity. The seismic activity in Karachi is monitored by institutions such as the Pakistan Meteorological Department (PMD) and the National Center for Seismology (NCS), these organizations use seismometers to detect and measure ground motion. The project area is falling in Zone 2B, varying from 0.16 to 0.24.

The baseline provided includes terrestrial and aquatic species found in the area. In order to compile the biodiversity in the vicinity of the proposed project location, the data and information were obtained from secondary data from published literature. The information was further refined and verified by random ground truthing.

The area is not located in or around protected area and no endangered species of flora and fauna and protected habitat is found in the project area during the surveys.

The stakeholder consultations are conducted to disseminate information about the project and its expected impact on the primary and secondary stakeholders. Primary stakeholder is usually referred to those, who may be directly affected by the proposed project's activities, while on the other hand secondary stakeholders refers to those who are usually affected indirectly or they have power to make decisions at governmental or institutional level. Based on the EIA procedures, detailed stakeholder consultative meetings were carried out with different stakeholders. The most important objective of these consultation meetings was to determine the extent of the impact of different proposed project activities and suggest appropriate mitigation measures accordingly.

After a thorough assessment of the existing environmental and socio-economic conditions and review of technical data, a team of environmental professionals analyzed the significant environmental impacts and suggested the necessary measures for mitigating the impacts. The chapter 6 presents the environmental impact assessment of the project. This EIA Report presents the screening process to identify the overall impacts of construction and operation activities on the physical, biological, and socioeconomic environment of the Project and suggest mitigation measures that need to be adopted, wherever necessary in order to reduce, minimize or compensate the negative impact anticipated from the project.

The potential impacts associated with the construction and operation of project have been identified, which assess its nature and magnitude which is associated with the various activities of the project.

The EMMP (Environmental Management and Monitoring Plan) has been designed to address how the proposed measures will be implemented. It defines the responsibilities of the proponent and contractor; develops a system of checks and balances; proposes actions that are to be taken by each role player; and lays down the required documentation, communication, and monitoring procedures.

The purpose of this EMMP is not only to address the expected environmental impacts of the proposed project, but also to enhance project benefits and to introduce standards of good practice to be adopted for the proposed project. The process of environmental mitigation and management, as described in this section, involves the coordination and collaboration of several officials to ensure effective implementation.

The Project Implementation Unit is responsible for overseeing the implementation of the project. The PIU plays a crucial role in managing the overall project and also ensuring compliance with environmental and social safeguards. They work closely with other stakeholders and agencies to execute the project in an environmentally and socially responsible manner.

The Project Supervision Consultant (PSC) supports the PIU in construction management activities. The PSC provides oversight, and decision-making support to the PIU during the construction phase. They also play a role in ensuring that environmental management measures are properly integrated into the construction activities.

The Project Contractor is responsible for executing the construction activities in accordance with the project's environmental and social requirements. Contractor needs to adhere to the Environmental Management Plan (EMP) and implement mitigation

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

measures to minimize adverse environmental and social impacts during the project construction phase.

Additionally, a detailed Environmental Management and Monitoring Plan (EMMP) identifies all the possible impacts associated with the proposed project and mitigation safeguards are an integral part of the plan to minimize adverse impacts associated with the project. Based on the point discussed above it is concluded that the proposed project will not have any significant long term adverse impacts onto the existing environment, if the project proponent ensures strict implementation of EMMP. The impacts identified were mostly short term, site specific and would be easily managed by implementation of the EMMP in this EIA document.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Table of Contents

CHAPTER 1: INTRODUCTION	1
1.1 Background Information	1
1.2 Objectives of the Project	1
1.3 Project Proponent	2
1.4 Purpose of Environmental Impact Assessment (EIA).....	3
1.5 Specific Objectives of EIA.....	3
1.6 EIA Study Stages	5
1.7 EIA Report Structure.....	5
CHAPTER 2: LEGISLATIVE AND POLICY FRAMEWORK	7
2.1 Background Information	7
2.2 Environmental Legislation Framework.....	7
2.2.1 Pakistan Environmental Protection Ordinance, 1983 (PEPO, 83)	7
2.2.2 Pakistan Environmental Protection Act, 1997 (PEPA, 97)	8
2.2.3 Sindh Environmental Protection Act, 2014.....	8
2.2.4 Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021	9
2.2.5 Sindh Environmental Quality Standards (SEQS).....	9
2.2.6 The Sindh Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rules, 2014.....	10
2.2.7 Sindh Hazardous Substance Rules, 2014	10
2.3 National and Provincial Environmental Policies and Guidelines	11
2.3.1 National Conservation Strategy (NCS)	11
2.3.2 National Environmental Policy, 2005	12
2.3.3 National Climate Change Policy, 2011	13
2.3.4 Sindh Drinking Water Policy, 2017	13
2.4 Other Cross-sectoral Laws in Sindh.....	14
CHAPTER 3: PROJECT DESCRIPTION	16
3.1 Project Background and Overview	16
3.2 Purpose of the Proposed Project.....	16
3.3 Description of the Proposed Project.....	16

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

3.3.1	Advantages of the Proposed Development.....	20
3.4	Project Location and Accessibility.....	21
3.5	Project Facilities	23
3.6	Technical Specifications	23
3.6.1	Road Network Design	23
3.6.2	Water Supply System	23
3.6.3	Wastewater Management System.....	24
3.6.4	Storm Water Drainage	24
3.6.5	Power Supply System	24
3.6.6	Solid Waste Management.....	24
3.6.7	Safety & Security.....	24
CHAPTER 4: ENVIRONMENTAL & SOCIAL BASELINE.....		25
4.1	Introduction	25
4.2	Methodology of Baseline Study	26
4.3	Physical Environment	26
4.3.1	Topography.....	27
4.3.2	Geological Conditions	29
4.3.3	Climatic Conditions	30
4.3.4	Groundwater	34
4.3.5	Wind Speed.....	35
4.3.6	Ambient Air and Noise.....	36
4.3.7	Water Network	37
4.3.8	Sewage Water Drainage	38
4.3.9	Disaster Risks	39
4.4	Biological Environment	41
4.4.1	Flora of the Project Area	41
4.4.2	Fauna	45
4.5	Social-Economic Environment	45
4.5.1	Demography	46
4.6	Livelihood and Project Nearby Surrounding	46
CHAPTER 5: STAKEHOLDER CONSULTATION		48

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

5.1	Background Information	48
5.2	Stakeholder Consultation Outcomes/Findings	49
5.2.1	Feedback by Primary Stakeholders	49
5.2.2	Views, Opinions and Recommendations of Secondary Stakeholders / Government Departments	51
CHAPTER 6: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES		52
6.1	Overview	52
6.2	Potential Impacts	52
6.3	Construction Phase Impacts	53
6.3.1	Soil Erosion/Dust.....	53
6.3.2	Wastewater Discharge	53
6.3.3	Solid Waste Generation and Management	54
6.3.4	Air Pollution	54
6.3.5	Noise and Vibration.....	55
6.3.6	Disturbance to the Traffic Flow.....	56
6.3.7	Water Consumption and Demand.....	56
6.3.8	Weather Conditions	56
6.3.9	Safety of Workers and Public.....	57
6.3.10	Employment and Business Opportunity	57
6.4	Operation Phase Impacts.....	58
6.4.1	Community Safety Risks	58
6.4.2	Solid Waste Management.....	58
6.4.3	Air Pollution	58
6.4.4	Utility Services and Consumption of Resources	59
6.4.5	Parking and Traffic Management	59
7.1	Background Information	60
7.1.1	Objectives and Purpose of EMMP	60
7.2	Roles & Responsibilities	60
7.2.1	Role of PIU	60
7.2.2	Role of PSC	61

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

7.2.3	Role of Project Contractor	61
7.3	Environmental Management Monitoring Plan	61
7.4	Environmental Monitoring and Sampling Plan.....	75
	Conclusion	77
	Annexures	78
	Annexure 1: Sindh Environmental Protection Act, 2014	79
	Annexure 2: SEPA (Environmental Assessment) Regulations, 2021	109
	Annexure 3: The Sindh Environmental Quality Standards, 2016.....	126
	Annexure 4: Copy of Lab Report of Ambient Air Quality	140
	Annexure 5: Copy of Lab Report of Ambient Noise	141

List of Figures

Figure 1: Cross Section A Drawing	17
Figure 2: Cross Section B Drawing	18
Figure 3: Cross Section C Drawing	18
Figure 4: Cross Section D Drawing	19
Figure 5: Cross Section E Drawing	19
Figure 6: Cross Section F Drawing.....	20
Figure 7: Location Map of the Proposed Project	22
Figure 8: Topographical Elevation of Project Site	29
Figure 9: Geological Map of Project Site	30
Figure 10: Temperature Trend- Karachi	31
Figure 11: Precipitation Trend in Karachi	32
Figure 12: Mean Monthly Relative Humidity in Karachi.....	34
Figure 13: Wind Speed of the Karachi	35
Figure 14: Ambient Air and Noise Monitoring Process	37
Figure 15: Water Supply Network of Karachi.....	38
Figure 16: Tectonics Plate Configuration of Pakistan	40
Figure 17: Floral Species found in the Project Site	44
Figure 18: Pictorial View of Consultation with Primary Stakeholders	50
Figure 19: Pictorial View of Consultation with Secondary Stakeholders	51

List of Tables

Table 1: Detail of EIA Experts/Consultants	4
Table 2: Key Figures of the Proposed Development	16
Table 3: Ambient Air Monitoring Results	36
Table 4: Details of Sewerage Lines in Karachi	39
Table 5: Details of Boundaries of Seismic Zone	41
Table 6: District South Division & Cantonments	46
Table 7: Overview of Potential Impacts due to the Project	52
Table 8: Environmental Management Plan (EMP) Construction Phase.....	62
Table 9: Environmental Management Plan (EMP) Operational Phase	71
Table 10: Environmental Monitoring Plan	73
Table 11: Environmental Monitoring and Sampling Plan	75



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

Acronyms

CRWSW	Construction of Road, Walkway & Seawall
EA	Environmental Assessment
ECS	Environmental Consultancy & Services
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GOS	Government of Sindh
IEE	Initial Environmental Examination
IMC	Independent Monitoring Consultant
KDA	Karachi Development Authority
KMC	Karachi Metropolitan Corporation
NCS	National Conservation Strategy
NEP	National Environmental Policy
NOC	No Objection Certificate
O&M	Operation & Maintenance
OHS	Occupational Health and Safety
PEPA	Pakistan Environmental Protection Agency
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
PSC	Project Supervision Consultant
SEPA	Sindh Environmental Protection Agency
SEP-A	Sindh Environmental Protection Act
SEQS	Sindh Environmental Quality Standards

CHAPTER 1: INTRODUCTION

1.1 Background Information

This Environmental Impact Assessment (EIA) report has been prepared for proposed project “Construction of Road, Walkway & Seawall” (CRWSW). Local Government Department, Government of Sindh will sponsor, while the Karachi Development Authority (KDA) will execute the project at sea front between Dolmen Mall and China Port, Clifton, Karachi. Salient features of the technical team of proposed project are provided below.

Project Name:	Construction of Road, Walkway & Seawall
Project Location:	At Sea Front Between Dolmen Mall and China Port, Clifton, Karachi.
Study Category:	Environmental Impact Assessment
Proponent:	Karachi Development Authority (KDA) 1st Floor, Civic Center, Gulshan-e-Iqbal, Karachi. Phone: 021-99232401 
Project Contractor:	M/s. Sher Jan Mosakhail & Sons
Project Consultant:	M/s. Atif Nazar & CO
Environmental Consultant:	Environmental Consultancy & Services

1.2 Objectives of the Project

The project will provide quality recreational facilities to the public to undertake walking and jogging in hygienic and safe environment. It will include roads, seawall, cycling track, jogging track and green belts including sitting areas.

The project will bridge the gap between demand and supply of such recreational facilities to enable people to spend their leisure time in aesthetically designed recreational facility to get rid of fatigue and feel fresh. The project will have positive impact on the overall environment in view of disastrous consequence being faced due to climatic change.

1.3 Project Proponent

Karachi Development Authority (KDA) was established in 1957 by merging Karachi Improvement Trust and Karachi joint Water Board under the President Order. KDA was responsible for the Water Supply System of Karachi and Building Control Management but after establishment of Karachi Water & Sewerage Board and Sindh Building Control Authority. The KDA is now responsible for the following functions.

- Planning, Coordination and rendering Planning advice
- Land Development
- Housing (Public Housing Scheme, Low Cost Housing Scheme)
- Roads & Bridges
- Redevelopment
- Manufacturing of Pipes
- Design Bureau
- Anti-Encroachment and Resettlement
- Research and Publication
- Horticulture - Parks & Recreation
- Computerization of Land Record, Accounting System
- Archiving of Land Record
- Land Acquisition
- Charged Parking

The KDA was merged with City District Government Karachi in 2002. Now the Government of Sindh has restored the KDA in its original position vide Provincial Assembly of Sindh Notification No: PAS/Legis-B-06/2016, dated: 11.05.2016, Karachi Development Authority (Revival & Amending) Act, 2016 - Sindh Act No. XVI of 2016. All the policy matters and important cases are dealt with / decided by the Governing Body of the Authority.

The Government of Sindh has constituted the Governing Body vide Local Government & Housing, Town Planning Department, Sindh Notification No: SO(G)/HTP /3-442/2016, dated: 29.09.2016. The present Governing Body of KDA consists of the following.

- | | |
|---|----------|
| • Minister, L.G. & HTP Dept. Govt of Sindh | Chairman |
| • Member Provincial Assembly | Member |
| • Member Provincial Assembly | Member |
| • Secretary, L.G. & HTP Dept. Govt of Sindh | Member |
| • Commissioner, Karachi | Member |

- | | |
|-------------------------|--------------------|
| • Director General, KDA | Member / Secretary |
| • Member Technical, KDA | Member |
| • Member Finance, KDA | Member |
| • Member Admin, KDA | Member |

At the time of establishment of KDA, the main function of the Authority was to develop Karachi city. The population of city at the time of establishment was about 1.6 million which has now increased to above 22 million. Hence, there is great need to develop more Schemes in the city but the KDA is not in a position to play its role as no vacant land is available with KDA for meeting the housing need of Karachi. However, the Authority is doing its best to provide facilities to the citizen of Karachi.

1.4 Purpose of Environmental Impact Assessment (EIA)

This Environmental Impact Assessment (EIA) Report has been prepared in compliance with the Sindh Environmental Protection Act (SEPA), 2014 and SEPA Review of EIA/IEE Regulations, 2021 for decision on environmental approval of the proposed project. As per SEPA (Environmental Assessment) Regulations, 2021 the proposed project falls in the Category I (5) of Schedule-III “Large scale public facilities” which means the proposed project requires full-fledged EIA to be conducted at planning stage for complying with SEPA Act, 2014.

1.5 Specific Objectives of EIA

The purpose of an Environmental Impact Assessment (EIA) for a development project is to evaluate and understand the potential environmental effects that may result from the implementation of that project. Environmental Impact Assessment serves as a valuable tool for balancing development objectives with environmental sustainability and ensuring that projects are carried out in a manner that minimizes harm to the environment. The primary objectives of an EIA are.

Identification of Environmental Impacts: Assess and identify the potential environmental impacts, both positive and negative, that may result from the proposed development project. This includes impacts on air quality, water resources, soil, biodiversity, ecosystems, and human health.

Prediction and Evaluation of Impacts: Evaluate the significance and magnitude of the identified impacts. This involves predicting the likely consequences of the project and assessing whether they are acceptable or can be mitigated to an acceptable level.

Public and Stakeholder Involvement: Involve the public, local communities, and relevant stakeholders in the decision-making process. This ensures that diverse perspectives are considered, and concerns from different groups are taken into account.

Mitigation and Enhancement Measures: Propose measures to avoid, minimize, or mitigate adverse environmental impacts. This may involve suggesting changes to the project design, incorporating pollution control technologies, or implementing conservation and restoration measures.

Decision Support: Provide decision-makers with comprehensive information on the environmental implications of the project. This allows for informed decision-making by considering environmental factors alongside economic and social considerations.

Compliance with Regulations: Ensure that the proposed development complies with relevant environmental laws, regulations, and standards. EIA is often a regulatory requirement in many countries to obtain project approvals.

Continuous Monitoring and Adaptive Management: Establish a framework for monitoring the environmental performance of the project during and after implementation. This allows for adaptive management, where adjustments can be made to mitigate unforeseen impacts.

For achieving these targets amicably KDA for their CRWSW project commissioned the services of environmental consultants namely, Environmental Consultancy & Services (ECS) for conducting this EIA study of the proposed project.

To further perform the tasks related to the subject EIA study, ECS engaged following experts as shown in the table 1.

Table 1: Detail of EIA Experts/Consultants

Sr. #	Name	Position in EIA Assessment Team
i.	Mr. Shahid Ali Lutfi	Team Leader / Sr. Environment Engineer
ii.	Mr. Nouman Sheikh	Project Manager
iii.	Dr. Atif Javed	Sr. Soil & Environmental Expert
iv.	Mr. M. Saeed Akhtar	Sr. Environmental Engineer
v.	Ms. Ruqia Shehzadi	Soil & Environmental Expert
vi.	Mr. Kamran Ali	Social Officer
vii.	Mr. Muhammad Ghufraan	Sr. Environmentalist
viii.	Ms. Mariam Intesama	Environmentalist

1.6 EIA Study Stages

Stage-I Project Data Acquisition	- Initial meeting between environmental consultant and project design team for basic project data acquisition.
Stage-II Desk Study/Literature Review	- Review of regulatory requirements based on preliminary assessment of project activities and the project area. - Review of secondary literature review to collect environmental data about the project area.
Stage-III Scoping and Stakeholder Consultation Meetings	- Disclose basic non-technical summary of the proposed project to the primary and secondary stakeholder through formal and informal discussions during scoping and consultation meetings to identify environmental and social parameters those are likely to undergo significant change due to the proposed project and document suggestions, concerns and recommendations of stakeholders consulted.
Stage-IV Baseline Investigations and Surveys	- Site visits for the Baseline Investigations including Physical, Ecological and Social Environmental conditions of the project area.
Stage-V Environmental and Social Impact Analysis and Mitigation	- Evaluation of the environmental parameters those are likely to undergo significant change due to the proposed project. - Development of Environmental Management and Monitoring Plan to mitigate the adverse impacts of the proposed project.
Stage-VI Documentation of EIA report	- Documentation and submission of EIA report to SEPA for preliminary scrutiny

1.7 EIA Report Structure

This EIA report has been organized in following chapters:

Chapter 1: Introduction

Highlights background information, basic overview of the proposed project, need and significance of the proposed project and purpose of this EIA study.

Chapter 2: Legislative and Policy Framework

Gives an overview of policies, legislations, and guidelines relevant to the proposed project.

Chapter 3: Project Description

Highlights detailed description of the proposed project such as construction and operation processes, utility requirements/source and completion timeframe etc.

Chapter 4: Environmental and Social Baseline

Describes the existing environment in the proposed project area. It carries details of area's infrastructures, physical, ecological, and socio-economic conditions of the area.

Chapter 5: Stakeholder Consultations

Describes the details about all stakeholders, the overall consultation process and their concerns and recommendations about the project.

Chapter 6: Environmental Impacts Analysis and Mitigations

Describes the anticipated environmental and social impacts of the project and their consequent screening in accordance with the general guidelines. The screening further identifies the residual impacts resulting as a consequence of the adoption of mitigation measures.

Chapter 7: Environmental Management and Monitoring Plan

Details the environmental management and monitoring plan to be implemented by the proponent for effective mitigation of adverse impacts and improved environmental performance.

Conclusion:

Summarizes the report and presents conclusion.

CHAPTER 2: LEGISLATIVE AND POLICY FRAMEWORK

2.1 Background Information

The first cover to the environmental safeguards within the country was under the Pakistan Environmental Protection Ordinance (EPO), 1983. It was the first commitment at the state level to ensure environmental conservation and safeguards in developmental pursuits. EPO focused primarily on industrial operations and unspecified other environmental aspects. The perceived technical lacunas were resolved when Pakistan Environmental Protection Act (PEPA), 1997 was enacted which was ambitious to incorporate preventive and curative measure for the promotion of sustainable development in the country (GoP, 1997).

Before the 18th Amendment in the constitution of Pakistan, Environmental Protection Act empowered Pakistan Environmental Protection Agency to implement all the relevant environmental legislation across all the provinces of Pakistan. However, after the 18th amendment the environmental portfolio devolved to provincial governments. Consequently, the Sindh Environmental Protection Agency was empowered to formulate environmental legislation, rules, regulations and standards and their enforcement/implement in the whole Sindh province as a formulating, regulatory and monitoring agency. However, it is important to note that, the enactment of comprehensive legislation on the environment, covering multiple areas of concern, is a relatively an ongoing and continuous phenomenon in a developing country like Pakistan.

2.2 Environmental Legislation Framework

2.2.1 Pakistan Environmental Protection Ordinance, 1983 (PEPO, 83)

Pakistan Environmental Protection Ordinance, 1983 (PEPO), 83 was the first specialized environment law promulgated through an ordinance. Under section 8 of the PEPO, 83 it was required to get environmental approval. However, practically this law was never implemented due to lacunas in it. Environmental Protection Agencies were not established at that time and there was no judicial mechanism for implementation and execution of this law. No rules were framed and thus for practical purposed this law never got implemented. However, with this introductory law Environment Protection Agencies were established in late 80s of last century and later on in 1994 National Environmental Quality Standards (NEQS) were notified.

2.2.2 Pakistan Environmental Protection Act, 1997 (PEPA, 97)

After passed by the Majlis-e-Shoora (Parliament), Pakistan Environmental Protection Act, 1997 (PEPA), 97 received the assent of the Acting President on the 3rd December, 1997. The law provides for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development, and for matters connected therewith and incidental thereto.

Requirement of Section 12 of PEPA, 1997 is reproduced below.

“12. Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA). (1) No person of a project shall commence construction or operation unless he has filed with the federal Agency an Initial environmental examination or, where the project is likely to cause an adverse environmental effect an environmental impact assessment and has obtained from the Federal Agency approval in respect thereof.”

2.2.3 Sindh Environmental Protection Act, 2014

After the 18th amendment all provinces adapted or enacted their own Environmental Protection Laws in the relevant province. The Sindh Environmental Protection Act was notified by the Provincial Assembly of Sindh via notification #PAS/Legis-B-06/2014 dated March 20, 2014. The Act extends to whole of the province of Sindh. The Sindh Environmental Protection Act, 2014) like PEPA, 1997 provides for the protection, conservation, rehabilitation and improvement of the environment. This Act, consisting of 37 sections divided into eleven Parts, establishes composition, duties and responsibilities of the Sindh Environmental Protection Council, entitled to: co-ordinate and supervise the enforcement of all the provisions relating to the environment in the Province; approve comprehensive provincial environmental and sustainable development policies and ensure their implementation within the framework of a conservation strategy and sustainable development plan; approve the Sindh Environmental Quality Standards; provide guidelines for the protection and conservation of species, habitats, and biodiversity and for the conservation of renewable and non-renewable resources; integrate principles and concerns of sustainable development into socio-economic and development policies, plans and programmes at the provincial, district and local levels; deal with inter-provincial and federal-provincial issues; provide guidelines for biosafety and for the use of genetically modified organisms; etc.

It creates the Sindh Environmental Protection Agency entitled to administer and implement the provisions of this Act and the rules and regulations regarding the environmental issues. The Sindh Sustainable Development Fund shall be managed by a Board known as the Provincial Sustainable Development Fund Board. The Act specifies

that no person shall discharge waste, pollutant, emit noise or any other matter that may cause or likely to cause pollution or adverse environmental effects (as defined in section 2) in levels higher than specified in Sindh Environmental Quality Standards. No person shall import hazardous waste into Sindh province or its coastal, internal, territorial or historical waters, except prior approval of the Agency. Part VI deals with Environmental Examinations and Assessments and specifies that all provincial authorities, local councils and local authorities responsible for formulating policies, legislation, plans and programs to be implemented in Sindh province which may cause any environmental impact in the jurisdiction of the province shall forward to the Sindh Environmental Protection Agency a strategic environment assessment. Copy of SEP Act is attached as Annexure-1.

2.2.4 Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021

Under these regulations the projects are categorized requiring IEE or EIA at the planning stage to be approved by Sindh Environment Protection Agency (SEPA). The categories are defined in the Sindh Environmental Protection Agency (SEPA). According to the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021 the proposed project falls under the Schedule III. Copy of SEPA Environmental Assessment Regulations is attached as Annexure-2.

2.2.5 Sindh Environmental Quality Standards (SEQS)

Environmental quality standards play a crucial role during construction and operation activities, waste disposal, and other human interventions that may impact the environment. Compliance with these standards is essential to prevent and mitigate adverse environmental effects, ensuring sustainable development and the well-being of the population.

In exercise of the powers conferred by section 37 of the Sindh Environmental Protection Act, 2014, the Sindh Environmental Protection Agency, with the approval of the Government, have notified Sindh Environmental Quality Standard, 2016 which specifies standards for industrial and municipal effluents, gaseous emissions, vehicular emissions, and noise levels. These standards would be applicable to the proposed project. Sindh Environmental Protection Agency, with the approval of the Sindh Environmental Protection Council, has established following standards, and Copy of SEQS is attached as Annexure-3.

- SEQS for Municipal and Industrial effluent
- SEQS for Industrial Gaseous Emissions and Motor Vehicle Exhaust
- SEQS for Ambient Air Quality and Ambient Noise

2.2.6 The Sindh Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rules, 2014

These rules are called the Sindh Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rules, 2014. Priority parameters are parameters of Sindh environmental quality standards which are selected for the purpose of submission of Environmental Monitoring Reports to the Agency by an industrial unit. On the basis of the pollution level of an industrial unit, these rules classify the unit into category “A”, “B” or “C” for liquid effluents, and category “A” or “B” for gaseous emissions.

Category “A” Industrial unit

An industrial unit in category “A” shall submit environmental monitoring reports on monthly basis. An industrial unit in category “A” shall maintain a record of the times during which start-up and upset conditions occur and shall mention the total time elapsed in such conditions in its monthly environmental monitoring report.

Category “B” Industrial unit

An industrial unit in category “B” shall submit environmental monitoring reports on quarterly basis.

Category “C” Industrial unit

An industrial unit in category “C” shall submit environmental monitoring reports on biannual basis for priority parameters in respect of liquid effluents.

2.2.7 Sindh Hazardous Substance Rules, 2014

The Sindh Hazardous Substances Rules, 2014 are a set of rules derived from the Sindh Environmental Act, 2014 and are first of the very specific hazardous substances regulations brought into force in 2014 after the initial draft set of rules devised in 2003. They represent specific regulations with aspect of handling, storage and disposal of hazardous substances and issuing an approving license to the user or facility. The Schedule-I of the Rules enlists the hazardous substances that are under the scrutiny of the Sindh-EPA.

Under its licensing terms, the Rules highlight particular components as follows:

- Employment of Qualified technical personnel
- Packing and labeling
- Conditions of Premises
- Safety precautions

- Trainings
- A comprehensive safety plan
- Waste management Plan and
- Transporting of hazardous substances

2.3 National and Provincial Environmental Policies and Guidelines

Environmental Policies and Guidelines relevant to the proposed project were also reviewed for this EIA study brief history of the national policies and guidelines is given below.

2.3.1 National Conservation Strategy (NCS)

The National Conservation Strategy (NCS) is the primary and earliest Policy document of the Government of Pakistan on national environmental issues. The Policy was approved by the Federal Cabinet in March 1992. The Strategy also attained recognition by international donor agencies, principally the World Bank. The NCS identifies 14 core areas including conservation of biodiversity, pollution prevention and abatement, soil and water conservation and preservation of cultural heritage and recommends immediate attention to these core areas in order to preserve the country's environment. A midterm review of the achievements of the NCS in 2000 concluded that achievements under the NCS have been primarily awareness raising and institutional building rather than actual improvement to environment and natural resources and that the NCS was not designed and is not adequately focused as a national sustainable development strategy¹. The need therefore arose for a more focused National Environmental Action Plan (NEAP) required to bring about actual improvements in the state of the national environment with greater emphasis on poverty reduction and economic development in addition to environmental sustainability.

The NEAP was approved by the Pakistan Environmental Protection Council under the chairmanship of the President/Chief Executive of Pakistan in February 2001. NEAP now constitutes the national environmental agenda and its core objective is to initiate actions that safeguard public health, promote sustainable livelihoods, and enhance the quality of life of the people of Pakistan. A National Environmental Policy has been approved by the Federal Cabinet in its meeting held in June 2005. This policy has

¹Arthur J. Hanson et al, *Pakistan's National Conservation Strategy Renewing Commitment to Action, Report of the Mid-Term Review, 2000*

already been endorsed by the Pakistan Environmental Protection Council during 2004. The new policy has total 171 guidelines on sectoral and cross-sectoral issues. The objectives of new policy include assurance of sustainable development and safeguard of the natural wealth of country. The following are the approved Sectoral Guidelines:

- Water Supply and Management;
- Air Quality and Noise;
- Waste Management;
- Forestry;
- Biodiversity and Protected Areas;
- Climate Change and Ozone Depletion;
- Energy Efficiency and Renewable;
- Agriculture and Livestock;
- Multilateral Environmental Agreements.

2.3.2 National Environmental Policy, 2005

National Environmental Policy aims to protect, conserve and restore Pakistan's environment in order to improve the quality of life of the citizens through sustainable development. The objectives of the policy are:

- Conservation, restoration and efficient management of environmental resources.
- Integration of environmental considerations in policy making and planning process.
- Capacity building of government agencies and other stockholders at all level for better environmental management.
- Meeting international obligations effectively in line with the national aspirations.
- Creation of a demand for environment through mass awareness and community mobilization².

²National Environmental Policy, 2005.

2.3.3 National Climate Change Policy, 2011

To ensure that climate change is mainstreamed in the economically and socially vulnerable sectors of the economy and to steer Pakistan towards climate resilient development. The main objectives of Pakistan's Climate Change Policy include:

- To pursue sustained economic growth by appropriately addressing the challenges of climate change.
- To integrate climate change policy with other inter-related national policies.
- To focus on pro-poor gender sensitive adaptation while also promoting mitigation to the extent possible in a cost-effective manner.
- To ensure water security, food security and energy security of the country in the face of the challenges posed by climate change.
- To minimize the risks arising from the expected increase in frequency and intensity of extreme weather events such as floods, droughts and tropical storms.
- To strengthen inter-ministerial decision making and coordination mechanisms on climate change.
- To facilitate effective use of the opportunities, particularly financial, available both nationally and internationally.
- To foster the development of appropriate economic incentives to encourage public and private sector investment in adaptation measures.
- To enhance the awareness, skill and institutional capacity of relevant stakeholders.
- To promote conservation of natural resources and long term sustainability³.

2.3.4 Sindh Drinking Water Policy, 2017

The Public Health Engineer and Rural Health Development Department, Government of Sindh with the approval of Chief Minister Sindh issued Drinking Water Policy in 2017. The main principles of Sindh Drinking Water Policy have been adopted from National Water Policy, 2009. The goal of Sindh Drinking Water Policy, 2017 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 in premises available when needed

³National Climate Change Policy, 2011.

and free from contamination, affordable and sufficient quantity and in a way that is equitable and sustainable.

2.4 Other Cross-sectoral Laws in Sindh

The term "environment" encompasses both the physical and biological factors and includes the air, water, soil, climate, flora, fauna, and various other elements that collectively create the ecological system in a specific area. The environment also encompasses the interactions and relationships between living organisms and their surroundings. The concept of the environment extends beyond the immediate physical space and incorporates the complex web of interconnected ecosystems and habitats on a global scale.

Understanding and protecting the environment are crucial for promoting sustainable development and ensuring the well-being of all living organisms. As such, apart from Sindh Environment Protection Act in general other special laws related to forests, water resources, wildlife, land, agriculture, health and planning are also applicable while preparing the EIA report of a development project. The following laws are relevant to this project and are discussed briefly in the following paras.

- i. **Land Acquisition Act 1894:** Land Acquisition Act, 1894, empowers the government to acquire private land for a project of national importance and lays down the acquisition procedure. A compensation is paid to the owners as per principals laid down in the law.
- ii. **The Sindh Forest (Amendment) Act, 2012:** Regulates forest resources in the province. Categorize the forest area such as reserve, guzara and protected forests. It empowers the government to declare any forest area reserved or protected and implement the relevant rules and regulations in such forests. However, Clifton Urban Forest is in close proximity to the proposed project. This is an artificial forest with mangroves as a dominant species. In addition, some trees are in the right of way of the proposed construction. These trees will be relocated to suitable nearby areas and no trees will be cut down.
- iii. **The Sindh Wildlife Protection Ordinance 1972 (Amendment 2001, 2010) Act, 2007, 2020:** The law empowers the provincial wildlife department to establish game reserves, parks, and wildlife sanctuaries. It regulates the hunting and disturbance of wildlife. It provides for the preservation, protection, and conservation of wildlife by the formation and management of protected areas and the prohibition of hunting of wildlife species declared protected under the ordinance. The ordinance also specifies three broad classifications of the

protected areas which are National Parks, Wildlife Sanctuaries and Game Reserves.

- iv. **The Sindh Occupational Safety and Health Act, 2017:** While, environmental laws and standards mainly focus on the impacts of the project on the surrounding environment (air, water, soil, socioeconomics), the health and safety laws primarily focus on the inside environment of the project to be suitable and safe for the staff and workers. The Sindh Occupational Safety and Health Act, 2017 provides for the health, safety and welfare of workers, disposal of solid wastes and effluents, and damage to private and public property, compulsory vaccination, inoculation, and Precautions against contagious or infectious diseases at workplaces. The project management will chalk out a standard health and safety policy and shall implement the same in accordance with provision of law.
- v. **Sindh Cultural Heritage (Preservation) Act – 1994:** Preservation of culture heritage is an important role in the development of society and understanding of the past culture of the civilizations. Sindh Cultural Heritage (Preservation) Act – 1994 provides rules and regulations to preserve and protect ancient places and objects of agricultural, historical, ethnological, archaeological, artistic, and national interest in the province of Sindh.
- vi. **The Antiquities Act 1975:** Preservation and protection of antiquities (any object more than 75 years old) is mandatory under the Antiquities Act, 1975. The law also empowers the government to declare any antiquity as protected.
- vii. **Employment of Child Act, 1991:** Child labour is prohibited through the world and likewise it is in Pakistan. In Pakistan, the Employment of Child Act (ECA) 1991 disallows child labour in the country. It states that no child shall be employed or permitted to work in any of the occupations outlined in the ECA (such as transport sector, railways, construction, industrial operation and any other jobs of similar nature) or in any workshop wherein any of the processes defined in the Act is carried out. The contractor will be bound by this Act to disallow any child labour at the project site.

CHAPTER 3: PROJECT DESCRIPTION

3.1 Project Background and Overview

This section of the EIA report presents a detailed project description which is mainly related to the construction and operational phases of the proposed project. A detailed insight regarding the project description was established by reconnaissance survey, site visit, and discussions between technical team of Project Proponent and the consultant.

3.2 Purpose of the Proposed Project

The project will provide quality recreational facilities to the public to undertake walking and jogging in hygienic and safe environment. It will include roads, seawall, cycling track, jogging track and green belts including sitting areas.

The project will bridge the gap between demand and supply of such recreational facilities to enable people to spend their leisure time in aesthetically designed recreational facility to get rid of fatigue and feel fresh. The project will have positive impact on the overall environment.

3.3 Description of the Proposed Project

The proposed project will include roads, seawall, cycling track, jogging track and green belts. The project will have a total of three roads including a primary dual track road and two dual track link roads. Each track of a primary road will be 14.6 meters wide with four lanes of 3.65 meters. The project will also have 7.3 meters wide service roads and car parking facility at certain locations. A car parking facility is proposed for 300 passenger cars which will be accessible via service roads. The key figures for the development are provided in Table-2 and the detailed cross section drawings from A to F are shown in Figures 1-6.

Table 2: Key Figures of the Proposed Development

Name	Length	Width
Major Road	3625 Meters	14.6 Meters Each Track
Link Road (Khayaban-e-Saadi)	711 Meters	14.6 Meters Each Track
Link Road (Ibn-e-Qasim Park)	445 Meters	10.95 Meters Each Track
Service Roads	At certain locations	7.3 Meters
Parking Facilities	At certain locations	6.1 Meter
Seawall	2795 Meters	-



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

Green Belt (Adjacent to Urban Deck)	2795 Meters	6.0 Meters
Green Belt (Adjacent to Cycling Track)	2795 Meters	6.0 Meters
Cycling Track	2795 Meters	5.0 Meters
Jogging Track	2795 Meters	3.0 Meters
Urban Deck	-	2.0 Meters

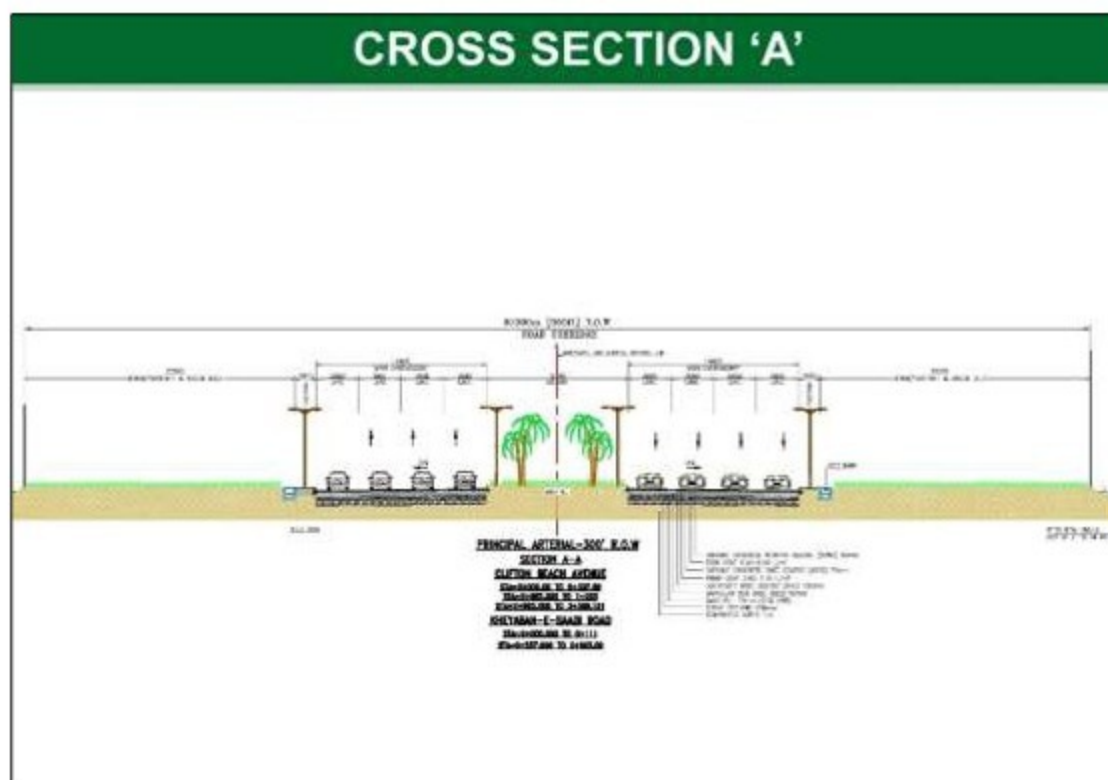


Figure 1: Cross Section A Drawing



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

CROSS SECTION 'B'



Figure 2: Cross Section B Drawing

CROSS SECTION 'C'



Figure 3: Cross Section C Drawing



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

CROSS SECTION 'D'

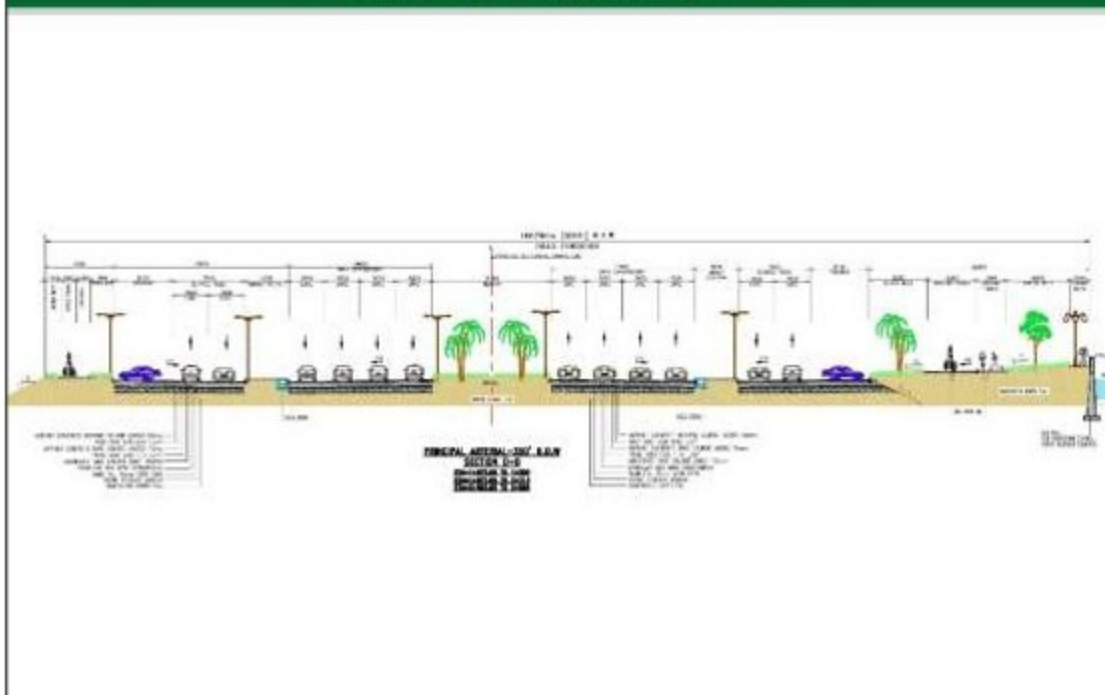


Figure 4: Cross Section D Drawing

CROSS SECTION 'E'

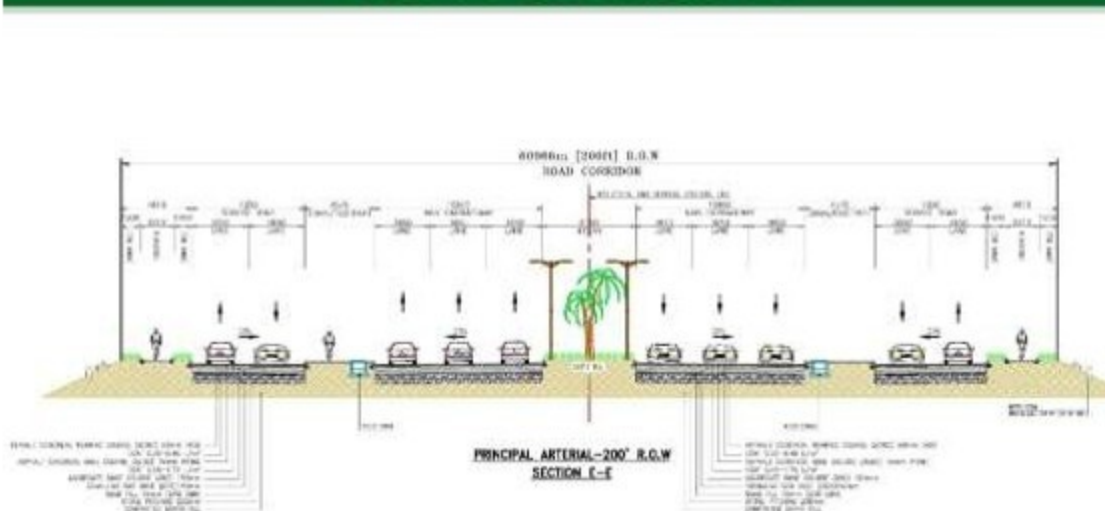


Figure 5: Cross Section E Drawing



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

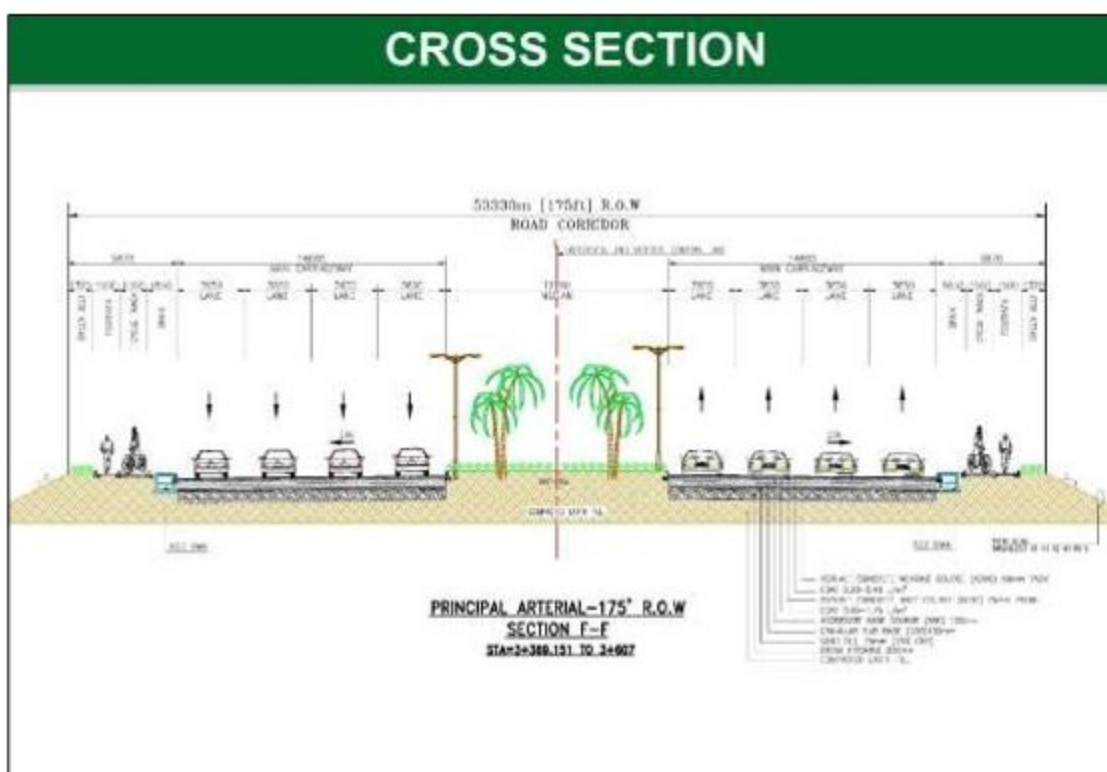


Figure 6: Cross Section F Drawing

3.3.1 Advantages of the Proposed Development

Establishing recreational facilities brings a range of benefits for surrounding communities and visitors. Each of these features plays an important role in improving infrastructure, making life better, and supporting environmental health. The following are some of the advantages the project will offer.

- Dedicated spaces for exercise, relaxation, and socializing. Having easy access to recreational areas will help reduce stress, boost physical health, and create a strong sense of community and belonging.
- The project will add beauty and boost tourism by offering stunning views, walking paths, and spaces for recreational activities.
- The seawall will make waterfronts safer and more enjoyable for visitors. It will also help to protect valuable infrastructure from the destructive impact of storm surges and coastal erosion, reducing the costs of repairs and reconstruction.

- iv. The project will create safe spaces for people to walk, away from traffic. This lowers the chance of accidents, making walking not only safer but also a more attractive way to get around.
- v. The project will enhance the beauty of urban spaces by creating pleasant routes for surrounding community and visitors to explore.
- vi. A dedicated cycling track will provide a safe and accessible space for cycling enthusiasts, encouraging regular physical activity.
- vii. Green belts will play a pivotal role in and maintaining air quality. They act as "lungs," absorbing carbon dioxide and releasing oxygen, which helps improve air quality.

3.4 Project Location and Accessibility

The Proposed Project is located at Seafront between Dolmen Mall and China Port, Clifton, Karachi. The project primary road will be constructed from crossroad locally called (Adda chowk) located at Marine Promenade Road to Dolmen City Circle Sea View Road. The project will also be accessible via Khayaban-e-Saadi and Ibn-e-Qasim Park road, for which link roads will be developed. The location map of the Proposed Project is shown below in Figure-7.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01



Figure 7: Location Map of the Proposed Project



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

3.5 Project Facilities

In order to improve the physical infrastructure, the project will utilize vacant government land to create new recreational area that will be used for leisure, improving the quality of life for the general public and supporting environmental health. The following facilities will be provided in the proposed project.

- Roads
- Walking & jogging track
- Cycling track
- Green areas
- Sitting areas
- Parking
- Urban deck
- Street lighting
- Electricity distribution system

3.6 Technical Specifications

The design of various infrastructure services has been planned and described in detail in the following sub-sections.

3.6.1 Road Network Design

The leveling and grading of the roads will require excavation activities, the roads to be developed in the project will involve nine stages, i.e. (i) compacted earth fill, (ii) stone pitching, (iii) sand fill, (iv) granular sub base, (v) aggregate base course, (vi) prime coat, (vii) asphalt concrete base course, (viii) tack coat, and (ix) asphalt concrete wearing course. The details are provided above in section drawings, which are shown in Figures 1-6.

3.6.2 Water Supply System

The water tanker will be the primarily water supply source to the project. The project will have water storage tanks. The project will require approximately 5,000 gallons per day (GPD).



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

3.6.3 Wastewater Management System

The wastewater generated from the project will mainly comprise of domestic wastewater from washrooms and ablution area, which will be connected to collection tank from where the wastewater will be discharged into nearby main drain line.

3.6.4 Storm Water Drainage

The storm water drainage has been designed considering the topography of the proposed site. A gravity-based drainage system will be provided along the footpaths to collect the storm water runoff.

3.6.5 Power Supply System

The major power consumption source for the proposed project will be lighting. The approximate electrical load required for the project will be 50 kW and will be obtained from K.E. The electrical design will be according to international standards and local regulatory authority.

3.6.6 Solid Waste Management

The solid waste generated on site will be collected by a solid waste contractor and number of trash bins will be placed inside the project area at dedicated places. The following methodology will be applied:

- Burning of refuse, scrap and waste in the open air will not be allowed.
- The construction debris will be removed from site.
- Timber and other scrap material with a commercial value shall be separated prior to removal.
- Oil and other drums shall be free from any leaks.
- Diesel storage tanks for generators shall be provided with the spill/drip trays to contain any spillage.
- Waste will be disposed off through Sindh Solid Waste Management Board Contractor.

3.6.7 Safety & Security

A high degree of general safety and security will be maintained with CCTV Cameras installed at appropriate locations to monitor the project access and adequate lighting will be provided.

CHAPTER 4: ENVIRONMENTAL & SOCIAL BASELINE

4.1 Introduction

The first step in environmental study is to recognize the existing condition of environmental resources, then identify the potential and residual impacts (both positive & negative) and after on, to recommend the detailed migratory (for negative impacts) and enhancement measures. In any environmental study the whole area should be taken into consideration and not the study area.

Taking into consideration the off-site as well as on-site impacts of the project enables to draw a clear and systematic picture of the present environmental conditions and possible changes in future. Such a picture provides information about potential or actual environmental changes in the different parts of the area and establishes the environmental trend of the study area. Thus, in any environmental study the first task is to establish the Baseline environmental conditions.

Keeping in view of the above purpose, the current chapter describes the baseline conditions of the project area and surroundings. It comprises the present condition of the various components of environment (Physical, biological and socio-economic) of the Project Area along with the whole Study Area. Both secondary data (from desk study) and primary data (on ground monitoring of air quality and noise levels) have been used for establishing the baseline conditions. Local knowledge has also been used through public consultation with the local communities. Information on these aspects has been derived from the desk study of available data, field visits to the Project/Study Area and information obtained through the visits to the Government departments and other agencies.

To develop a comprehensive environmental and social baseline of the project area, comprehensive review of literature was done by team of experts. Furthermore, the literature reviewed for developing a comprehensive environmental and social baseline was validated by frequent site visits and field investigations for ground trothing to describes the existing environmental settings in the study area and is based upon the secondary information collected from the published sources, reconnaissance survey, primary socio-economic survey and environmental monitoring of air and noise, in the study area. The major purpose of describing the environmental settings of the study area is:

- To assess the existing environmental quality, as well as study the environmental impacts due to the proposed project.
- To identify environmentally significant factors or geographical areas that could preclude any future development.

Following dedicated activities were performed at the project site for baseline development.

- Visual observations by experts were carried out within and around the project site.
 - Air quality and noise level monitoring was carried out through Sindh EPA approved laboratory at the project site.
- Ocular observations by experts were carried out to validate the ecological and social conditions of the project area.

4.2 Methodology of Baseline Study

In order to develop the comprehensive Environmental and Social (E&S) baseline of the project area, a thorough review of the available and published literature was carried out by the team. The literature review was further supplemented by the site visits and field surveys for the data validation and on ground verification in context to the physical, ecological and the social baseline of the project area.

The scoping and the extent of data generation were formulated with interdisciplinary team discussions, criteria questions and professional judgment also keeping in view of guidelines. The baseline studies started with reconnaissance survey and site visits in the study area for fixing the monitoring locations for collection of the primary data. Various Government departments were approached for getting information for the secondary data generation.

The various parameters surveyed and studied for the baseline study are discussed in the following sections components:

- Physical Environment
- Ecological Environment
- Socio-Economic Environment

4.3 Physical Environment

The existing physical environmental conditions of the project area are described in this section. Data on topography and land use, geophysical, climate, water resources and drainage, natural disaster and seismology was acquired from published literature and previously conducted studies. Air quality and noise levels were analyzed during extensive field surveys conducted specially for this EIA.

4.3.1 Topography

Karachi, the capital city of the Sindh province in Pakistan, is a sprawling metropolis with diverse topography that includes a mix of urban, coastal, and hilly landscapes. Situated on the Arabian Sea coastline, boasts a varied topography that significantly influences its physical and cultural landscapes. The average elevation of the project site ranges from 0 to 8 meters, and the topographical map of the site is shown in Figure 8.

A. Coastal Areas

The southern and western parts of Karachi are characterized by a long coastline along the Arabian Sea. Clifton and Keamari are prominent coastal neighborhoods, featuring sandy beaches and rocky shores. The Port of Karachi, one of the largest and busiest ports in South Asia, is situated along the coast. The marshy lands constitute the coastal belt from Gharo Creek to Hawkes Bay. The coastline of Karachi is about 70 km long. It is generally oriented northwest to southwest.

On the western side, it is bounded by the Hub River and on the East by the Mangrove swamps and creeks of the Port Qasim area. Famous beaches include Hawkes Bay, Paradise Point, Sandspit, and Clifton. Dense Mangroves and creeks of the Indus Delta can be found towards the southeastern side of the city, towards the West and the North is Cape Monze.

B. Hills and Plateaus

Northern Karachi is marked by hills and plateaus, providing a contrast to the flat plains. The Kirthar Range, including hills like the Manghopir Hills and the Gharo Hills, influences the topography of the district. Hilly Region: Kirthar Range at the western boarder are barren, with very little to no vegetation, dry riverbeds, and water channels. The Khasa Hills lie in the Northwest and form the border between North Nazimabad Town and Orangi Town. Manghopir hill range in the Northwest start from the Hub River Dam area, running North to South, then change direction slightly towards the West. At the Eastern coast of Karachi is dominated by an eroded hilly range known as Ibrahim Hyderi Hills. In between the Lyari and the Malir River there are small portions of hilly ranges, all of which have different names and specific local characteristics.

C. Urban Plains

The central and eastern areas of Karachi consist of flat and urban plains. The city has expanded horizontally over the years, with a mix of residential, commercial, and industrial developments.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

D. Malir River Basin

The Malir River flows through the eastern part of Karachi, contributing to the city's topography. The Malir River basin has witnessed urbanization, but parts of it still maintain a more natural environment.

E. Islands

Karachi includes some small islands off its coast, such as Manora Island and Baba and Bhit Islands.

F. Green Spaces

Despite being a bustling urban center, Karachi features various parks and green spaces, providing relief from the concrete jungle. Clifton Beach and Bagh Ibne Qasim are notable recreational areas.

In summary, the topography of Karachi District is a dynamic blend of coastal plains, urban expanses, river basins, hills, lakes, and islands. This diversity contributes to the city's unique character and serves as a significant factor in its economic, social, and environmental dynamics.

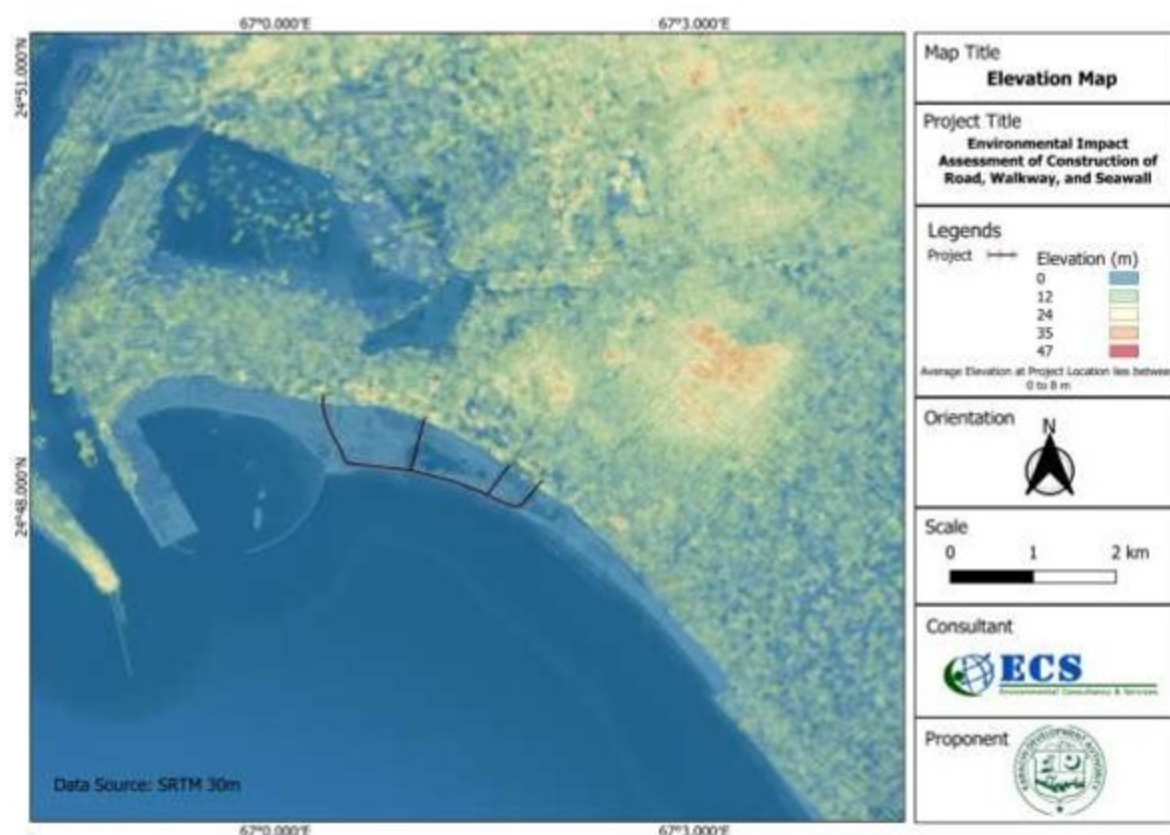


Figure 8: Topographical Elevation of Project Site

4.3.2 Geological Conditions

Geology of the local area is underlain lower Indus basin described as Indus River alluvial of early Eocene. Early deposition of sediments includes silt, sand stone, conglomerate, limestone with low compact and cementing materials. Surface feature is described as syncline delta, and valley region and anticline ridges are exposed. As stratigraphic description there are two formations Gazij and Manchar formation that dip gently northeast to southeast offshore. The coastal region is found to be of tertiary and post-tertiary origin. Blatter et al (1929) dates it as recent as Eocene. The region has been formed by the upheaval of land from the Tethys Sea, which once extended up to the northern border of Pakistan but, gradually withdrew with the rising of the Himalayas. The underlying rocks are mostly of marine origin, highly folded, faulted and fissured everywhere.

The exposed geological material in the area is generally silty sand, sandy gravel and silty clay which is either product of in-situ weathering or deposited by the action of gravity and water. Below this over burden of silty sandy gravel soil, alternating layer of sedimentary rock comprising of sandstone, shell mudstone, siltstone and limestone are present. The rock formation of this area is from Nari Formation of Oligocene age and partially from Gaj

Formation of Miocene age. The Nari Formation consists mainly of sandstone, siltstone and shale with subordinate limestone while the Gaj Formation consists of shale with subordinate limestone. However, the proposed project site primarily consists of Alluvium and partially Pliocene and Miocene Sedimentary Rocks. Refer to Figure-9 for Geological map of the project site.

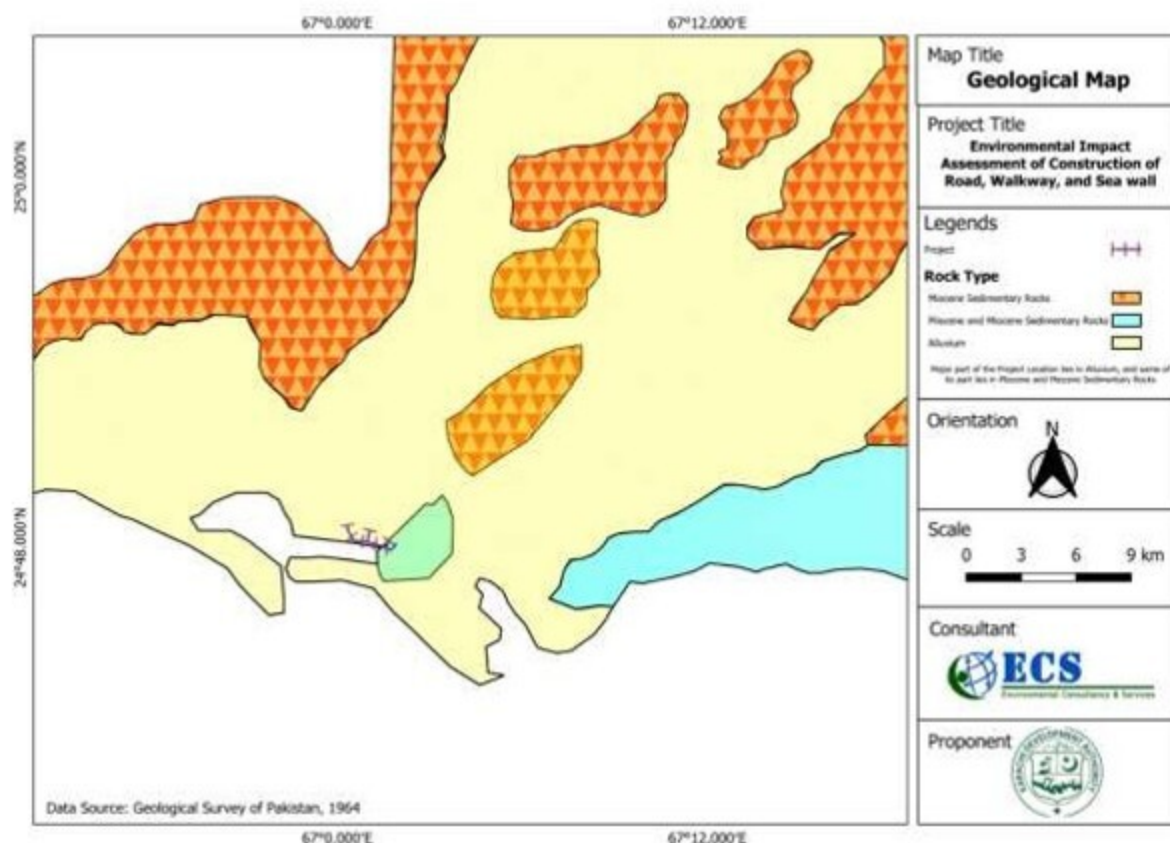


Figure 9: Geological Map of Project Site

4.3.3 Climatic Conditions

Karachi, the largest city in Pakistan and the capital of the Sindh province, experiences a hot desert climate, often referred to as an arid or semi-arid climate. Karachi's climate is characterized by extremely hot summers, mild winters, low rainfall, and high humidity. The city's weather patterns are influenced by its proximity to the Arabian Sea, the monsoon winds, and the desert conditions prevailing over much of the region. Adaptation and resilience to the challenging climate conditions are crucial aspects of life in Karachi.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

A. Temperature

The weather in Karachi is characterized by high temperatures, low precipitation, and distinct seasons. Summers in Karachi are extremely hot and can last from April to September. The city experiences scorching heatwaves, with occasional temperatures soaring even higher. Winters, lasting from November to February, are relatively mild. Daytime temperatures hover around 20-25°C (68-77°F), making it a more pleasant time for outdoor activities. The hot season lasts for 3.4 months, from April 1 to July 13, with an average daily high temperature above 33°C. The hottest month of the year in Karachi is June, with an average high of 34°C and low of 29°C. The cool season lasts for 1.8 months, from December 17 to February 12, with an average daily high temperature below 27°C. The coldest month of the year in Karachi is January, with an average low of 13°C and high of 26°C. Average high and low temperature of Karachi is shown below in Figure-10.

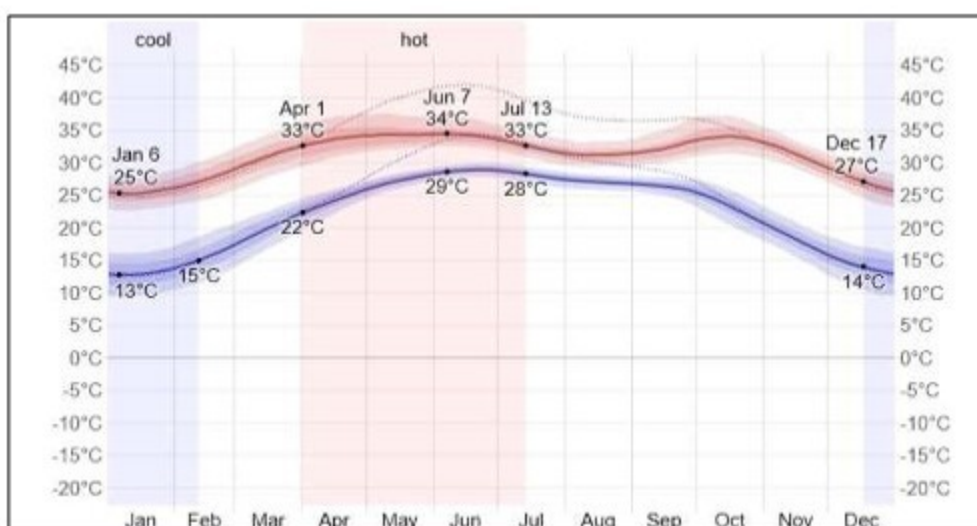


Figure 10: Temperature Trend- Karachi

B. Precipitation

Karachi has low annual rainfall, typically ranging from 100 to 150 millimeters. The majority of precipitation occurs during the monsoon season, which is relatively short and lasts from June to August. However, the city is on the western edge of the monsoon zone, so rainfall can vary greatly from year to year. Extended periods of dry weather are common, contributing to the arid conditions. Karachi may experience drought-like situations, and water scarcity is a recurring concern. The rainy period of the year lasts for 2.7 months, from June 25 to September 15, with a sliding 31-day rainfall of at least 13 millimeters. The month with the most rain in Karachi is August, with an average rainfall of 33 millimeters. The rainless period of the year lasts for 9.3 months, from September 15 to June 25. The month with the least rain in Karachi



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

is May, with an average rainfall of 1 millimeter. The mean monthly precipitation record for Karachi can be seen in Figure-11.

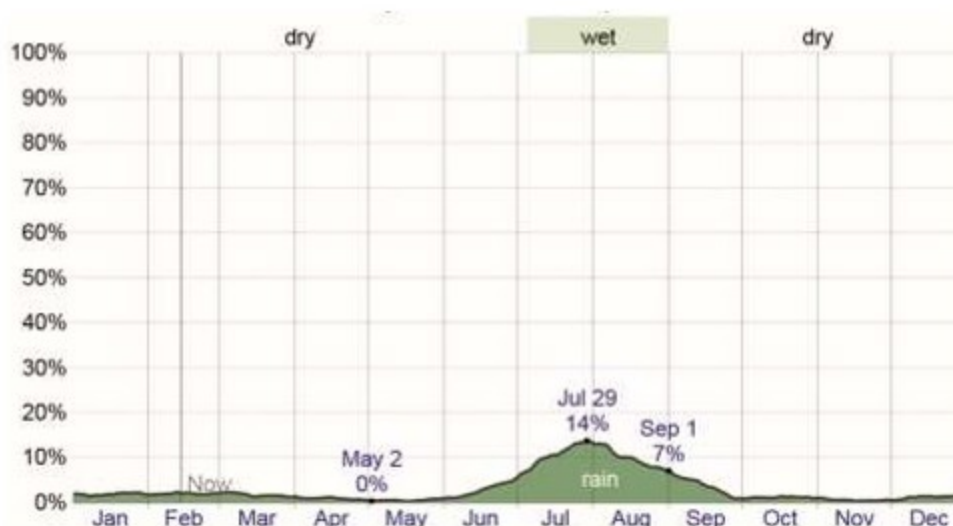


Figure 11: Precipitation Trend in Karachi

C. Sea Breeze/Moderating Effect of the Sea

The Arabian Sea has a moderating influence on temperatures, with sea breezes providing some relief during hot summer afternoons. Coastal areas, such as Clifton and Keamari, may experience slightly milder temperatures compared to inland areas. The average hourly wind speed in Karachi experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.1 months, from April 14 to September 18, with average wind speeds of more than 4.8 meters per second. The windiest month of the year in Karachi is June, with an average hourly wind speed of 6.5 meters per second. The calmer time of year lasts for 6.9 months, from September 18 to April 14. The calmest month of the year in Karachi is November, with an average hourly wind speed of 3.1 meters per second.

D. Monsoon Influence

Monsoon Winds: The monsoon winds, originating from the Indian Ocean, bring moisture to the region during the summer. However, Karachi is on the periphery of the monsoon influence, resulting in less rainfall compared to other parts of the subcontinent.

E. Humidity

High Humidity Levels: Due to its proximity to the Arabian Sea, Karachi experiences high humidity levels, especially during the monsoon season. This combination of high temperatures and humidity contributes to the discomfort during the summer months.

F. Dust Storms

Prevalence of Dust Storms: Karachi occasionally experiences dust storms, particularly during the dry and hot months. These storms can reduce visibility and add to challenging weather conditions.

G. Urban Heat Island Effect

Urbanization Impact: The extensive urbanization and concrete structures in Karachi contribute to the urban heat island effect, causing temperatures to be higher in the city compared to surrounding rural areas.

H. Relative Humidity

Karachi experiences extreme seasonal variation in the perceived humidity. The muggier period of the year lasts for 7.8 months, from March 14 to November 8, during which time the comfort level is muggy, oppressive, or miserable at least 27% of the time. The muggiest day of the year is July 25, with muggy conditions 100% of the time. The least muggy day of the year is January 18, with muggy conditions 2% of the time.

The relative humidity typically ranges from 25% (dry) to 91% (very humid) over the course of the year, rarely dropping below 10% (very dry) and reaching as high as 100% (very humid). The air is driest around February 9, at which time the relative humidity drops below 33% (comfortable) three days out of four; it is most humid around August 2, exceeding 83% (humid) three days out of four. The mean monthly relative humidity for Karachi is shown graphically in Figure-12.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

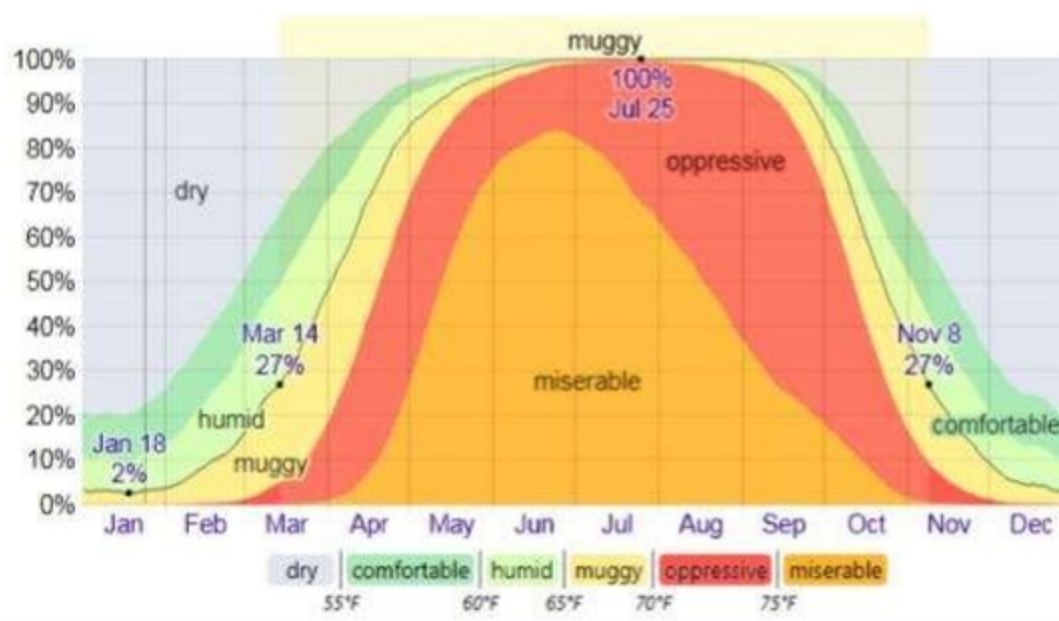


Figure 12: Mean Monthly Relative Humidity in Karachi

4.3.4 Groundwater

Karachi relies heavily on groundwater as a source of water for various purposes. The city is situated on a coastal plain, and there are aquifers beneath the surface that store and supply groundwater. Over-extraction of groundwater has been a concern in Karachi, leading to the depletion of aquifers. Rapid urbanization and population growth contribute to increased water demand, and the extraction of groundwater exceeds the natural recharge rate in some areas. Groundwater quality may also be compromised due to contamination from industrial discharges, sewage, and other pollutants. This poses health risks to residents relying on groundwater for drinking purposes.

Challenges: Some major challenges regarding Water resources in Karachi are given below.

- i. **Urbanization:** The rapid urbanization of Karachi has resulted in increased impervious surfaces, reducing natural recharge of aquifers and exacerbating surface water runoff issues.
- ii. **Pollution:** Industrial and domestic pollution has led to contamination of both surface water bodies and groundwater. This pollution not only affects the quality of water but also poses risks to public health.
- iii. **Infrastructure Challenges:** The city faces challenges in terms of water infrastructure, distribution systems, and sewage treatment. Aging infrastructure and inadequate management contribute to water scarcity and sanitation issues.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

- iv. **Climate Change:** Changing climate patterns, including variations in rainfall and temperature, can impact the availability of both surface and groundwater resources.

Efforts to address these challenges include the development of water management plans, infrastructure upgrades, and initiatives to promote sustainable water use. Organizations such as the Karachi Water and Sewerage Board (KWSB) play a crucial role in managing water resources in the city.

4.3.5 Wind Speed

Karachi weather is characterized as pleasant weather due to sea breeze movement, which blows all the year except during local disturbances which are experienced sometimes in winter and summer months. This wind has the highest velocities during the summer months, when the direction is south-west to west. Over the course of the year, typical wind speeds vary from 9.4 mph to 14.7 mph (fresh breeze). The average hourly wind speed in Karachi experiences significant seasonal variation over the course of the year. The windier part of the year lasts for 5.1 months, from April 14 to September 18, with average wind speeds of more than 10.8 miles per hour. The windiest month of the year in Karachi is June, with an average hourly wind speed of 14.5 miles per hour. The calmer time of year lasts for 6.9 months, from September 18 to April 14. The calmest month of the year in Karachi is November, with an average hourly wind speed of 6.9 miles per hour. The average wind speed experienced in Karachi region is graphically shown in Figure 13.

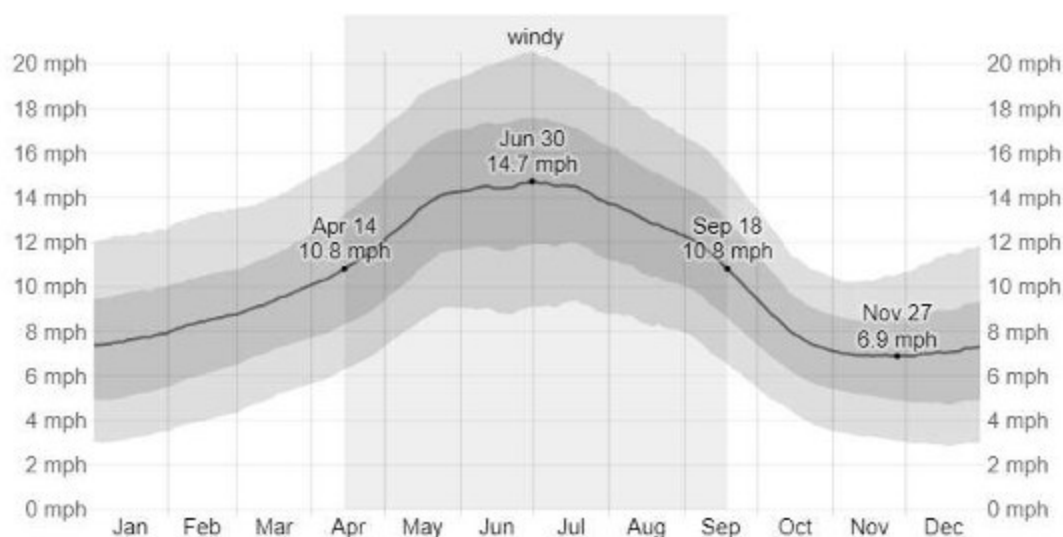


Figure 13: Wind Speed of the Karachi

4.3.6 Ambient Air and Noise

To assess the ambient air in the project area, air quality monitoring was conducted through third party SEPA approved laboratory. Monitoring results are presented in Table 3 which show that ambient air quality of the project area is within range of SEQs limits. Copy of laboratory report is attached as Annexure-4.

In addition to this, ambient noise level monitoring was also carried out of the various points, the monitoring results show that ambient noise levels of the project area are within range of SEQs limits. Copy of laboratory report is also attached as Annexure-5. Pictures of ambient air and noise monitoring process are shown in Figure-14.

Table 3: Ambient Air Monitoring Results

Parameter	Unit	Concentration	SEQS Limit
Carbon Monoxide (CO)	mg/m ³ /hr	4.5	10
Ozone (O ₃)	µg/m ³ /24hr	7.9	130
Nitrogen Oxide (NO)	µg/m ³ /24hrs	16.9	40
Oxides Of Nitrogen (NO ₂)	µg/m ³ /24hrs	28.6	80
Sulfur Dioxide (SO ₂)	µg/m ³ /24hrs	8.4	120
Suspended Particulate Matters	µg/m ³ /24hrs	261.3	500
Particulate matter (PM ₁₀)	µg/m ³ /24hrs	121.3	150
Particulate matter (PM _{2.5})	µg/m ³ /24hrs	57.0	75
Lead (Pb)	µg/m ³ /24hrs	<0.1	1.5



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

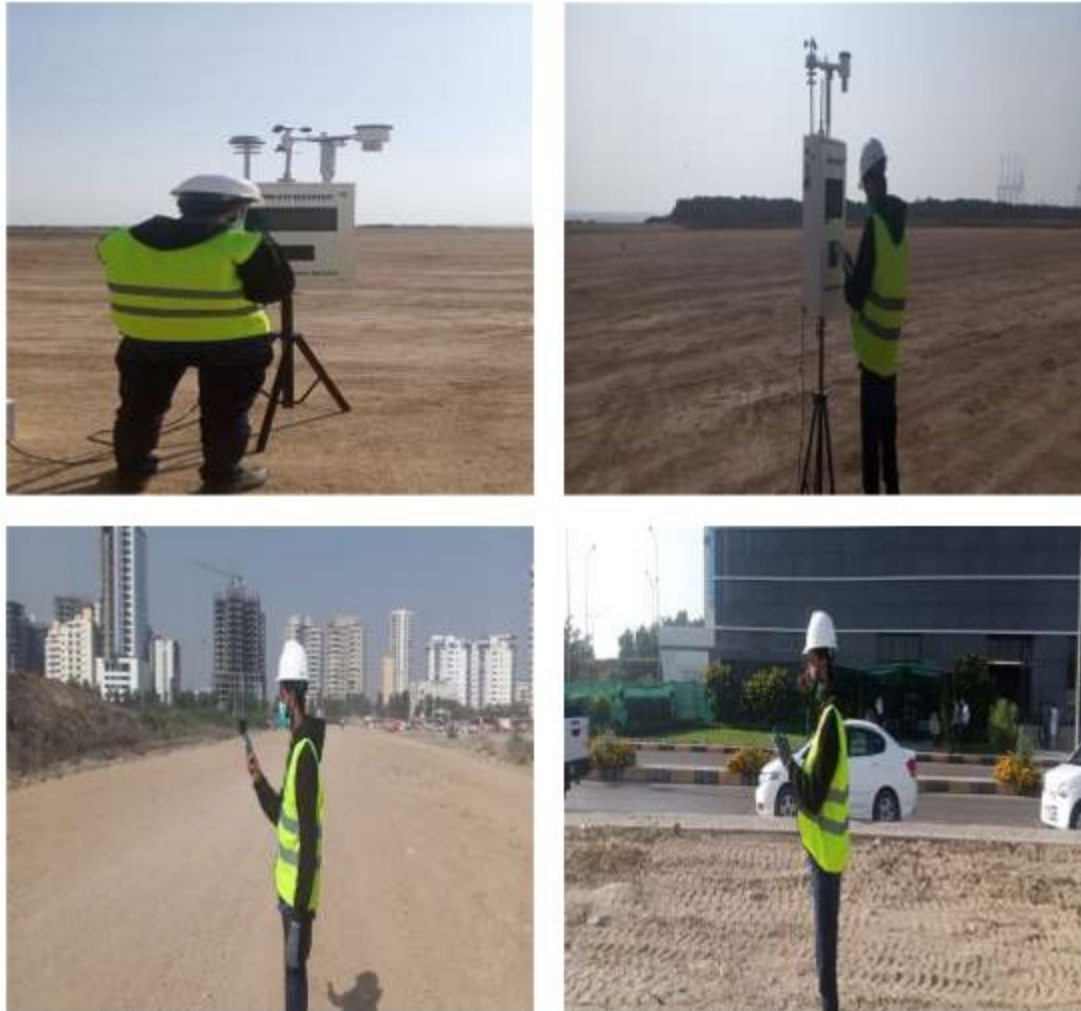


Figure 14: Ambient Air and Noise Monitoring Process

4.3.7 Water Network

Karachi lies in Malir River basin. It is surrounded by Hub River in the west and Malir River on east. Malir basin is mainly drained through the Malir River followed by the Lyari channel. Both these channels are transient; therefore, the flowing water is generally sewage and industrial effluent. Hub River follows on the western margin of the city is also transient but it is devoid of any sewage or anthropogenic effects. The coastal aquifers of Karachi are mainly recharged by Malir or Lyari Rivers. Hub River is recharging limited aquifers, Nari and Gaj

formations. While Malir and Lyari Rivers are mainly recharging alluvial aquifers in the coastal parts of Karachi city.⁴ Figure-15 shows the water supply network of Karachi.



Figure 15: Water Supply Network of Karachi

4.3.8 Sewage Water Drainage

Sewage is gathered through RCC pipes and uncovered channels, and gathered sewage is arranged to neighboring water bodies through rivers and Nallah's. Karachi's untreated wastewater including domestic sewage and industrial wastewater is discharged into the Lyari and Malir rivers, and finally disposed to the nearest coastal belt. According to KWSB, 417MGD untreated sewage is drained into the sea through the 232KM network of Main Nallah's & 1000Km network of town drains. These Nallah's mainly discharge into the two main rivers namely Malir River & Lyari River, refer to Table 4 to observe the main sewerage containing bodies.⁵

⁴Khan, A., and EghbalBakhtiari, A. (2017). Groundwater Assessment of Coastal Aquifers in Karachi: Impact of Seawater Intrusion. *International Journal of Ground Sediment & Water*, 6, 247-263.

⁵ Hyder, I. (2007, March 16). A presentation on the reforms in Karachi Water & Sewerage Board (KW&SB). Retrieved from <http://arifhasan.org/karachi/reforms-in-kwsb-an-overview-for-civil-society>

Table 4: Details of Sewerage Lines in Karachi

Major *Nallah's	Major Rivers	Final Drain
Soldier Bazar Nallah	Malir River	Sea
Gujjar Nallah	Lyari River	
Orangi Nallah		
Railway Station Nallah		
Nehr e Khayam		
Ferer Nallah		
Manzoor Colony Nallah		

4.3.9 Disaster Risks

Pakistan straddles the boundaries between the Indo-Pakistan, Arabian and Eurasian plates, and its structure is predominantly affected by their past and present interrelationships. Two composite plates, comprising both continental and oceanic crust (Indo-Pakistan & Arabia) are separated by an intra-oceanic transform boundary, which within the Pakistan offshore area is expressed as the Murray Ridge. The Eurasian Plate is a collage of three microplates which amalgamated in Iran-Afghanistan and western Pakistan area during Cretaceous to Paleogene times (Quad Report, 1994). The most easterly of these microplates, the Afghan Block, forms a considerable part of Pakistan's northwestern edge, and is bounded by the two major transform fault systems of Herat and Chamman. The boundaries between microplates can be traced by belts of ophiolite assemblages. The Indo-Australian plate upon which Pakistan, India and Nepal lie, is continuously moving northward, colliding with and sub-ducting under the Eurasian plate, thus forming the Himalayan mountains, and triggering earthquakes in the process. Figure-16 shows Tectonic plates configuration of Pakistan.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

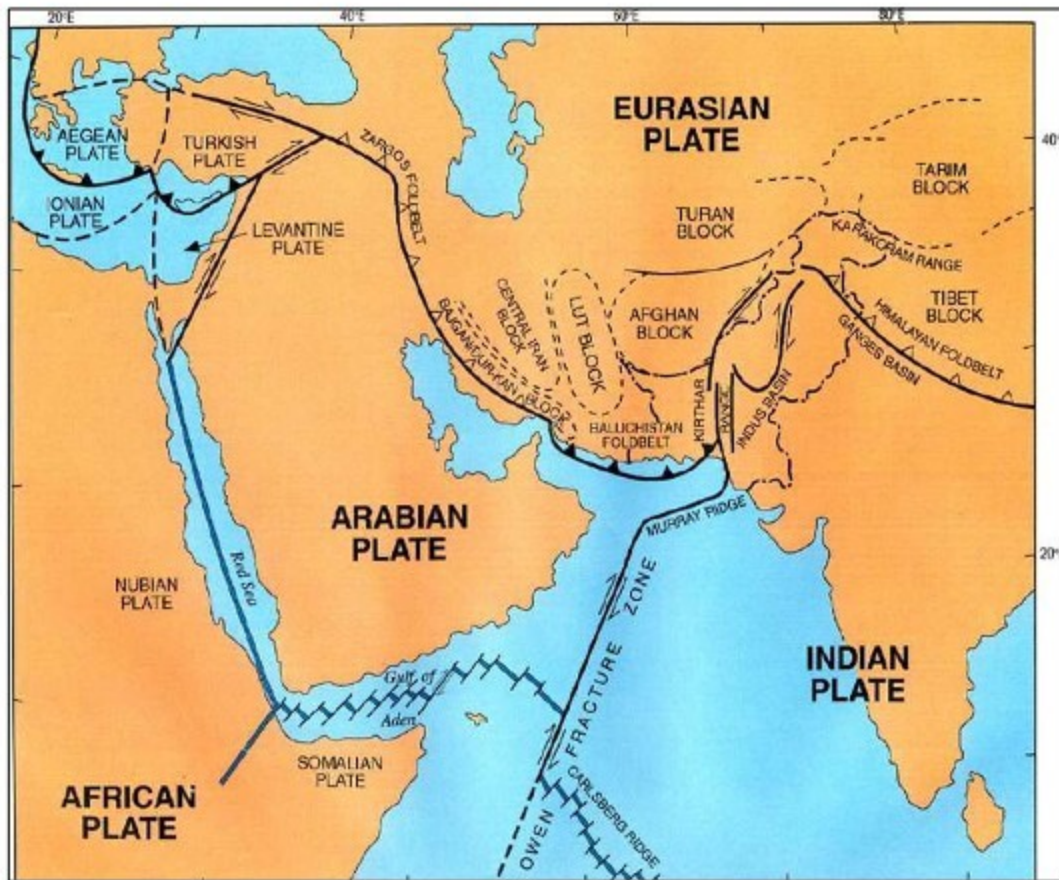


Figure 16: Tectonics Plate Configuration of Pakistan

Karachi, being a densely populated and economically significant city, is situated in a seismically active region. The city's vulnerability to seismic events stems from its location near the tectonic boundary between the Arabian and Eurasian plates. While Karachi itself may not be directly on a fault line, the broader geological setting poses a seismic risk. Karachi has experienced seismic events in the past, with varying magnitudes. The historical record indicates that the region is susceptible to seismic activity, and periodic monitoring is essential.

The Arabian Sea plate is subducting beneath the Eurasian plate near the Makran Trench to the south of Karachi. This tectonic setting can lead to seismic activity and the potential for large earthquakes. The seismic activity in Karachi is monitored by institutions such as the Pakistan Meteorological Department (PMD) and the National Center for Seismology (NCS). These organizations use seismometers to detect and measure ground motion. Table-5 indicates that the project area is falling in Zone 2B, varying from 0.16 to 0.24.

Table 5: Details of Boundaries of Seismic Zone

Seismic Zone	Peak Horizontal Ground Acceleration
Zone 1	0.05 to 0.08g
Zone 2A	0.08 to 0.16g
Zone 2B	0.16 to 0.24g
Zone 3	0.24 to 0.32g
Zone 4	> 0.32g

Note: Where “g” is the acceleration due to gravity

4.4 Biological Environment

This section provides the ecological baseline of the project area. The ecological baseline provided in this section includes terrestrial and aquatic species found in the area. In order to compile the biodiversity in the vicinity of the proposed project location, the data and information were obtained from secondary data from published literature. The information was further refined and verified by random ground truthing.

Development of recreational areas in Karachi is important, which helps in improving quality of life of the people. Although transforming a natural seaside landscape into a recreational area may alter the local ecosystem and the habitats of marine species but the proposed infrastructure development will help preserve the natural ecosystem by restricting the waste and human interference. Construction activities along the coast, including the construction of seawall, roads, green belts, cycling track, jogging track and other facilities, can affect both terrestrial and aquatic ecosystems. These effects are temporary and can be avoided/minimized with careful planning and sustainable practices to ensure that the recreational area enhances the city’s amenities while preserving the coastal ecosystem.

4.4.1 Flora of the Project Area

Karachi, as a coastal city, lies along the Arabian Sea, with a hot, arid climate characterized by dry conditions and scarce rainfall. The region is home to hardy plant species such as drought-resistant and salt tolerant shrubs. Flora is sparse in the coastal areas of Karachi due to a combination of harsh environmental factors. The region experiences high salinity levels in both soil and water, which makes it difficult for many plant species to thrive. The coastal winds,

often carrying salt and sand, also pose a challenge for vegetation growth. Additionally, the hot and arid climate, coupled with urban development and human activity, further reduces the availability of suitable habitats for plant life. As a result, only specialized, salt-tolerant species, like mangroves and coastal grasses, are able to survive in such environments.

No endangered or vulnerable floral species were found during the survey. Some common types of plants (Figure-17) found in the area includes:

Avicennia marina – Commonly known as Grey Mangrove or Sikra is a species of mangrove and plays a crucial role in coastal ecosystems by stabilizing shorelines, preventing erosion, and providing habitat for various marine and terrestrial species. Its dense root system also filters water, improving water quality and supporting biodiversity.

Avicennia germinans – Commonly known as the Black Mangrove is a species of mangrove tree found in coastal areas. It plays an important role in coastal ecosystems by providing habitat for wildlife, stabilizing coastlines, and filtering pollutants.

Cortaderia selloana – Commonly known as pampas grass, is a large ornamental grass. In its natural environment, it plays a role in stabilizing soil and providing habitat for various species.

Halopyrum mucronatum – Commonly known as Saltgrass is a salt-tolerant grass species typically found in coastal and saline habitats. It helps in stabilizing sandy soils and preventing erosion, while also contributing to the overall productivity and biodiversity of coastal ecosystems by providing forage for wildlife and serving as a habitat for various organisms.

Suaeda fruticosa – Commonly known as Seablite or Shrubby Seablite is a salt-tolerant shrub commonly found in coastal and saline environments. It helps stabilize the soil, reduce erosion, and serves as an important food source for wildlife, especially in saline habitats where other vegetation struggles to grow.

Prosopis juliflora – Commonly known as Mesquite or Jand It is a fast-growing known for its ability to thrive in arid, saline environments. In coastal and desert environments, it helps prevent soil erosion, improves soil fertility through nitrogen fixation, and provides valuable shade, timber, and forage for wildlife and livestock.

Phoenix dactylifera – Commonly known as Date Palm is a valuable tree in arid regions, providing food, shelter, and economic benefits. Its deep root system helps stabilize sandy soils and prevent erosion, while its fruit, dates, serves as an important nutritional resource for both humans and wildlife.



ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01



Avicennia marina



Halopyrum mucronatum



Cortaderia selloana



Avicennia germinans



ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01



Halopyrum mucronatum



Suaeda fruticosa



Prosopis juliflora



Phoenix dactylifera

Figure 17: Floral Species found in the Project Site

4.4.2 Fauna

Water availability is the main constraint for the distribution of many animal species. Large wild mammals are virtually absent in the project area. The common fauna species observed in the project area are listed below.

- Mammals: Sheep, Goat, Cattle, Dog, Cat, Camel, House Mouse, etc.
- Bird: Seagull, Osprey, Sand Pipers, Crane, House Crow, Myna, Bulbul, Kite, Sparrow, Pigeon, etc.
- Insects: Beach flies, Sand fleas, Beetles, Ants, Bees, Wasp, etc.
- Reptiles: House Gecko.
- Others: Crab, Mollusk, etc.

4.5 Social-Economic Environment

The socio-Economic baseline provides an overview of the social and economic conditions of the project area based on primary and secondary data sources. This overview helps in understanding the socioeconomic importance of the project area and contributes towards identification of any social risk that the project proponent must be aware of during the project design phase. The baseline data presented here also provides a basis for monitoring project activities during the project construction and operation phases.

Karachi is among the most populous metropolitan cities of the world. The population of Karachi is increasing exponentially which is coupled by the effect of rural population migration to urban center for more livelihood opportunities. The city credits its growth to the mixed populations of economic and political migrants and refugees from different national, provincial, linguistic and religious origins largely come to settle here permanently.

One notable aspect of Karachi's population is its remarkable ethnic and cultural diversity. The city is home to people from various ethnic backgrounds, including Muhajir, Sindhi, Punjabi, Pashtun, and Baloch. This diversity is reflected in the city's rich cultural tapestry, with a blend of languages, traditions, and cuisines. Karachi's economic importance is evident in its role as the financial and industrial heart of Pakistan. The city hosts the Karachi Stock Exchange, major corporate offices, and a bustling port that contributes significantly to the country's trade activities. Its economic vibrancy attracts people from different regions seeking employment opportunities.

Karachi is divided into seven districts: Malir, Central, East, West, South, Korangi, and Keamari. The proposed project site falls under South district. The South district is

administratively divided into 5 sub-divisions and 2 cantonments⁶, which are outlined in Table-6. Therefore, the social baseline for this project is based on secondary data for South District and primary data collected through consultations with primary stakeholders.

Table 6: District South Division & Cantonments

Sr.#	Name	Status
1.	Aram Bagh	Subdivision
2.	Civil Lines	Subdivision
3.	Garden	Subdivision
4.	Lyari	Subdivision
5.	Saddar	Subdivision
6.	Karachi Cantonment	Cantonment
7.	Clifton	Cantonment

4.5.1 Demography

According to the Census 2023 provided by Pakistan Bureau of Statistics (PBS), total population of District South is 2,329,764. The district has a sex ratio of 114 males to 100 females with 426,224 households and an average household size of 5.47. The population of District South is entirely urban. Average growth rate between 2017 and 2023 is 4.71%. Based on the census in 2017, the population of South District was 1,769,230.⁷

4.6 Livelihood and Project Nearby Surrounding

Several site visits were carried out in order to examine the socio-economic conditions around the project environment. Since the proposed project site is located in Clifton, Karachi, which is considered hub for employment opportunities and the livelihood of the people near the project area is mostly dependent on business activities, private and government jobs. Various high rise commercial and residential buildings, offices, hospitals, restaurants, banks, malls, markets, schools, shops, parks, etc. are located within the radius of 1 km from the project site. The Arabian sea is located to the south of project site, and nearby locations of project site are listed below.

- Clifton Beach
- Urban Forest Clifton

⁶ <https://click.gos.pk/districts>

⁷ <https://www.pbs.gov.pk/sites/default/files/population/2023/Sindh.pdf>

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- Dolmen Mall Clifton
- Sky Tower
- Bagh Ibn-e-Qasim Park

CHAPTER 5: STAKEHOLDER CONSULTATION

5.1 Background Information

The main objective of public consultation is to disseminate information about the project and its expected impact on the primary and secondary stakeholders. The public consultation and participation serves as an effective tool for social interaction. This tool helps to develop the significant confidence between the stakeholders and the project proponent to minimize the anticipated environmental and social impacts of the project. Primary stakeholder is usually referred to those, which may be directly affected by the proposed project's activities, while on the other hand secondary stakeholders refers to those who are usually affected indirectly or they have power to make decisions at governmental or institutional level. Based on the EIA procedures, detailed stakeholder consultative meetings, Focus Group Discussion (FGD) and Key Informant Interviews (KII) were carried out with different stakeholders. The most important objective of these consultation meetings was to determine the extent of the impact of different proposed project activities and suggest appropriate mitigation measures accordingly. This section of EIA clearly describes the issues raised by the stakeholders during different consultation meetings conducted specifically for this assignment, informal and focused group discussions with the primary and secondary stakeholders were carried out which was primarily focused on determining the perceptions of the key stakeholders:

The overall objectives of the process were identified as follows:

- To inform and acquire feedback from primary and secondary stakeholders on proposed project activities.
- To identify potential issues and mitigation measures.
- To incorporate stakeholders concerns in the project documents.
- To identify the negative impacts due to the project execution.

Following stakeholders approached for consultation meetings during this EIA study:

Primary Stakeholders:

- Nearby Business Owners

Secondary Stakeholders

- Sindh Environmental Protection Agency
- Sindh Tourism and Culture Department
- Cantonment Board Clifton

5.2 Stakeholder Consultation Outcomes/Findings

Consultation outcomes have been discussed in the following sub sections.

5.2.1 Feedback by Primary Stakeholders

The comments, concerns and recommendations received during the primary stakeholder consultations have been included in this section. The comments gathered from stakeholder consultation were helpful in the screening of potential environmental and social aspects of the project. Figure 18 shows the primary stakeholders' consultations.

- The nearby communities supported the project and expressed that it would help in improving quality of life by providing opportunities for cycling, jogging and seating areas in green spaces.
- Project executers were urged to consider safe work management during construction.
- Appropriate waste management system should be adopted.
- The project will boost local economies by creating jobs, attracting tourism, and enhancing property values in the surrounding area.

A meeting was also held with the Founder of the Clifton Urban Forest. He showed the following concerns with the proposed project:

- Karachi is a tidal zone, and heavy tides are produced. With the proposed construction these tides could be blocked, and the tidal effect may be strong enough that it may damage the proposed sea wall and nearby urban areas.
- Karachi is located on the Allah Bund Fault with seismic zone of 2B having a moderate level of seismic risk. This tidal effect may accelerate the seismicity impacting the urban areas in large.

However, he showed no concern whether the proposed project may impact the Clifton Urban Forest and did not give any suggestion/recommendation specific for proposed project.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01



Figure 18: Pictorial View of Consultation with Primary Stakeholders

5.2.2 Views, Opinions and Recommendations of Secondary Stakeholders / Government Departments

The recommendations received from secondary stakeholder consultation have been provided in this section. Figure 19 shows the secondary stakeholders' consultations.

- Appropriate design should be developed without disturbing the surroundings.
- Traffic and parking management mechanism should be developed for operation phase.
- The construction of the development should be high quality and environment friendly.
- Appropriate safety and security system should be developed in the project.



Figure 19: Pictorial View of Consultation with Secondary Stakeholders

CHAPTER 6: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1 Overview

After a thorough assessment of the existing environmental and socio-economic conditions and review of technical data, a team of environmental professionals analyzed the significant environmental impacts and suggested the necessary measures for mitigating the impacts. This chapter presents the environmental impact assessment of the project. This section of the EIA Report presents the screening process to identify the overall impacts of construction and operation activities on the physical, biological, and socioeconomic environment of the Project and suggest mitigation measures that need to be adopted, wherever necessary in order to reduce, minimize or compensate the negative impact anticipated from the project.

The potential impacts associated with the construction and operation of project have been identified, which assess its nature and magnitude which is associated with the various activities of the project.

6.2 Potential Impacts

All the potentially significant environmental impacts from the project are grouped in following phases. Table-7 gives the overview of potential impacts of the project construction and operation phases.

Table 7: Overview of Potential Impacts due to the Project

S. No	Impacts	Negative Impact		Positive Impact		No Impact
		Short Term	Long Term	Short Term	Long Term	
1	Construction Phase					
	Soil Erosion/Dust	√				
	Wastewater Discharge	√				
	Solid Waste Management	√				
	Air Pollution	√				
	Noise and Vibration	√				
	Disturbance to Traffic flow	√				

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

	Water consumption & Demand	√				
	Weather Conditions	√				
	Safety of Workers & Public	√				
	Employment & Business Opportunities			√		
2	Operation Phase					
	Community Safety Risks		√			
	Solid Waste Management		√			
	Air Pollution		√			
	Utility services & Consumption of Resources		√			
	Parking & Traffic Management				√	

6.3 Construction Phase Impacts

6.3.1 Soil Erosion/Dust

Excavations will be carried out during foundation works of infrastructure and utility laying work would generate heaps of soil which may result in soil erosion.

Mitigation Measures:

- Excavated soil will be re-used as back filling material in civil works, road leveling, and filling of depressions.
- Soil stockpiles would be regularly wetted to keep airborne dust levels to minimum.
- Necessary measures and planning would be done to keep the excavation work to minimum possible duration.
- Good engineering practices will be adopted during construction works.
- Soil to be kept on safe site which can be reused for the development of parks and green built area etc.

6.3.2 Wastewater Discharge

Generation of wastewater from the construction site may contaminate the soil of the site or its surrounding if not properly managed. This may not only cause harm to soil, but also provide breeding place for mosquitoes and other insects, which is dangerous for the environment.

Mitigation Measures:

- Sewage water will be drained into the main sewer drain after passing through tank.
- No direct discharge will be allowed.

6.3.3 Solid Waste Generation and Management

The project is expected to generate waste including; packing waste; scrap, excess construction waste, empty containers and drums, used lubricating oils and paint etc. during the construction phase. The impact of solid waste disposal would be significant if the waste management is not carried out appropriately.

Mitigation Measures:

- Separate waste bins will be placed for different type of wastes – plastic, paper, metal, glass, wood and cotton.
- Recyclable material will be separated at source and the recyclable waste will be managed in accordance with the SEPA requirement.
- Surplus construction material including partially filled chemical and paints containers will be returned to supplier. Construction waste will be disposed of onsite as fill material or sold as scrap to contractors.
- Record of all waste disposed during the construction period will be maintained.
- Waste will be disposed off through SSWMB contractor.

6.3.4 Air Pollution

Exhaust emissions from the operation of construction machinery and transportation vehicles may cause air pollution. Movement of heavy machinery and construction material transportation vehicles would create dust emissions in the area. Generators used for power generation may cause pollution in ambient air and have adverse impacts on the workers, operators and nearby area.

Mitigation Measures:

- The Contractor will be responsible for taking necessary mitigation measures for reduction of air pollution from dust emissions and safety measure during construction work.
- The impact from above mentioned activities will be mitigated by selection of good quality equipment, machinery and vehicles.
- Smoke releasing machinery and vehicles would not be allowed to be operated on the project by Contractor or sub-contractor (if any).

- Water sprinkling and monitoring to be carried out regularly to ensure adequate suppression of dust.
- High exhaust pipes would be used in generators and other fixed equipment for better dispersion of air emissions and to prevent high concentrations of pollutants in the immediate vicinity.
- Emission levels of the generators and other fixed equipment would be monitored and maintenance would be done as per the recommendation of the manufacturer/supplier.
- Duration of the work having potential of dust emissions would be minimized by proper project management.

6.3.5 Noise and Vibration

The operation of generators and operation of machinery may create high noise and vibrations levels in the project area. However, this would be a localize issue and noise and vibration levels will attenuate with distance from the work site. Movement of vehicles for delivery of construction material may also induce high noise levels for short periods.

Mitigation Measures:

- The impact from above mentioned activities will be mitigated by the selection of good quality of generators and machinery.
- Noise and vibration producing machinery and vehicles would not be allowed to operate on the project site by the management and contractor or sub-contractor (if any).
- During generators installation at the work site all possible noise and vibration reducing measures would be adopted, including usage of canopy over the generator.
- Noise and vibration levels of the generators and other fixed equipment would be monitored and necessary maintenance would be done to control the noise and vibration levels.
- Duration of the work having potential of high noise and vibration generation would be minimized by proper management.
- Nighttime activities would be avoided to the possible limits to minimize the disturbance to neighborhood.

6.3.6 Disturbance to the Traffic Flow

The movement of the construction machinery and construction material transportation vehicles may disturb the other traffic using the project adjoining road.

Mitigation Measures:

- A traffic management plan will be prepared for the project.
- Movement of the vehicle would be planned and allowed on designated routes only.
- Night time movement would be avoided to the possible limits to minimize the disturbance to neighborhood.

6.3.7 Water Consumption and Demand

Water required for numerous construction activities will be fulfilled through water tanker; however, improper storage of water at site may disturb the project site. Usage of bad quality of water may also lead to poor construction.

Mitigation Measures:

- Water conservation practices will be adopted to prevent wastage of water.
- Water storage at site would be done in tanks in order to ensure no leakage.
- Fiberglass tanks of approved manufacturer will also be used for construction water storage.
- Water conservation practices will be adopted during the entire course of construction to keep the water demand as low as possible.

6.3.8 Weather Conditions

Weather parameters which include; temperature, humidity and wind are the important parameters and variation in these parameters will affect the quality and efficiency of the construction and workers. High temperature will affect the worker's efficiency and quality of concrete.

Mitigation Measures:

- Adequate drinking water will be provided to workers during high temperature times.
- To avoid any heat stroke to worker's awareness will be provided and adequate measures will be taken.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- Concrete pouring will be performed in the recommended timing as per concrete type, and pouring will be avoided during high temperature.
- Site will be kept clean and tidy to avoid dust emission and falling objects.

6.3.9 Safety of Workers and Public

Operation of machinery, movement of vehicles, handling of materials, including cement, paints, solvents, etc. are some potential sources having safety concerns for the workers. In addition to these, trespassing of unauthorized personnel, snatching, vandalism and terrorism activity may occur. The possibilities of accidents also cannot be ruled out during the construction phase.

Mitigation Measures:

- The Contractor will be responsible to ensure safe working practices during construction phase.
- Necessary training will be provided to workers related to health and safety during construction phase.
- First aid facility will be provided to the workers at site.
- Necessary Personnel Protective Equipment (PPE) will be provided to the workers engaged in work having potential risk to health and safety.
- Safety signage's, unauthorized personnel prohibition and warning signage's will be posted at the project site.
- Incident and accident record shall be maintained and updated record shall be kept at site.

6.3.10 Employment and Business Opportunity

The Project would provide direct employment opportunities during construction period. Besides direct employment in the construction work, the project would provide several indirect opportunities of business and trade. These would include but not limited to supply of construction material, water, equipment, machinery, fuel. The procurement of material would promote business in the local markets and indirect opportunities of employment. Many workers would be engaged in the construction work. It would include skilled and semi-skilled workers.

Mitigation Measures:

- Preference will be given to hire services of trained labor for skilled and semi-skilled work.
- Preference will be given to local market for purchase of material.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- Preference will be given to local suppliers for procurement of construction material and machinery.

6.4 Operation Phase Impacts

6.4.1 Community Safety Risks

Increase in road accidents to people are expected after the development of the roads.

Mitigation Measures:

- Properly designed speed bumps, speed signs and traffic direction signs will be installed.
- A proper road safety program will be developed.

6.4.2 Solid Waste Management

The operation phase will mainly generate food waste, packaging material, paper, plastic and glass. If these waste are not properly managed and disposed off may pose serious environmental hazard not only to the visitors but also to public of project's vicinity. Improper handling and storage of solid waste may also provide favorable ground for the breeding of vectors and rodents, source of foul smell.

Mitigation Measures:

- The solid waste generated at the project will be collected through SSWMB.
- Separated waste bins for plastic, glass, paper and food waste will be placed, so that on site segregation can be managed.
- Awareness signs will be placed to educate visitors in the project for managing their solid waste properly.

6.4.3 Air Pollution

Increased vehicular traffic on roads can lead to air pollution, which can affect the health of visitors and nearby community.

Mitigation Measures:

- The project has been designed with green belts, which will be established along the urban deck and cycling track to improve air quality.

- The project has also been designed with cycling and jogging tracks which will help reduce vehicular emissions.

6.4.4 Utility Services and Consumption of Resources

Water and electricity will be the prime utilities in the project. During normal usage of utilities likelihood of leakages from the network resulting in loss of resources as well as pollution in the Project area. Excessive and uncontrolled usage of these resources will contradict the principles of sustainable usage of natural resources.

Mitigation Measures:

- The best quality of electrical cables and gadgets will be used in the project which would require less maintenance and prevent leakages of resources.

6.4.5 Parking and Traffic Management

The project has been designed with parking facilities at certain locations for 300 passenger cars, which will help ease the parking issues in the area.

Mitigation Measures:

- Entry and exist point of the parking will be kept free from obstruction.
- No offsite parking will be allowed in the project area.
- Signage's of No Parking will be installed at appropriate locations.

CHAPTER 7: ENVIRONMENTAL MANAGEMENT PLAN

7.1 Background Information

The potential environmental impacts during the construction and operation phases of the proposed project on various environmental components such as social, biological and physical environment were predicted in the course of the EIA study. This EIA document has also identified mitigation measures to minimize the environmental impacts of the proposed project, keeping these effects within acceptable limits.

The EMMP (Environmental Management and Monitoring Plan) has been designed to address how the proposed measures will be implemented. It defines the responsibilities of the proponent and contractor; develops a system of checks and balances; proposes actions that are to be taken by each role player; and lays down the required documentation, communication, and monitoring procedures.

7.1.1 Objectives and Purpose of EMMP

The purpose of this EMMP is not only to address the expected environmental impacts of the proposed project, but also to enhance project benefits and to introduce standards of good practice to be adopted for the proposed project.

The primary objectives of the EMMP are to:

- Facilitate the implementation of the mitigation measures that are identified in the EIA;
- Define the responsibilities of the project proponent and contractor and to provide a means for effective communication of environmental issues between them;
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures guidelines.

7.2 Roles & Responsibilities

The process of environmental mitigation and management, as described in this section, involves the coordination and collaboration of several officials to ensure effective implementation. The key organizations in this process include:

7.2.1 Role of PIU

The Project Implementation Unit is responsible for overseeing the implementation of the project. The PIU plays a crucial role in managing the overall project and also ensuring

compliance with environmental and social safeguards. They work closely with other stakeholders and agencies to execute the project in an environmentally and socially responsible manner.

7.2.2 Role of PSC

The Project Supervision Consultant (PSC) supports the PIU in construction management activities. The PSC provides oversight, and decision-making support to the PIU during the construction phase. They also play a role in ensuring that environmental management measures are properly integrated into the construction activities.

7.2.3 Role of Project Contractor

The Project Contractor is responsible for executing the construction activities in accordance with the project's environmental and social requirements. Contractor needs to adhere to the Environmental Management Plan (EMP) and implement mitigation measures to minimize adverse environmental and social impacts during the project construction phase.

7.3 Environmental Management Monitoring Plan

The detailed Environmental Management Plan for construction and operations phases is provided in Table 8 and Table 9, respectively. Meanwhile the Environmental Monitoring Plan is given in Table 10.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

Table 8: Environmental Management Plan (EMP) Construction Phase

S. No.	Aspect	Probable Impact	Safeguards and Mitigations	Responsibility	Supervised by
1.1.	Soil Erosion/Dust	Excavations will be carried out during foundation works of infrastructure and utility laying work would generate heaps of soil which may result in soil erosion..	• Excavated soil will be re-used as back filling material in civil works, road leveling, and filling of depressions. • Soil stockpiles would be regularly wetted to keep airborne dust levels to minimum. • Necessary measures and planning would be done to keep the excavation work to minimum possible duration. • Good engineering practices will be adopted during construction works. • Soil to be kept on safe site which can be reused for the development of parks and green built area etc.	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

1.2.	Wastewater Discharge	Generation of wastewater from the construction site may contaminate the soil of the site or its surrounding if not properly managed. This may not only cause harm to soil, but also provide breeding place for mosquitoes and other insects, which is dangerous for the environment.	• Sewage water will be drained into the main sewer drain after passing through tank. • No direct discharge will be allowed.	Project Contractor	PSC & PIU-KDA
1.3.	Solid Generation and Waste Management	The project is expected to generate waste including; packing waste; scrap, excess construction waste, empty containers and drums, used lubricating oils and paint etc. during the construction phase. The impact of solid waste disposal would be significant if the waste management is not carried out appropriately.	• Separate waste bins will be placed for different type of wastes – plastic, paper, metal, glass, wood and cotton. • Recyclable material will be separated at source and the recyclable waste will be managed in accordance with the SEPA requirement. • Surplus construction material including partially filled chemical and paints containers will be returned to supplier. Construction waste will be disposed of onsite as fill material or sold as scrap to contractors. • Record of all waste disposed during	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

			construction period will be maintained.		
1.4.	Air Pollution	Exhaust emissions from the operation of construction machinery and transportation vehicles may cause air pollution. Movement of heavy machinery and construction material transportation vehicles would create dust emissions in the area. Generators used for power generation may cause pollution in ambient air and have adverse impacts on the workers, operators and nearby area.	• The Contractor will be responsible for taking necessary mitigation measures for reduction of air pollution from dust emissions and safety measure during construction work. • The impact from above mentioned activities will be mitigated by selection of good quality equipment, machinery and vehicles. • Smoke releasing machinery and vehicles would not be allowed to be operated on the project by Contractor or sub-contractor (if any). • Water sprinkling and monitoring to be carried out regularly to ensure adequate suppression of dust. • High exhaust pipes would be used in generators and other fixed equipment for better dispersion of air emissions and to prevent	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

			high concentrations of pollutants in the immediate vicinity. • Emission levels of the generators and other fixed equipment would be monitored and maintenance would be done as per the recommendation of the manufacturer/supplier. • Duration of the work having potential of dust emissions would be minimized by proper project management.		
1.5.	Noise and Vibration	The operation of generators and operation of machinery may create high noise and vibrations levels in the project area. However, this would be a localized issue and noise and vibration levels will attenuate with distance from the work site. Movement of vehicles for delivery of construction material may also induce high noise levels for short periods.	• The impact from above mentioned activities will be mitigated by the selection of good quality of generators and machinery. • Noise and vibration producing machinery and vehicles would not be allowed to operate on the project site by the management and contractor or sub-contractor (if any).	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

			• During generators installation at the work site all possible noise and vibration reducing measures would be adopted, including usage of canopy over the generator. • Noise and vibration levels of the generators and other fixed equipment would be monitored and necessary maintenance would be done to control the noise and vibration levels. • Duration of the work having potential of high noise and vibration generation would be minimized by proper management. • Night time activities would be avoided to the possible limits to minimize the disturbance to neighborhood.		
1.6.	Disturbance to the Traffic Flow	The movement of the construction machinery and construction material transportation vehicles may disturb the other traffic using the project adjoining road.	• A traffic management plan will be prepared for the project. • Movement of the vehicle would be planned and	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

			allowed on designated routes only. • Night time movement would be avoided to the possible limits to minimize the disturbance to neighborhood.		
1.7.	Water Consumption and Demand	Water required for numerous construction activities will be fulfilled through water tanker; however, improper storage of water at site may disturb the project site. Usage of bad quality of water may also lead to poor construction.	• Water conservation practices will be adopted to prevent wastage of water. • Water storage at site would be done in tanks in order to ensure no leakage. • Fiberglass tanks of approved manufacturer will also be used for construction water storage. • Water conservation practices will be adopted during the entire course of construction to keep the water demand as low as possible. • Strict compliance with the established safety rules and regulations.	Project Contractor	PSC & PIU-KDA
1.8.	Weather Conditions	Weather parameters which include; temperature, humidity and wind are the important parameters and	• Adequate drinking water will be provided to workers	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

		variation in these parameters will affect the quality and efficiency of the construction and workers. High temperature will affect the worker's efficiency and quality of concrete.	during high temperature times. • To avoid any heat stroke to worker's awareness will be provided and adequate measures will be taken. • Concrete pouring will be performed in the recommended timing as per concrete type, and pouring will be avoided during high temperature. • Site will be kept clean and tidy to avoid dust emission and falling objects.		
1.9.	Safety of Workers and Public	Operation of machinery, movement of vehicles, handling of materials, including cement, paints, solvents, etc. are some potential sources having safety concerns for the workers. In addition to these, trespassing of unauthorized personnel, snatching, vandalism and terrorism activity may occur. The possibilities of accidents also cannot be ruled out during the construction phase.	• The Contractor will be responsible to ensure safe working practices during construction phase. • Necessary training will be provided to workers related to health and safety during construction phase. • First aid facility will be provided to the workers at site. • Necessary Personnel Protective Equipment	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

			(PPE) will be provided to the workers engaged in work having potential risk to health and safety. • Safety signage's, unauthorized personnel prohibition and warning signage's will be posted at the project site. • Incident and accident record shall be maintained and updated record shall be kept at site.		
1.10.	Employment and Business Opportunity	The Project would provide direct employment opportunities during construction period. Besides direct employment in the construction work, the project would provide several indirect opportunities of business and trade. These would include but not limited to supply of construction material, water, equipment, machinery, fuel. The procurement of material would promote business in the local markets and indirect opportunities of employment. Many workers	• Preference will be given to hire services of trained labor for skilled and semi-skilled work. • Preference will be given to local market for purchase of material. • Preference will be given to local suppliers for procurement of construction material and machinery.	Project Contractor	PSC & PIU-KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

		would be engaged in the construction work. It would include skilled and semi-skilled workers.			
--	--	---	--	--	--

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Table 9: Environmental Management Plan (EMP) Operational Phase

S.No.	Aspect	Probable Impact	Safeguards and Mitigations	Responsibility
2.1.	Community Safety Risks	Increase in road accidents to people are expected after the development of the roads.	• Properly designed speed bumps, speed signs and possibly traffic direction signs will be installed. • A proper road safety program will be developed.	KDA
2.2.	Solid Waste Management	The operation phase will mainly generate food waste, packaging material, paper, plastic and glass. If these waste are not properly managed and disposed off may pose serious environmental hazard not only to the visitors but also to public of project's vicinity. Improper handling and storage of solid waste may also provide favorable ground for the breeding of vectors and rodents, source of foul smell.	• The solid waste generated at the project will be collected through SSWMB. • Separated waste bins for plastic, glass, paper and food waste will be placed, so that on site segregation can be managed. • Awareness signs will be placed to educate visitors in the project for managing their solid waste properly	KDA & SSWMB
2.3.	Air Pollution	Increased vehicular traffic on roads can lead to air pollution, which can affect the health of visitors and nearby community.	• The project has been designed with green belts, which will be established along the urban deck and cycling track to improve air quality. • The project has also been designed with cycling and jogging tracks which will help reduce vehicular emissions.	-
2.4.	Utility Services and Consumption of Resources	Water and electricity will be the prime utilities in the project. During normal usage of utilities likelihood of leakages from the network resulting in loss of resources as well	• Best quality of electrical cables and gadgets will be used in the project which would require less maintenance and prevent leakages of resources.	KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

		as pollution in the Project area. Excessive and uncontrolled usage of these resources will contradict the principles of sustainable usage of natural resources.		
2.5.	Parking and Traffic Management	The project has been designed with parking facilities at certain locations for 300 passenger cars, which will help ease the parking issues in the area.	• Entry and exist point of the parking will be kept free from obstruction. • No offsite parking will be allowed in the project area. • Signage's of No Parking will be installed at appropriate locations.	KDA

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Table 10: Environmental Monitoring Plan

Environmental Issue	Monitoring Action	Timing	Monitoring Delivered By	Managed by	Supervised by
Construction Phase					
1.1 Soil Erosion/Dust	Site Inspection (Visual) Controls.	During excavation activities and usage as filling material.	Record of soil erosion control actions	Project Contractor	PSC & PIU KDA
1.2 Discharge of Wastewater	Randomly check to ensure compliance.	During construction period.	Written and dated note indicating compliance or issue and action taken	Project Contractor	PSC & PIU KDA
1.3 Disposal of construction waste	Monitor to check waste handling and disposal procedure.	During construction period.	Note to file, signed and dated	Project Contractor	PSC & PIU KDA
1.4 Releases of Air Emissions from vehicular and machinery exhaust	- Check maintenance log. - Site inspection (visual).	i. During machinery operation. ii. At maintenance location during construction period.	Inspection note to file for use in contractor reporting and in semi-annual audit report.	Project Contractor	PSC & PIU KDA
1.5 Noise and Vibration	- Using a portable noise meter, monitor checks conditions. - Check noise level monitoring record. - Site inspection (visual) to Check dampener-pads on generator platform.	During construction period	Inspection note with compliance status and noise reading results	Project Contractor	PSC & PIU KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

1.6 Disturbance of Traffic Flow	• Check traffic plan available at site • Randomly check vehicle present at site.	During construction period	Inspection note, re-findings signed and dated	Project Contractor	PSC & PIU KDA
1.7 Water Consumption	• Check water consumption record • Compare water consumption	During construction period	Inspection note, signed and dated	Project Contractor	PSC & PIU KDA
1.8 Weather Conditions	• Check concreting and pouring activity plan • Check high temperature timing working plan • Check record of training. • Check high wind days working plan	During construction period	Note to file, signed and dated	Project Contractor	PSC & PIU KDA
1.9 Safety of workers and public	• Inspection of construction location to ensure proper use of OHS gear and contractor enforcement. • Check the daily record of labour and project staff	During construction period	Inspection note, signed and dated	Project Contractor	PSC & PIU KDA



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

7.4 Environmental Monitoring and Sampling Plan

The environmental monitoring and sampling plan for construction phase is provided in Table-11.

Table 11: Environmental Monitoring and Sampling Plan

GASEOUS AIR EMISSION PLAN				
Parameters	Source	Frequency	Standards	
CO, Smoke, Noise	Construction Machinery	Quarterly	SEQS	
CO, NO _x , SO _x and Particulates	Power Generator	Monthly	SEQS	
AMBIENT AIR QUALITY PLAN				
Parameters	Locations	Frequency	Duration	
PM _{2.5} , PM ₁₀ , SPM, NO, NO ₂ , CO, SO _x	7 meters from the Project Boundaries	Quarterly	8-hours	
DRINKING WATER QUALITY SAMPLING PLAN				
Parameters	Locations	Frequency	Standard	
TDS, TSS, pH, Total Coliform, Fecal Coliform	Drinking Water Source	Quarterly	SDWQS/WHO	
WASTEWATER QUALITY SAMPLING PLAN				
Parameters	Locations	Frequency	Duration	Standards
BOD, COD, DO, TSS, TDS, pH, NO ₃ , SO ₄ , Oil & Grease	Collection Tank	Quarterly	Grab sampling	SEQS
NOISE LEVEL SAMPLING PLAN				
Parameters	Locations	Frequency	Duration	Standards



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY & SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

Decibels [dB(A)Scale]	At the interface of project 7 meters from the equipment at construction site	Quarterly	Continuous for 8 hours in a full working day	WHO Noise Guidelines
SOLID WASTE SAMPLING AND CHARACTERIZATION PLAN				
Parameters	Locations	Frequency	Duration	Standards
•Waste generation rate, •Waste composition, •Recyclables and non-recyclables, •Hazardous waste,	At main solid waste collection point from where the waste is transported.	Quarterly	-	-

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Conclusion

The project will provide quality recreational facilities to the public to undertake walking and jogging in hygienic and safe environment. It will include roads, seawall, cycling track, jogging track and green belts including sitting areas.

The project will enable people to spend their leisure time in aesthetically designed recreational facility to get rid of fatigue and feel fresh. The project will have a positive impact on the overall environment.

To develop a comprehensive environmental and social baseline of the project area, comprehensive review of literature was done by team of experts. Furthermore, the literature reviewed for developing a comprehensive environmental and social baseline was validated by frequent site visits and field investigations for ground trothing to describes the existing environmental settings in the study area.

The potential impacts due to the development of the proposed project on the environment are identified, and the mitigation measures are proposed to mitigate the Project's adverse environmental effects. Implementation of suggested mitigation measures may eliminate or reduce the magnitude of the environmental impacts of the project.

Additionally a detailed Environmental Management and Monitoring Plan (EMMP) identifies all the possible impacts associated with the proposed project and mitigation safeguards are an integral part of the plan to minimize adverse impacts associated with the project. Based on the point discussed above it is concluded that the proposed project will not have any significant long term adverse impacts onto the existing environment, if the project proponent ensures strict implementation of EMMP. The impacts identified were mostly short term, site specific and would be easily managed by implementation of the EMMP in this EIA document.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

Annexures

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Annexure 1: Sindh Environmental Protection Act, 2014



The Sindh Government Gazette

Published by Authority

KARACHI THURSDAY MARCH 20, 2014

PART-IV

PROVINCIAL ASSEMBLY OF SINDH

NOTIFICATION

KARACHI, THE 20th MARCH, 2014.

NO.PAS/Legis-B-06/2014-The Sindh Environmental Protection Bill, 2014 having been passed by the provincial Assembly of Sindh on 24th February, 2014 and assented by the Governor of Sindh on 19th March, 2014 is hereby published as an Act of the legislature of Sindh

THE SINDH ENVIRONMENTAL PROTECTION ACT, 2014

SINDH ACT NO.VIII OF 2014

AN ACT

to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development.

WHEREAS it is expedient to provide for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development, and for matters connected therewith and incidental thereto;

Preamble

PART-I

It is hereby enacted as follows:-

1. (1) This Act may be called the Sindh Environmental Protection Act, 2014.

Short title and commencement



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

- (2) It extends to the whole of the Province of Sindh.
(3) It shall come into force at once

2. In this Act, unless there is anything repugnant in the subject or context-

Definitions

- (i) "adverse environmental effect" means impairment of, or damage to, the environment and includes—
- (a) impairment of, or damage to, human health and safety to biodiversity or property;
 - (b) pollution; and
- (c) any adverse environmental effect as may be specified in the rules or regulations made under this Act;
- (ii) "Agency" means the Sindh Environmental Protection Agency established under section 5 of this Act;
- (iii) "agricultural waste" means waste from farm and agricultural activities including poultry, cattle farming, animal husbandry residues from the use of fertilizers, pesticides and other farm chemicals and agricultural runoff;
- (iv) "air pollutant" means any substance that causes pollution of air and includes soot, smoke, dust particles, odor, light, electro-magnetic, radiation, heat, fumes, combustion exhaust, exhaust gases, noxious gases, hazardous substances and radioactive substances;
- (v) "biodiversity" or "biological diversity" means the variability among living organisms from all sources, including inter-alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems;
- (vi) "biosafety" means the mechanism developing through policy and procedure to ensure human health and the environmentally safe application of biotechnology;
- (vii) "Council" means the Sindh Environmental Protection Council established under section 3 of this Act;
- (viii) "discharge" means spilling, leaking, pumping, depositing, seeping, releasing, flowing-out, pouring, emitting, emptying or dumping into the land, water or atmosphere;
- (ix) "ecosystem" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit;



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (x) "effluent" means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapour;
- (xi) "emission standards" means the permissible standards established by the Agency for emission of air pollutants and noise and for discharge of effluent and waste;
- (xii) "environment" means-
 - (a) air, water, land and natural resources;
 - (b) all layers of the atmosphere;
 - (c) all organic and inorganic matters and living organisms;
 - (d) ecosystems and ecological relationships;
 - (e) buildings, structures, roads, facilities and works;
 - (f) all social and economic conditions affecting community life; and
 - (g) the inter-relationship between any of the factors in sub-clause (a) to (f) made under this Act;
- (xiii) "environmental aspect" means an organization's activities or services that can interact with the environment;
- (xiv) "environment audit" means a systemic scrutiny of environmental performance of an organization, factory, company or manufacturing and production unit regarding to its operations;
- (xv) "environmental impact assessment" means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigation and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed;
- (xvi) "Environmental Management Plan" means a site specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with the environmental legislation;
- (xvii) "Environmental Protection Order" means an order passed under Section 21 made under this Act.
- (xviii) "Environmental Protection Tribunal" means the Environmental Protection Tribunal constituted under section 25 of this Act ;

3



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (xvix) "Environmental Review" means a quantitative and qualitative assessment of documents submitted by proponent, comments from public and Government agencies or organizations;
- (xx) "factory" means any premises in which industrial activity is being undertaken;
- (xxi) "genetically modified organism" means any organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology and which does not occur naturally through mating and or recombination and includes both living and non-living modified organisms;
- (xxii) "Government" means the Government of Sindh;
- (xxiii) "Government Agency" includes:-
- (a) A department, attached department or any other office of Government; and
 - (b) A development authority, local authority, company body corporate established or control by Government;
- (xxiv) "Court" means the Court of the Judicial Magistrate First Class;
- (xxv) "hazardous substance" means-
- (a) a substance or mixture of substances, other than a pesticide as defined in the Agricultural Pesticides Ordinance, 1971 (II of 1971), which, by reason of its chemical activity or toxic, explosive, flammable, corrosive, radioactive or other characteristics, causes, or is likely to cause, directly or in combination with other matters an adverse environmental effect; and
 - (b) any substance which may be prescribed as a hazardous substance;
- (xxvi) "hazardous waste" means waste which is or which contains a hazardous substance or which may be prescribed as hazardous waste, hospital waste, nuclear waste, obsolete pesticides and persistent organic pollutants;
- (xxvii) "hospital waste" means waste medical supplies and materials of all kinds, and waste blood, tissue, organs and other parts of the human and animal bodies, from hospitals, clinics, laboratories and veterinary facilities;

4



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (xxviii) "industrial activity" means any operation or process for manufacturing, making, formulating, synthesising, altering, repairing, ornamenting, finishing, packing or otherwise treating any article or substance with a view to its use, sale, transport, delivery or disposal, or for mining, for oil and gas exploration and development, or for pumping water or sewage, or for generating, transforming or transmitting power or for any other industrial or commercial purposes;
- (xxix) "industrial waste" means waste resulting from an industrial activity;
- (xxx) "initial environmental examination" means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an adverse environmental effect for requiring preparation of an environmental impact assessment;
- (xxxi) "local authority" means any agency set up or designated by Government, by notification in the official Gazette, to be a local authority for the purposes of this Act;
- (xxxii) "local council" means a local council constituted or established under a law relating to local government;
- (xxxiii) "motor vehicle" means any mechanically propelled vehicle adapted for use upon land whether its power of propulsion is transmitted thereto from an external or internal source, and includes a chassis to which a body has not been attached, and a trailer, but does not include a vehicle running upon fixed rails;
- (xxxiv) "municipal waste" includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like;
- (xxxv) "noise" means the intensity, duration and character of sounds from all sources, and includes vibration;
- (xxxvi) "non degradable plastic products" means a plastic product which are made from the non-biodegradable substances;
- (xxxvii) "nuclear waste" means waste from any nuclear reactor or nuclear plant or other nuclear energy system, whether or not such waste is radioactive;



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (xxxviii) "Oxo-biodegradable Plastic Products" means a plastic product made of a polymer by adding a pro-degrading additive containing a transition metal salt, except cobalt, which cause the plastic to degrade and bio-grade from oxidative and cell mediated phenomena either simultaneously or successfully;
- (xxxix) "person" means any natural person or legal entity and includes an individual, firm, association, partnership, society, group, company, corporation, co-operative society, Government Agency, non-governmental organization, community-based organization, village organization, local council or local authority and, in the case of a vessel, the master or other person having for the time being the charge or control of the vessel;
- (xxxi) "pollution" means the contamination of air, land or water by the discharge or emission of effluent or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or substances alters unfavorably the chemical, physical, biological, radiational, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity;
- (xli) "prescribed" means prescribed by rules made under this Act;
- (xlii) "project" means any activity, plan, scheme, proposal or undertaking involving any change in the environment and includes-
- (a) construction or use of buildings or other works;
 - (b) construction or use of roads or other transport systems;
 - (c) construction or operation of factories or other installations;
 - (d) mineral prospecting, mining, quarrying, stone-crushing, drilling and the like;
 - (e) any change of land use or water use; and
 - (f) alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems, factories or other installations;



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (xliii) "proponent" means the person who proposes or intends to undertake a project;
- (xliv) "regulations" means regulations made under this Act;
- (xlv) "rules" means rules made under this Act;
- (xlv) "sewage" means liquid or semi-solid wastes and sludge from sanitary conveniences, kitchens, laundries, washing and similar activities and from any sewerage system or sewage disposal works;
- (xlvii) "Schedule Plastic Products" means all types of flexible plastic packaging and disposable plastic products made of Polythene, Polypropylene, Polystyrene and Poly-ethylene Terephthalate (PET), used for food and non-food items, like shopping bags, garbage bags, snacks packs, water and milk packaging, shrink wraps, bubble pellet wraps, films, liners, woven or non-woven bags, mulch films;
- (xlviii) "Sindh Environmental Quality Standards" means standards established by the Agency under clause (e) of sub-section(1) of section 6 and approved by the Council under clause (c) of sub-section(1) of section 4 made under this Act;
- (xlix) "standards" means qualitative and quantitative standards for discharge of effluent and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the Sindh Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations;
- (i) "strategic environmental assessment" mean an analysis of a proposed policy, legislation, plan or programme to determine whether the principles of sustainable development have been integrated therein and to identify its likely environmental effects and such components as require an initial environmental examination or environmental impact assessment;
- (ii) "sustainable development" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs;



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

- (iii) "trans-boundary environmental impacts" means environmental impact arising from beyond the boundaries or limits of Sindh province and causing any adverse environmental impact or pollution in the air, land, water and coaster water of Sindh province;
- (iii) "waste" means any substance or object which has been, is being or is intended to be, discarded or disposed-of, and includes liquid waste, solid waste, waste gases, suspended waste, industrial waste, agricultural waste, nuclear waste, municipal waste, hospital waste, used polyethylene bags and residues from the incineration of all types of waste.
- (iv) "waters (coastal waters, internal waters, territorial waters and historical waters)" means such limits of the waters adjacent to the land territory as may be specified in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976).

PART-II

THE SINDH ENVIRONMENTAL PROTECTION COUNCIL

**Establishment
of the Sindh
Environmental
Protection
Council.**

3. (1) The Government of Sindh shall, by notification in the official Gazette, establish a Council to be known as the Sindh Environmental Protection Council consisting of-

- (i) Chief Minister or such other person as the Chief Minister may nominate in this behalf. **Chairperson**
- (ii) Minister-in-charge of the Environment Protection Department. **Vice Chairperson**
- (iii) Additional Chief Secretary, Planning and Development Department, Government of Sindh. **Ex-officio member**
- (iv) Secretaries of the Environment, Finance, Public Health Engineering, Irrigation, Health, Agriculture, Local Government, Industries, Live Stock and Fisheries, Forest and Wildlife, Energy, Education, Departments of Government of Sindh and the divisional commissioners of Sindh. **Ex-officio members**



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

- (v) Such other persons not exceeding twenty-five as Government may appoint from representatives of the Chambers of Commerce and Industry and industrial associations, representatives of the Chambers of Agriculture, the medical and legal professions, trade unions, non-governmental organizations concerned with the environment and sustainable development, and scientists, technical experts and educationists. **Non-official members**
- (vi) Director General, Sindh Environment Protection Agency **Member / Secretary**
- (vii) Two Members of the Provincial Assembly of Sindh amongst the eleven Members of the Standing Committee on Environment nominated by the Speaker **Members**

2) The Members of the Council, other than ex-officio members, shall be appointed in accordance with the prescribed procedure.

(3) A non-official member, unless he sooner resigns or is removed, shall hold office for a term of three years and shall be eligible for re-appointment but shall not hold office for more than two terms.

(4) The Council shall frame its own rules of procedure.

(5) The Council shall hold meetings, as and when necessary, but not less than two meetings, shall be held in a year.

(6) The Council may constitute committees of its members and entrust them with such functions as it may deem fit, and the recommendations of the committees shall be submitted to the Council for approval.

(7) The Council, or any of its committees, may invite any technical expert or representative of any Government Agency or non-governmental organization or other person possessing specialized knowledge of any subject for assistance in performance of its functions.

9



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

4. (1) The Council shall-
- (a) co-ordinate and supervise the enforcement of the provisions of this Act and other laws relating to the environment in the province;
 - (b) approve comprehensive provincial environmental and sustainable development policies and ensure their implementation within the framework of a conservation strategy and sustainable development plan as may be approved by Government from time to time;
 - (c) approve the Sindh Environmental Quality Standards;
 - (d) provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources;
 - (e) coordinate integration of the principles and concerns of sustainable development into socio-economic and development policies, plans and programmes at the provincial, district and local levels;
 - (f) consider the annual Sindh Environment report and give appropriate directions thereon and cause it to be laid before the Provincial Assembly;
 - (g) deal with inter-provincial and federal-provincial issues, and liaise and coordinate with other Provinces through appropriate inter-provincial forums regarding formulation and implementation of standards and policies relating to environmental matters with an inter-provincial impact;
 - (h) provide guidelines for biosafety and for the use of genetically modified organisms; and
 - (i) assist the Federal Government or Federal Agency in implementation and or administration of various provision of United Nation Convention on Laws on Seas, 1980 (UNCLOS) in coastal waters of the province;
- (2) The Council may, either itself or on the request of any person or organization, direct the Agency or any Government Agency to prepare, submit, promote or implement projects for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, and the sustainable development of resources or to undertake research in any specified aspect of environment.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

**PART III
THE SINDH ENVIRONMENTAL PROTECTION AGENCY**

5. (1) Government shall, by notification in the Official Gazette, establish the Sindh Environmental Protection Agency, to exercise the powers and perform the functions assigned to it under the provisions of this Act and the rules and regulations made thereunder.

**Establishment
of the Sindh
Environmental
Protection
Agency.**

(2) The Agency shall be headed by a Director General who shall be appointed by Government on such terms and conditions as it may determine.

(3) The Agency shall have such administrative, technical and legal staff as Government may specify, to be appointed in accordance with such procedure as may be prescribed.

(4) The powers and functions of the Agency shall be exercised and performed by the Director General.

(5) The Director General may, by general or special order, delegate any of these powers and functions to staff appointed under sub-section (3).

(6) For assisting the Agency in the discharge of its functions Government shall establish Advisory Committees for various sectors and appoint as members thereof eminent representatives of the relevant sector, educational institutions, research institutes and non-governmental organizations.

6. (1) The Agency shall –

**Functions of the
Agency.**

- (a) administer and implement the provisions of this Act and the rules and regulations;
- (b) prepare, in co-ordination with the appropriate Government Agency or local council and, in consultation with the concerned Advisory Committees where established, environmental policies for the approval of the Council;
- (c) take all necessary measures for the implementation of the environmental policies approved by the Council;
- (d) prepare and publish an annual Sindh Environment Report on the state of the environment in the province;
- (e) prepare or revise and establish the Sindh Environmental Quality Standards with approval of the Council;

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Provided that before seeking approval of the Council, the Agency shall publish the proposed Sindh Environmental Quality Standards for public opinion in accordance with the prescribed procedure;

(f) ensure enforcement of the Sindh Environmental Quality Standards;

(g) where the quality of ambient air, water, land or noise so requires, the Agency may, by notification in the Official Gazette establish different standards for discharge or emission from different sources and for different areas and conditions as may be necessary;

Provided that where these standards are less stringent than the Sindh Environmental Quality Standards; prior approval of the Council shall be obtained;

(h) establish systems and procedures for surveys, surveillance, monitoring, measurement, examination, investigation, research, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment in various sectors;

(i) take measures to promote research and the development of science and technology which may contribute to the prevention of pollution, protection of the environment, and sustainable development;

(j) issue licences, approval for the consignment, handling, transport, treatment, disposal of, storage, handling or otherwise dealing with hazardous substances;

(k) certify laboratories as approved laboratories for conducting tests and analysis and one or more research institutes as environmental research institutes for conducting research and investigation for the purposes of this Act;

(l) identify the needs for and initiate legislation in various sectors of the environment;

(m) provide assistance to relevant Federal and Provincial Government Agencies in the management of environment accidents and natural and environmental disasters, including conduct of inquiry thereto;

(n) render advice and assistance in environmental matters including such information and data available with it as may be required for carrying out the purposes of this Act;

Provided that the disclosure of such information shall be subject to the restrictions specified in Part XI (Access to Information);

10

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- (o) assist Government Agencies, local councils, local authorities and other persons to implement schemes for the proper disposal of wastes so as to ensure compliance with the Sindh Environmental Quality Standards;
 - (p) provide information and guidance to the public on environmental matters;
 - (q) recommend environmental courses, topics, literature and books for incorporation in the curricula and syllabi of educational institutions;
 - (r) promote public education and awareness of environmental issues through mass media and other means including seminars and workshops;
 - (s) establish and maintain mechanisms, including its own website, to disseminate information, subject to the provisions of this Act, regarding policies, plans and decisions of the Government, the Council and the Agency, relating to the environment;
 - (t) specify safeguards for the prevention of accidents and disasters which may cause pollution, collaborate with the concerned persons in the preparation of contingency plans for control of such accidents and disasters, and co-ordinate implementation of such plans;
 - (u) review and approve mitigation plans and give guidance and directions, where necessary, relating to clean up operations ordered under this Act;
 - (v) encourage the formation and working of non-governmental organizations, community organizations and village organizations to prevent and control pollution and promote sustainable development;
 - (w) take or cause to be taken all necessary measures for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development; and
 - (x) perform any function that the Council may assign to it.
- (2) The Agency may-
- (a) undertake inquiries or investigation into environmental issues, either of its own accord or upon complaint from any person or organization;
 - (b) request any person to furnish any information or data relevant to its functions;



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

- (c) initiate, with the approval of Government, requests for foreign assistance in support of the purposes of this Act and enter into arrangements with foreign agencies or organizations for the exchange of material or information and participate in international seminars or meetings;
- (d) recommend to Government and the Council the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and the purposes of this Act, including -
 - (i) taxes, duties, cesses and other levies; and
 - (ii) incentives, prizes, awards, rewards, subsidies, tax exemptions, rebates and depreciation allowances;
- (e) establish and maintain laboratories to help in the performance of its functions under this Act and to conduct research in various aspects of the environment and provide or arrange necessary assistance for the establishment of similar laboratories in the private sector;
- (f) arrange, in accordance with such procedure as may be prescribed, financial assistance for projects designed to facilitate in discharge of its functions; and
- (g) acquire assistance of concerned authorities of district administration and other relevant agencies, departments and police assistance for enforcement of this Act.

Power of the Agency

7. Subject to the provisions of this Act, the Agency may-

- (a) lease, purchase, acquire, own, hold, improve, use or otherwise deal in and with any property both moveable and immovable;
- (b) sell, convey, mortgage, pledge, exchange or otherwise dispose of its property and assets;
- (c) fix and realize fees, rates and charges for rendering any service or providing any facility, information or data under this Act or its rules and regulations;
- (d) enter into contracts, execute instruments, incur liabilities and do all acts or things necessary for proper management and conduct of its business;
- (e) appoint, with the approval of Government and in accordance with such procedures as may be prescribed, such advisers, experts and consultants as it considers necessary for the efficient performance of its functions on such terms and conditions as it may deem fit;
- (f) summon and enforce the attendance of any person and require him to supply any information or document needed for the conduct of any enquiry or investigation into any environmental issue;

11

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- (g) Director General may authorize any officer or official to enter and inspect or under a search warrant issued by Environmental Protection Tribunal or a Court, search at any time, any land, building, premises, vehicle or vessel or other place where or in which there are reasonable grounds to believe that an offence under this Act has been, or is being, or likely to be committed;
- (h) take samples of any materials, products, articles or substances or of the effluent, wastes or air pollutants being discharged or emitted or of air, water or land in the vicinity of the discharge or emission;
- (i) arrange for the testing and analysis of samples at a certified laboratory;
- (j) confiscate any article used in the commission of the offence where the offender is not known or cannot be found within a reasonable time;

Provided that the powers under clauses (f), (g), (h) (i), and (j) shall be exercised in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898) or the rules and regulations and under the direction of the Environmental Protection Tribunal or a Court; and

- (k) establish the Sindh Environmental Co-ordination Committee comprising the Director-General as its Chairman and such other persons as Government shall appoint as its members to exercise such powers and perform such functions as shall be delegated or assigned to it by Government for carrying out the purposes of this Act and for ensuring coordination among Government Agencies in implementation of environmental policies.

PART IV SINDH SUSTAINABLE DEVELOPMENT FUND

8. (1) There shall be established a Sindh Sustainable Development Fund.

**Establishment of
the Sindh
Sustainable
Development
Fund.**

- (2) The Sindh Sustainable Development Fund shall be derived from the following sources, namely—

- (a) allocations and grants made or loans advanced by the Government of Sindh or by the Federal Government;
- (b) aid and assistance, grants, advances, donations and other non-obligatory funds received from foreign governments, national or international agencies, and non-governmental organizations; and

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

(c) voluntary contributions from private, corporate, multinational organizations and other persons.

(d) Any fees generated under the provision of this act including the fines imposed against contraventions including penalties.

(3) The Sindh Sustainable Development Fund shall be utilized, in accordance with such procedures as may be prescribed for -

(a) providing financial assistance to projects designed for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, the sustainable development of resources and for research in any specified aspect of the environment; and

(b) any other purposes which, in the opinion of the Board, will help achieve environment objectives and the purposes of this Act.

9. (1) The Sindh Sustainable Development Fund shall be managed by a Board known as the Provincial Sustainable Development Fund Board consisting of— **Management of the Sindh Sustainable Development Fund.**

(i) Additional Chief Secretary, Planning and Development Department, Government of Sindh, **Chairperson**

(ii) Such officers of Government, not exceeding five (05), as Government may appoint including Secretaries of the Environment, Finance, Industries and Local Government Departments, Government of Sindh. **Ex-officio Members**

(iii) Such non-official persons, not exceeding five (05), as Government may appoint, including representatives of the Chambers of Commerce and Industry, non-governmental organizations and major donors. **Non-official Members**

(iv) Director General, Sindh Environmental Protection Agency. **Secretary/ Member**

(2) The members of the Board, other than ex-officio member shall be appointed in accordance with the prescribed procedure.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

(3) A non-official member of the Board, unless he sooner resigns or is removed, shall hold office for a term of three years and shall be eligible for re-nomination, but shall not hold office for more than two terms.

(4) The Board shall frame its own rules of procedure with the approval of Government.

(5) In accordance with such procedures and such criteria as may be prescribed, the Board shall have the power to —

- (a) sanction financial assistance for eligible projects;
- (b) invest moneys held in the Sindh Sustainable Development Fund in such profit-bearing Government bonds, saving schemes and securities as it may deem suitable; and
- (c) take such measures and exercise such powers as may be necessary for utilization of the Sindh Sustainable Development Fund for the purposes specified in sub-section (3) of section 8.

(6) The Board shall constitute committees of its members to undertake regular monitoring of projects financed from the Sindh Sustainable Development Fund and to submit progress reports to the Board which shall publish an Annual Report incorporating its annual audited accounts and performance evaluation based on the progress reports.

10.(1) The Agency shall maintain proper accounts of the Sindh Sustainable Development Fund and other relevant records and prepare annual statement of accounts in such form as may be prescribed.

Accounts

(2) The accounts of the Sindh Sustainable Development Fund shall be audited annually by the Auditor General of Pakistan.

PART V PROHIBITIONS AND ENFORCEMENT

11. (1) Subject to the provisions of this Act and the rules and regulations, 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 to 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; or, where applicable, the standards established under Section 6(1)(g)(i); or direction issued under Section 17, 19, 20 and 21 of this Act; or any other direction issued, in general or particular, by the Agency.

**Prohibition of
certain
discharges or
emissions and
compliance with
standards.**

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

(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.

(3) Monitoring and analysis under sub-section (1) and (2), shall be acceptable only when carried out by the Environmental Laboratory certified by the Agency as prescribed in the rules.

12. No person shall import hazardous waste into Sindh province or its coastal, internal, territorial or historical waters, except acquiring prior approval of the Agency.

**Prohibition of
import of
hazardous
waste.**

13. Subject to the provisions of this Act, no person shall import, generate, collect, consign, transport, treat, dispose of, store, handle or otherwise use or deal with any hazardous substance except-

**Handling of
hazardous
substances.**

- (a) under a licence issued by the Agency; or
- (b) in accordance with the provisions of any other law, rule, regulation or notification for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Government is a party.

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-

**Prohibition of
action adversely
affecting
Environment.**

- (a) recycling or reuse of hospital waste and infectious waste;
- (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;
- (d) release of emissions or discharges from industrial or commercial operations as prescribed;
- (e) recycling or reuse or recovery of hazardous wastes or industrial by-products in an unauthorized or non-prescribed manner or procedure; and



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

(f) any activity which may cause adverse environmental affect due to trans boundary projects of Province of Sindh.

which lead to pollution or impairment of or damage to biodiversity, ecosystem, aesthetics or any damage to environment and natural resources as defined in section 2 (xxxvi) of this Act.

(2) No person shall generate, handle, transport, dispose of or handle the hospital waste and infections waste except in accordance with the Hospital Waste Management Rules and in such manner as may be prescribed.

(3) No person shall import, manufacture, stockpile, trade, supply, distribute or sell any scheduled plastic product which is non-degradable. The scheduled plastic products must be oxo-biodegradable and the pro-degradant used must be approved by the Agency or any other department or agency and in such manner as prescribed.

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.

**Regulation of
motor vehicles.**

(2) For ensuring compliance with the standards mentioned in sub-section (1), the Agency may direct that any motor vehicle or class of vehicles shall install such pollution control devices or other equipment or use such fuels or undergo such maintenance or testing as prescribed.

(3) For ensuring compliance with the standards mentioned in sub-section (1), the Agency may direct that any manufacturer of motor vehicle or class of vehicles shall use such manufacturing standard or design or pollution control devices or other equipment or undergo such testing as may be prescribed.

(4) Where a direction has been issued by the Agency under sub-section (2) and (3) in respect of any motor vehicles or class of motor vehicles, no person shall operate or manufacture any such vehicle till such direction has been complied with.

16. (1) The monitoring, testing and analysis carried out in compliance or for the enforcement of any provisions of this Act.

**Certified
Environmental
Laboratory**

(2) The laboratory or organization having any facility for environmental monitoring, testing and analysis and intend to perform under sub-section (1) shall register with the Agency in accordance with the Environmental Laboratory Certification Rules as prescribed.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

**PART VI
ENVIRONMENTAL EXAMINATIONS AND ASSESSMENTS**

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.

**Initial
environmental
examination
and
environmental
impact
assessment.**

(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.

(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.

(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:

(5) The provisions of sub-sections (1), (2), (3) and (4) shall apply to such categories of projects and in such manner as prescribed:

(6) The Agency shall maintain separate registers for initial environmental examination and environmental impact assessment projects, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be open for inspection to the public during office hours.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

18. (1) All provincial government agencies, departments, authorities, local councils and local authorities responsible for formulating policies, legislation, plans and programmes to be implemented in Sindh province which may cause any environmental impact in the jurisdiction of the province shall, before submitting the same to the competent authority for approval, forward to the Sindh Environmental Protection Agency a strategic environment assessment containing —

**Strategic
environmental
assessment.**

- (a) description of the objectives and features of the proposed policy, legislation, plan or programme that are in consonance with the principles of sustainable development;
- (b) assessment of the adverse environmental effects, if any, likely to be caused during implementation of the policy, legislation, plan or programme along with proposed preventive, mitigation and compensatory measures;
- (c) analysis of possible alternatives; and
- (d) identification of those components of the policy, legislation, plan or programme, if any, in respect of which specific environmental impact assessment need to be carried out in due course.

(2) The Agency shall, in consultation with the concerned Government Agencies and Advisory Committees where established, review the strategic environment assessment, within sixty (60) days of its filing, and prepare a report containing its comments and recommendations in respect thereof which shall be forwarded to the initiating Government Agency, authority, local council or local authority and duly considered by it and the competent authority before approval or otherwise of the proposed policy, legislation, plan or programme.

(3) The provisions of sub-sections (1), and (2) shall apply to such categories of policies, plans and programmes and in such manner as may be prescribed.

19. (1) The Agency shall carry out or arrange environmental monitoring of all projects in respect of which it has approved an initial environmental examination or environmental impact assessment to determine whether the actual environmental impact exceeds the level predicted in the assessment and whether the conditions of the approval are being complied with.

**Environmental
monitoring.**

(2) For purposes of sub-section (1), the Agency may require the person in charge of a project to furnish such information as it may specify pertaining to the environmental impact of the project, including quantitative and qualitative analysis of -

21



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

(a) discharge of effluents, wastes, emissions of air pollutants, noise and any other matter or action that may be found offensive under section 14 from the project on daily, weekly, monthly or annual basis;

(b) ambient quality of the air, water, noise and soil before, during and after construction and during operation of the project.

(3) On review of the data collected by it and information provided, the Agency may issue such directions to the person in charge as it may consider necessary to ensure compliance with the conditions of the approval.

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.

**Environmental
Audit and
Review**

(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.

(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.

PART VII ENVIRONMENTAL PROTECTION ORDER

21. (1) Where the Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of any provision of this Act, the rules or regulations or of the conditions of a licence, or is likely to cause, or is causing or has caused an adverse environmental effect, the Agency may, after giving the person responsible for such

**Environmental
Protection
Order.**



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures as the Agency may consider necessary within such period as may be specified in the order.

(2) In particular and without prejudice to the generality of the foregoing power, such measures may include —

- (a) immediate stoppage, preventing, lessening or controlling the discharge, emission, disposal, handling, act or omission, or to minimize or remedy the adverse environmental effect;
- (b) installation, replacement or alteration of any equipment or thing to eliminate, control or abate on a permanent or temporary basis, such discharge, emission, disposal, handling, act or omission;
- (c) action to remove or otherwise dispose of the effluent, waste, air pollutant, noise, or hazardous substances;
- (d) action to restore the environment to the condition existing prior to such discharge, disposal, handling, act or omission, or as close to such condition as may be reasonable in the circumstances, to the satisfaction of the Agency; and
- (e) impose a penalty as prescribed.

(3) Notwithstanding the provisions of sub-section (1), in an emergency situation where, for reasons to be recorded, the Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of the provisions of this Act and that circumstances of the case warrant immediate action in the public interest, it may pass an ad-interim order of the nature described in sub-sections (1) and (2) by providing reasonable opportunity of hearing.

PART VIII

OFFENCES AND PENALTIES

22. (1) Whoever contravenes or fails to comply with the provisions of sections 11, 17, 18 and 21 or any order issued there under shall be punishable with a fine which may extend to five million rupees, to the damage caused to environment and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues:

Provided that if the contravention of the provisions of section 11 also constitutes a contravention of the provisions of section 15, such contravention shall be punishable under sub-section (2).

Penalties.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

(2) Whoever contravenes or fails to comply with the provisions of sections 13, 14, 15 and 16 or any rule or regulation or conditions of any license, any order or direction, issued by the Agency, shall be punished with a fine, and in case of continuing contravention or failure with an additional fine which may extend to ten thousand rupees for every day during which such contravention continues.

(3) Where an accused has been convicted of an offence under sub-sections (1) and (2), the Environmental Protection Tribunal and Court shall, as the case may be, in passing sentence, take into account the extent and duration of the contravention or failure constituting the offence and the attendant circumstances.

(4) Where an accused has been convicted of an offence under sub-sections (1) or (2), the Environmental Protection Tribunal or Court, as the case may be, shall endorse a copy of the order of conviction to the concerned trade or industrial association, if any, or the concerned Provincial Chamber of Commerce and Industry or the Federation of Pakistan Chambers of Commerce and Industry.

(5) Where a person convicted under sub-sections (1) and (2) had been previously convicted for any contravention of this Act and its rules or regulations, the Environmental Protection Tribunal, as the case may be, may, in addition to the punishment awarded thereunder-

- (a) sentence him to imprisonment for a term that may extend up to three years;
- (b) order the closure of the factory;
- (c) order confiscation of the facility, machinery and equipment, vehicle or substance, record, document or other object used or involved in contravention of the provisions of this Act;
- (d) order such person to restore the environment at his own cost, to conditions existing prior to the contravention or as close to such conditions as may be reasonable in the circumstances to the satisfaction of the Agency; and
- (e) order that compensation be paid to any person or persons for any loss, or damage to their health or property suffered by such contravention.

(6) The Director General or an officer generally or specially authorised by him in this behalf may, on the application of the accused, compound an offence under this Act with the permission of the Environmental Protection Tribunal or Court in accordance with such procedure as prescribed.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

(7) Where the Director General is of the opinion that a person had contravened any provision of this Act, he may, subject to the rules, by notice in writing to that person require him to pay to the Agency a penalty in the amount set out in the notice for each day the contravention continues.

23. Where any contravention of this Act has been committed by a body corporate, and it is proved that such offence has been committed with the consent or connivance of, or is attributed to any negligence on the part of, any director, partner, manager, secretary or other officer of the body corporate, such director, partner, manager, secretary or other officer of the body corporate, shall be deemed guilty of such contravention along with the body corporate and shall be punished accordingly:

**Offences by
body
corporate.**

Provided that in the case of a company as defined under the Companies Ordinance, 1984 (XLVII of 1984), only the Chief Executive as defined in the said Ordinance shall be liable under this section.

Explanation.— For the purposes of this Section, "body corporate" includes a firm, association of persons and a society registered under the Societies Registration Act, 1860 (XXI of 1860), or under the Co-operative Societies Act, 1925 (VII of 1925).

24. Where any contravention of this Act has been committed by any Government Agency, local authority or local council, and it is proved that such contravention has been committed with the consent or connivance of, or is attributable to any negligence on the part of, the Head or any other officer of Government Agency, local authority or local council, such Head or other officer shall also be deemed guilty of such contravention along with the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

**Offences by
Government
Agencies, local
authorities or
local councils.**

PART IX ENVIRONMENTAL PROTECTION TRIBUNALS AND COURTS

25. (1) Government may, by Notification in the Official Gazette, establish as many Environmental Protection Tribunals as it considers necessary and, where it establishes more than one Environmental Protection Tribunal, it shall specify territorial limits within which, or the class of cases in respect of which, each one of them shall exercise jurisdiction under this Act.

**Environmental
Protection
Tribunals.**

(2) An Environmental Protection Tribunal shall consist of a Chairperson who is, or has been, or is qualified for appointment as a Judge of the High Court to be appointed after consultation with the Chief Justice of the High Court and two members to be appointed by Government, of which at least one shall be a technical member nominated from amongst the officers of the Agency with suitable professional qualifications and experience in the environmental field.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

(3) For every sitting of the Environmental Protection Tribunal, the presence of the Chairperson and not less than one Member shall be necessary.

(4) A decision of an Environmental Protection Tribunal shall be expressed in terms of the opinion of the majority of its members, including the Chairperson, or if the case has been decided by the Chairperson and only one of the members and there is a difference of opinion between them, the decision of the Environmental Protection Tribunal shall be expressed in terms of the opinion of the Chairperson.

(5) An Environmental Protection Tribunal shall not, merely by reason of a change in its composition, or the absence of any member from any sitting, be bound to recall and rehear any witness who has given evidence, and may act on the evidence already recorded by, or produced, before it.

(6) An Environmental Protection Tribunal may hold its sittings at such places within its territorial jurisdiction as the Chairperson may decide.

(7) No act or proceeding of an Environmental Protection Tribunal shall be invalid by reason only of the existence of a vacancy in, or defect in the constitution of, the Environmental Protection Tribunal.

(8) The terms and conditions of service of the Chairperson and members of the Environmental Protection Tribunal shall be such as may be prescribed.

26. (1) An Environmental Protection Tribunal shall exercise such powers and perform such functions as are, or may be, conferred upon or assigned to it by or under this Act or the rules and regulations.

(2) All contraventions punishable under sub-section (1) of section 22 shall exclusively be triable by an Environmental Protection Tribunal.

(3) An Environmental Protection Tribunal shall not take cognizance of any offence triable under sub-section (2) except on a complaint in writing by—

- (a) the Agency or any Government Agency or local council; and
- (b) any aggrieved person, who has given notice of not less than thirty days to the Agency, of the alleged contravention and of his intention to make a complaint to the Environment Protection Tribunal.

**Jurisdiction
and powers of
Environmental
Protection
Tribunals.**



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

(4) In exercise of its criminal jurisdiction, the Environmental Protection Tribunal shall have the same powers as are vested under the Code of Criminal Procedure, 1898 (Act V of 1898).

(5) In exercise of the appellate jurisdiction under section 27 the Environmental Protection Tribunal shall have the same powers and shall follow the same procedure as an appellate court in the Code of Civil Procedure, 1908 (Act V of 1908).

(6) In all matters with respect to which no procedure has been provided for in this Act, the Environmental Protection Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908 (Act V of 1908).

(7) An Environmental Protection Tribunal may, on application filed by any officer duly authorised in this behalf by the Director General, issue bailable warrant for the arrest of any person against whom reasonable suspicion exists, of his having been involved in contravention punishable under sub-section (1) of section 22:

Provided that such warrant shall be applied for, issued and executed in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898):

Provided further that if the person arrested executes a bond with sufficient sureties in accordance with the endorsement on the warrant he shall be released from custody, failing which he shall be taken or sent without delay to the officer in-charge of the nearest jurisdiction police station.

(8) All proceedings before the Environmental Protection Tribunal shall be deemed to be judicial proceedings within the meaning of sections 193 and 228 of the Pakistan Penal Code (Act XLV of 1860), and the Environmental Protection Tribunal shall be deemed to be a court for the purpose of sections 480 and 482 of the Code of Criminal Procedure, 1898 (Act V of 1898).

(9) No court other than an Environmental Protection Tribunal shall have or exercise any jurisdiction with respect to any matter to which the jurisdiction of an Environmental Protection Tribunal extends under this Act and the rules and regulations.

(10) Where the Environmental Protection Tribunal is satisfied that a complaint made to it under sub-section (3) is false and vexatious to the knowledge of the complainant, it may, by an order, direct the complainant to pay to the person complained against such compensatory costs which may extend to one hundred thousand rupees.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

27. (1) Any person aggrieved by any order or direction of the Agency under any provision of this Act or the rules or regulations may prefer an appeal with the Environmental Protection Tribunal within thirty days of the date of communication of the impugned order or direction to such person.

**Appeals to the
Environmental
Protection
Tribunal.**

(2) An appeal to the Environmental Protection Tribunal shall be in such form, contain such particulars and be accompanied by such fees as prescribed.

28. (1) Any person aggrieved by any final order or by any sentence of the Environmental Protection Tribunal passed under this Act may, within thirty days of communication of such order or sentence, prefer an appeal to the High Court.

**Appeals from
orders of the
Environmental
Protection
Tribunal.**

(2) An appeal under sub-section (1) shall lie before the High Court of Sindh.

29. (1) Notwithstanding anything contained in the Code of Criminal Procedure, 1898 (Act V of 1898), or any other law for the time being in force, but subject to the provisions of this Act, all contraventions punishable under sub-section (2) of section 22 shall exclusively be triable by the Court of Judicial Magistrate of First Class having of First Class having jurisdiction.

**Jurisdiction of
Judicial
Magistrate.**

(2) A Judicial Magistrate shall be competent to impose any punishment specified in sub-sections (2) and (4) of section 22.

(3) A Judicial Magistrate shall not take cognizance of an offence triable under sub-section (1) except on a complaint in writing by—

- (a) the Agency; and
- (b) any aggrieved person.

30. Any person aggrieved by any final order or sentence passed by a Judicial Magistrate under section 28 may, within thirty days from the date of the communication of such order or sentence, appeal to the Court of the District and Sessions Judge defined as Green Court under this Act, whose decision thereon shall be final.

**Appeals from
orders of the
Judicial
Magistrate.**

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

PART X PUBLIC PARTICIPATION

31.(1) The Agency shall cause relevant details of any proposed project regarding which an Environmental Impact Assessment has been received to be published, along with an invitation to the public to furnish their comments thereon within a specified period.

Public participation.

(2) In accordance with such procedure as may be prescribed, the Agency shall hold public hearings to receive additional comments and hear oral submissions.

(3) All comments received under sub-sections (1) and (2) shall be duly considered by the Agency while reviewing the environmental impact assessment or strategic impact assessment, and decision or action taken thereon shall be communicated to the persons who have furnished the said comments.

PART XI GENERAL

32. The Agency may, by notification in the official Gazette, make and amend the schedule.

Power to make and amend schedule.

33. No suit, prosecution or other legal proceedings shall lie against Government, the Council, the Agency, the Director General of the Agency, members, officers, employees, experts, advisors, committees or consultants of the Agency or Environmental Protection Tribunal or Court or any other person for anything which is done or intended to be done in good faith under this Act or rules or regulations.

Indemnity

34. Any dues recoverable by the Agency under this Act and rules or regulations shall be recoverable as arrears of land revenue.

Dues recoverable as arrears of land revenue.

35. The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force.

Act to override other laws.

36. The Sindh Environment Protection Agency may, by notification in the Official Gazette, make rules for carrying out the purposes not in consistence of this Act with the approval of Government.

Power to make rules.

37. (1) For carrying out the purposes of this Act, the Agency may, by Notification in the Official Gazette and with the approval of Government, make regulations not inconsistent with the provisions of this Act or the rules.

Power to make regulations.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

(2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for —

- (a) submission of periodical reports, data or information by any Government Agency, local authority or local council in respect of environmental matters;
- (b) preparation of emergency contingency plans for coping with environmental hazards and pollution caused by accidents, natural disasters and calamities;
- (c) appointment of officers, advisors, experts, consultants and employees;
- (d) levy of fees, rates and charges in respect of services rendered, actions taken and schemes implemented;
- (e) monitoring and measurement of discharges and emissions;
- (f) categorization of projects to which, and the manner in which sections 17, 18 and 20 applies;
- (g) laying down of guidelines for preparation of initial environmental examination, environmental impact assessment and strategic environmental assessment, and development of procedures of their filing, reviews and approval;
- (h) laying down standard operating procedures for environmental sampling, examination of water, waste water, gaseous emissions, solid waste and noise;
- (i) providing procedures for handling hazardous substances; and
- (j) installation of devices in, use of fuels by, and maintenance and testing of motor vehicles for control of air and noise pollution.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Annexure 2: SEPA (Environmental Assessment) Regulations, 2021



**GOVERNMENT OF SINDH
SINDH ENVIRONMENTAL PROTECTION AGENCY**

Karachi dated the 03rd September, 2021

NOTIFICATION

NO.EPA/TECH/739/2021:- In exercise of the powers conferred by section 37 of the Sindh Environmental Protection Act, 2014, the Sindh Environmental Protection Agency, with the approval of Government, is pleased to make the following regulations, namely:-

1. Short title and commencement

- (1) These regulations may be called the Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021.
- (2) They shall come into force at once.

2. Definitions. -

- (1) In these regulations, unless there is anything repugnant in the subject or context
 - (a) "Act" means the Sindh Environmental Protection Act, 2014 (VIII of 2014);
 - (b) "Agency" means the Sindh Environmental Protection Agency as defined under section 2(ii);
 - (c) "Director General" means the Director General of the Agency;
 - (d) Environmental Checklist means rapid environmental assessment or environmental screening through a prescribed checklist in respect of projects having least/minimal impacts on the environment.
 - (e) "Firm" means the Environmental Consulting Firm registered by the Agency.
 - (f) "Environmentally sensitive area" means a location, large or small, that has significant environmental values that contribute to maintaining biological diversity and integrity, have intrinsic or attributed scientific, historical or cultural heritage value, or are important in providing amenity, harmony or sense of community, ecosystem as declared by Agency.
 - (g) "Protected area" means any area which safeguards the earth's precious bio-diversity, protected areas of natural beauty and conservation of cultural significance as declared by relevant authority;
 - (h) "Schedule" means the Schedules provided in these regulations;

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- (i) "Urban area" means an area within the limits of a town, municipality or city as determined by the Agency on the basis of population and environmental issues
 - (2) All other words and expressions used but not defined in these regulations shall have the same meaning as are assigned to them in the Act.
- 3. Projects requiring Environmental Checklist (EC)**
 A proponent of a project falling in any category listed in Schedule-I shall file environmental checklist with the Agency and the provisions of section 17 shall apply to such projects.
- 4. Projects requiring an Initial Environmental Examination (IEE)**
 A proponent of a project falling in any category listed in Schedule-II shall file an IEE with the Agency, and the provisions of section 17 shall apply to such projects.
- 5. Projects requiring an Environmental Impact Assessment (EIA)**
 A proponent of a project falling in any category listed in Schedule-III shall file an EIA with the Agency, and the provisions of section 17 shall apply to such projects.
- 6. Projects not requiring an Environmental Assessment**
 - (1) A project not falling in any category listed in Schedules-I, II and III shall not be required to file an EC, IEE or EIA
 - (2) Notwithstanding anything contained in sub-regulation (1), the Agency may direct the proponent of a project, whether or not listed in Schedule I or II or III, to file an EC or IEE or EIA, for reasons to be recorded in such direction:
 Provided that no such direction shall be issued without the recommendations in writing of the Advisory Committee constituted under regulations 21.
- 7. Preparation of environmental assessment report**
 - (1) The Agency may issue guidelines for preparation of an EC or IEE or EIA reports including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.
 - (2) The Agency may issue guidelines for preparation scope of an Environmental Management Plan(EMP) or Environmental Audit(EA).
 - (3) Where guidelines have been issued under sub-regulation (1) & (2), an EC, IEE or EIA or EMP or EA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify any departure therefrom.
- 8. Review Fees**
 The proponent shall pay, at the time of submission of an EC, IEE or EIA or EMP or BTS tower a non-refundable review fee to the Agency as prescribe in Schedule-IV.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

9. Filing of report

- (1) Two hard copies and two electronic copies for an EC or IEE or EIA report shall be filed with the Agency by the proponent. The Agency may require the proponent to submit additional copies, as and when required during the review process.
- (2) Every EC, IEE and EIA shall be accompanied by -
 - (a) an application, in the form prescribed in Schedule-V;
 - (b) Copy of receipt showing payment of review fee as prescribed in Schedule-IV

10. Preliminary Scrutiny

- (1) Any report filed by the proponent or applicant shall be returned, if found incomplete in terms of Regulation 9.
- (2) Notwithstanding anything contained in sub-regulation (1) of regulation 12, the Agency may require the proponent to submit an additional information at any stage during the review process.

11. Public participation

- (1) In the case in an EIA, the Agency shall issue a public notice to be published in widely circulated English or Urdu or Sindhi national newspaper and in a local newspaper of general circulation in the area affected by the project, mentioning the type of project, its exact location, the name and address of the proponent and the date, time and place of public hearing for inviting comments from primary stakeholders.
- (2) The date fixed under sub-regulation (1) shall not be earlier than ten days from the date of publication of the notice.
- (3) The Agency shall also ensure the circulation of the EIA, where necessary, to the concerned Government Agencies and solicit their comments thereon.
- (4) All comments received by the Agency from the public or any Government Agency shall be duly considered before issuance of decision.
- (5) The Agency may issue guidelines indicating the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment.

12. Review process

- (1) Notwithstanding anything contained in sub section (4) of Section 17, the Agency shall make every effort to conclude its review process of the EA, EMP or environmental checklist within fifteen days, of the IEE within thirty days, and of the EIA within sixty days after receiving of complete case.
- (2) In reviewing an EIA, the Agency shall consult such Committee of Experts be constituted for the purpose by the Director General, and may also solicit views of concerned Advisory Committee, if any, constituted by the Agency.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

- (3) The Director General may, where considers it necessary, constitute a committee to inspect the site of the project and submit its report on such matters as may be specified.
- (4) In reviewing the IEE, the Director General may constitute a committee of the officers from within the Agency, on case to case basis, in view of the jurisdiction and location of the project for the purpose to extend final recommendation about the approval or rejection of the IEE.
- (5) The review of the IEE or EIA by the Agency shall be based on quantitative and qualitative assessment of the documents and data furnished by the proponent, comments from the public and Government Agencies received under regulation 12, and views of the committees mentioned in sub-regulations (2) and (3) above.
- (6) EMP, EA, EC shall be reviewed as per guidelines issued by SEPA

13. Decision

- (1) The documentary evidence in the form of videos (soft copies) of public hearing shall be submitted by the proponent within three days after conclusion of public hearing to the Agency.
- (2) On completion of the review process, the decision of the Agency shall be communicated to the proponent in the form prescribed in Schedule-VI or in case of an IEE or EMP or environmental checklist or environmental audit in the form prescribed in Schedule-VII in case of an EIA.

14. Conditions of approval

- (1) Every approval of an EC or IEE or EIA or EMP or EA shall, in addition to such conditions as may be imposed by the Agency, be subject to the condition that the project shall be designed, constructed or operated and mitigatory and other measures adopted, strictly in accordance with the EC or IEE or EIA or EMP or EA, unless any variations thereto have been specified in the approval by the Agency.
- (2) Where the Agency accords its approval subject to certain conditions, the proponent shall submit an undertaking to the Agency, before commencing operation of the project, in the form prescribed in Schedule-VIII that the conditions of approval, and the requirements in the IEE or EIA relating to design and construction, adoption of mitigation and other measures have been duly complied with.

15. Validity period of Approval

- (1) The approval accorded by the Agency under section 17 read with sub-regulation (2) of regulation 15 shall be valid, for commencement of construction, for a period of three years from the date of issue.
- (2) If construction is commenced during the initial three years validity period, the

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

validity of the approval shall stand extended for a further period of three year.

- (3) The proponent may apply to the Agency for extension in the validity periods mentioned in sub-regulations (1), (2), which may be granted by the Agency in its discretion for such period not exceeding three years at a time, if the conditions of the approval do not require significant change:

Provided that the Agency may require the proponent to submit a fresh IEE or EIA, if in its opinion changes in location, design, construction and operation of the project so warrant.

16. Entry and Inspection

- (1) For the purpose of verification of any matter relating to the review or to the conditions of approval of an EC or IEE or EIA or EMP or EA list prior to, before or during and after commencement of construction or operation of a project, duly authorized staff of the Agency shall be entitled to enter and inspect the project site, factory building and plant and equipment installed therein.
- (2) The proponent shall ensure full cooperation of the project staff at site to facilitate the inspection, and shall provide such information as may be required by the Agency for this purpose and pursuant thereto.

17. Cancellation of approval

- (1) Notwithstanding anything contained in these regulations, if, at any time, on the basis of information or report received or inspection carried out, the Agency is of the opinion that the conditions of an approval have not been complied with, or that the information supplied by a proponent in the approved EC or IEE or EIA or EMP or EA list is incorrect, it shall issue notice to the proponent for show cause within two weeks of receipt thereof as to why the approval should not be cancelled.
- (2) In case no reply is received or if the reply is considered unsatisfactory, the Agency may, after giving the proponent an opportunity of being heard -
 - (i) require the proponent to take such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or
 - (ii) cancel the approval.
- (3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.
- (4) Any action taken under this regulation shall be without prejudice to any other action that may be taken against the proponent under the Act or rules or regulations or any other law for the time being in force.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

18. Registers of EC or IEE and EIA projects

Separate Registers to be maintained by the Agency for EC or IEE and EIA projects shall be in the form prescribed in Schedule-IX.

19. Environmentally sensitive areas

- (1) The Agency may designate an area to be an environmentally sensitive area,
- (2) Notwithstanding anything contained in regulations 3 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Agency.

20. Environmental assessment guidelines

- (1) The Agency may from time to time issue guidelines to assist proponents and other persons involved in the preparation of environmental assessment.
- (2) Where guidelines have been issued under sub-regulation (1), the projects shall be planned and prepared, to the extent practicable, in accordance therewith and any departure therefrom justified in the IEE/EIA pertaining to the project.

21. Environmental Assessment Advisory Committee. -

The agency may constitute one or more Committees for the purpose of rendering advice on implementation and enforcement of Section 17, which may include experts of relevant field, civil society, academia, environmental experts, representative of Administrative Department, legal expert and experts from natural resources.

22. Repeal and Savings.

- (1) The Sindh Environmental Protection Agency (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations 2014, shall, on commencement of these regulations, stand repealed.
- (2) All orders made, notification issued, actions taken under the repealed Regulations shall remain in force until amended, altered or repealed by the provisions of these regulations.

**DIRECTOR GENERAL
SINDH ENVIRONMENTAL PROTECTION
AGENCY**

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE-I

(See Regulation 3)

List of projects requiring Environmental Screening (through check list)

- a. Subject to the compliance with concerned zoning laws:
 - i. Construction of residential and commercial buildings having total covered area from 60,000 sq.feet to 100,000 sq.feet
 - ii. Housing Schemes covering an area from 05 acres to 15 acres.
 - iii. Ware Houses for Non-Hazardous substances having total area from 1000 sq.yards to 5,000 sq.yards
 - iv. Warehouse for Fertilizers
 - v. Marriage Halls/Banquet/Restaurants/Baking facilities having total area more than 500 sq.yards
 - vi. Motor vehicle workshops/Service Stations having total area of more than 500 sq.yards.
- b. Construction/Reconstruction/Rehabilitation of roads in urban area from 500 meters to 01 kilometres and in rural area from 500 meters to 05 kilometres.
- c. Construction of Flyover, underpasses and bridges of length from 100 meters to 500 meters
- d. On-farm dams and fish farms
- e. Pulses mills
- f. Flour Mills
- g. Lining of existing minor canals and /or water courses.
- h. Canal cleaning
- i. Forest harvesting operations
- j. Rain harvesting projects
- k. Health care units of less than 50 beds
- l. BTS Tower
- m. Lime Kilns
- n. Ice factories and cold storage.
- o. Cotton oil mill
- p. Construction of LPG, CNG, LNG filling station and petrol pumps
- q. Carpet manufacturing units
- r. Rain harvesting projects
- s. Industrial Effluent Treatment Plant
- t. Sanitary Landfill site up to 500 tons/day



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

Schedule-II

(See Regulation 4)

List of projects requiring an Initial Environmental Examination

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock and fish farms
2. Warehousing for pesticides and pharmaceuticals
3. Projects involving packaging, formulation, cold storage and warehouse of agricultural, livestock and fish products.
4. Construction & Operation of Slaughter houses

B. Energy

1. Hydroelectric power generation up to 25 MW
2. Thermal power generation up to 100 MW
3. Coal fired power plants with capacity up to 50 MW
4. Transmission lines up to 132 KV, and grid stations
5. Waste-to-energy generation projects including bio-mass up to 25 MW
6. Construction of Coal Handling and storage facilities
7. Handling, Transportation & Storage of Biofuel Facility
8. Handling and storage of edible grains and seeds
9. All Renewable energy Projects (excluding Protected/Sensitive area under any law)

C. Oil and Gas projects:

1. Oil and gas 2D/3D Seismic survey and drilling activities (on and off shore)
2. Oil and gas extraction projects including exploration and production located outside the environmentally sensitive/protected areas
3. Oil & Gas transmission gathering, storage, separation & transportation system
4. Construction of CNG, LPG Petroleum and LNG bulk storage facility
5. Oil blending and recycling units

D. Manufacturing and processing

1. Ceramics and glass units
2. Food processing units
3. Pharmaceutical units.
4. Rice mills, ghee/oil mills, Cotton ginning
5. Man-made fibers and resin projects



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

6. Tanning and leather finishing projects
7. Manufacturing of apparel, textile garments units, including weaving, spinning, dyeing, bleaching and printing
8. Woodwork units manufacturing products
9. Steel re-rolling mills
10. Waste recycling plants
11. Battery manufacturing plant
12. Brick Kilns
13. Marble processing units
14. Stone Crushing units

E. Mining and mineral processing

1. Commercial extraction of sand, gravel, limestone, clay, Sulphur and other minerals not included in Schedule I.
2. Crushing, grinding and separation processes
3. Metal Smelting plant production capacity up to 20 tons/day

F. Transport

1. Construction of flyovers, underpasses and bridges having length more than 500 meters to 1000 meters in urban areas and more than 5km in rural areas
2. Bus terminals/ railway station/ metro stops and construction & operation of transport related terminals
3. Rehabilitation or rebuilding or reconstruction of existing roads more than one kilometers in urban areas and more than 5 km from rural areas

G. Water management, dams, Irrigation and flood protection

1. Dams and reservoirs with storage volume of less than 25 million cubic meters of surface area less than 4 square kilometers
2. Irrigation systems and drainage system with the area of less than 15,000 hectors
3. Flood protection bunds

H. Water supply and filtration

Water supply schemes and filtration plants

I. Waste disposal and wastewater treatment

1. Solid and Non-hazardous waste with annual capacity up to 10,000 tonnes (excluding municipal landfill sites and commercial facilities) including Garbage Transfer station/composting plant

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

2. Wastewater treatment for sewerage treatment facility less than 100 mgd
3. Hospital waste disposal facilities including incineration units owned by Hospitals for own use excluding commercial facility.

J. Urban development

1. Housing schemes more than 15 acres to 50 acres
2. Residential, Commercial multistory High rise construction projects having covered area more than 100,000 sq. feet to 500,000 sq. feet.
3. Laboratories
4. Hospitals, health care unit of more than 50 beds
5. Construction of Educational and Academic institutions.

K. Other projects

Any other project for which filing of an IEE is required by the Agency under sub-regulation (2) of Regulation 6.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE III

(See Regulation 5)

List of projects requiring an EIA

A. Energy

1. Hydroelectric power generation more than 50 MW
2. Thermal power generation more than 100 MW
3. Coal power projects more than 50 MW
4. Transmission lines above 132 KVA and distribution projects.
5. Nuclear power plants
6. Wind, Solar or renewable energy projects if falls under any environmental sensitive and protected area.

B. Oil and Gas projects

1. Oil Petroleum refineries.
2. LPG and LNG Terminals Projects
3. Coal Handling Terminals Projects

C. Manufacturing and processing

1. Cement plants
2. Chemical manufacturing industries
3. Fertilizer plants
4. Steel Mills
5. Sugar Mills and Distilleries
6. Establishment of Industrial estates & Export processing zones
7. Petrochemicals complex
8. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, printing and publishing, paints and dyes.

D. Mining and mineral processing

1. Mining and processing of coal, gold, copper, sulphur and precious stones
2. Mining and processing of major non-ferrous metals, iron and steel rolling
3. Metal Smelting plant production capacity more than 20 tons/day

E. Transport

1. Airports
2. Construction of highway, motor ways, major roads (Intercity roads) more than one km and above

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

3. Ports and harbor development
 4. Mass transit projects
 5. Railway works
 6. Construction of Flyover, underpass and bridges having total length more than one km.
- F. Water management, dams, irrigation and flood protection**
1. Dams and reservoirs with storage volume of 25 million cubic meters and above having surface area of 4 square kilometers and above
 2. Irrigation and drainage projects serving more than 15,000 hectares and above
- G. Water supply and filtration**
- Public water supply schemes and **filtration** plants.
- H. Waste Disposal and treatment**
1. Facilities for handling, storage or disposal of hazardous or toxic wastes or radioactive waste (including landfill sites, incineration units, etc.)
 2. Solid waste municipal landfill sites.
 3. Combine Effluent Treatment Plant
 4. Domestic wastewater treatment plant more than 100mgd
- I. Urban development and tourism**
1. Housing schemes above 50 acres
 2. Residential, Commercial High rise buildings subject to compliance of building bylaws of relevant organizations more than 500,000 sq. feet
 3. All Projects located in High Density Zones notified by Government and relevant land controlling organization, irrespective of their size.
 4. Commercialization of major corridors/roads in urban centers
 5. Large Scale public facilities
 6. Large-scale tourism development projects
- J. Environmentally Sensitive Areas**
- All projects situated in environmentally sensitive areas being identified by the Agency.
- K. Other projects**
1. Any other project for which filing of an EIA is required by the Agency under sub-regulation (2) of Regulation 5.
 2. Any other project likely to cause an adverse environmental effect.

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Schedule-IV
(See Regulation 8)

Project Cost (In million)	Review Fee
Up to 20	Rs.50,000
Above 20 up to 100	Rs. 100,000
Above 100 up to 200	Rs. 200,000
Above 200 up to 500	Rs. 400,000
Above 500	Rs. 600,000
Review fee for Environmental Checklist or EMP shall be Rs. 40,000/=	
Review fee for BTS Tower shall be 20,000/=	

*

Note:

The fee shall be payable into the "Sindh Sustainable Development Fund" account
Details are as under:

A/C Title: Sindh Sustainable Development Fund

Account Number: 03084572626100

Bank: Sindh Bank

Branch Code: 0308-Korangi Industrial Area

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE VI
[See Regulation 13(2)]

Decision on IEE/Environmental Check List

1. Name and address of proponent _____
2. Description of project _____
3. Location of project _____
4. Date of filing of IEE _____
5. After careful review of the IEE, the Agency has decided –
 - (a) to accord its approval, subject to the following conditions:

 - or (b) that the proponent should submit an EIA of the project, for the following reasons –

Dated _____

Tracking no. _____

Director-General
Sindh Environmental Protection Agency
(with official stamp/seal)

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE VII

[See Regulation 13(2)]

Decision on EIA

1. Name and address of proponent _____
 2. Description of project _____
 3. Location of project _____
 4. Date of filing of EIA _____
 5. After careful review of the EIA, and all comments thereon, the Federation Agency has decided –
 - (a) to accord its approval, subject to the following conditions:

 - or (b) that the proponent should submit an EIA with the following modifications-

 - or (c) to reject the project, being contrary to environmental objectives, for the following reasons:

- Dated _____
- Tracking no. _____

Director-General
Sindh Environmental Protection Agency
(with official stamp/seal)

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE VIII
[See Regulation 14(2)]

Undertaking

I, (full name and address) as proponent for (name, description and location of project) do hereby solemnly affirm and declare that the conditions of approval and the requirements in the IEE or EIA relating to design and construction, adoption of mitigation and other measures and other relevant matters have been duly complied with in the design and construction of the project.

Signature, name and

designation of proponent
(with official stamp/seal)

Witnesses(full names and addresses)

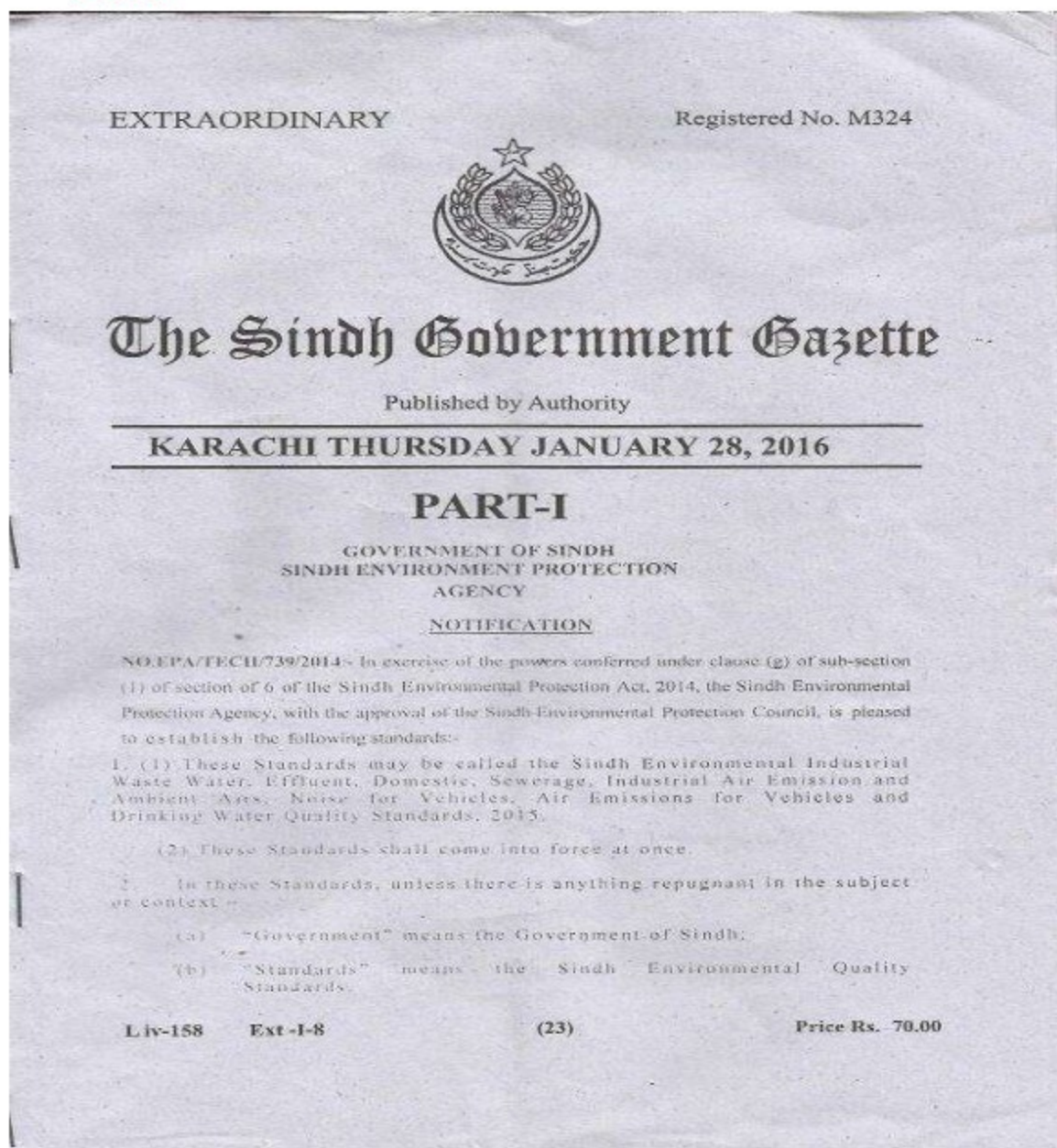
	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

SCHEDULE IX
(See Regulation 18)
Form of Registers for EC, IEE and EIA projects

<u>S. No.</u>	<u>Description</u>	<u>Relevant Provisions</u>
1	2	3
1.	Tracking number	
2.	Category type (as per Schedules I or II)	
3.	Name of proponent	
4.	Name and designation of contact person	
5.	Name of consultant	
6.	Description of project	
7.	Location of project	
8.	Date of submission of IEE/EIA	
9.	Date of public hearing / technical presentation	
10.	Date of committee of experts for schedule-II projects	
11.	Approval granted (Yes/No)	
12.	Date of approval granted or refused	

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
DOC NO. EIA/KDA/CRWSW/1224/01		

Annexure 3: The Sindh Environmental Quality Standards, 2016





ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

24

SINDH ENVIRONMENTAL QUALITY STANDARDS FOR MUNICIPAL AND LIQUID INDUSTRIAL EFFLUENTS (mg/l, UNLESS OTHERWISE DEFINED)

S. No.	Parameter	Standards		
		Into Inland Waters 3	Into Sewage Treatment ⁽⁵⁾ 4	Into Sea ⁽¹⁾ 5
1	2	3	4	5
1.	Temperature 40°C or Temperature Increase *	≤3°C	≤3°C	≤3°C
2.	pH value (H ⁺)	6-9	6-9	6-9
3.	Biochemical Oxygen Demand (BOD) ₅ at 20°C ⁽¹⁾	80	250	80**
4.	Chemical Oxygen Demand (COD) ⁽¹⁾	150	400	400
5.	Total Suspended Solids (TSS) ...	200	400	200
6.	Total Dissolved Solids (TDS)	3500	3500	3500
7.	Oil and Grease	10	10	10
8.	Phenolic compounds (as phenol)	0.1	0.3	0.3
9.	Chloride (as Cl ⁻)	1000	1000	SC***
10.	Fluoride (as F ⁻)	10	10	10
11.	Cyanide (as CN ⁻) total	1.0	1.0	1.0
12.	An-ionic detergents (as MBAS) ⁽²⁾	20	20	20
13.	Sulphate (SO ₄ ²⁻)	600	1000	SC***
14.	Sulphide (S ²⁻)	1.0	1.0	1.0
15.	Ammonia (NH ₃)	40	40	40
16.	Pesticides ⁽³⁾	0.15	0.15	0.15
17.	Cadmium ⁽⁴⁾	0.1	0.1	0.1
18.	Chromium (trivalent and hexavalent) ⁽⁴⁾	1.0	1.0	1.0
19.	Copper ⁽⁴⁾	1.0	1.0	1.0
20.	Lead ⁽⁴⁾	0.5	0.5	0.5
21.	Mercury ⁽⁴⁾	0.01	0.01	0.01
22.	Selenium ⁽⁴⁾	0.5	0.5	0.5
23.	Nickel ⁽⁴⁾	1.0	1.0	1.0
24.	Silver ⁽⁴⁾	1.0	1.0	1.0
25.	Total toxic metals ...	2.0	2.0	2.0
26.	Zinc ...	5.0	5.0	5.0
27.	Arsenic ⁽⁴⁾	1.0	1.0	1.0
28.	Barium ⁽⁴⁾	1.5	1.5	1.5
29.	Iron ...	8.0	8.0	8.0
30.	Manganese ...	1.5	1.5	1.5
31.	Boron ⁽⁴⁾	6.0	6.0	6.0
32.	Chlorine ...	1.0	1.0	1.0



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

25

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

PART-I

Explanations:

1. Assuming minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Sindh Environmental Protection Agency. By 1:10 dilution means, for example that for each one cubic meter of treated effluent, the recipient water body should have 10 cubic meter of water for dilution of this effluent.
2. Methylene Blue Active Substances; assuming surfactant as biodegradable.
3. Pesticides include herbicides, fungicides, and insecticides.
4. Subject to total toxic metals discharge should not exceed level given at S. N. 25.
5. Applicable only when and where sewage treatment is operational and BOD₅=80mg/l is achieved by the sewage treatment system.
6. Provided discharge is not at shore and not within 10 miles of mangrove or other important estuaries.
 - * The effluent should not result in temperature increase of more than 3°C at the edge of the zone where initial mixing and dilution take place in the receiving body. In case zone is not defined, use 100 meters from the point of discharge.
 - ** The value for industry is 200 mg/l
 - *** Discharge concentration at or below sea concentration (SC).

Note: 1. Dilution of liquid effluents to bring them to the STANDARDS limiting values is not permissible through fresh water mixing with the effluent before discharging into the environment.

2. The concentration of pollutants in water being used will be subtracted from the effluent for calculating the STANDARDS limits".

"SINDH ENVIRONMENTAL QUALITY STANDARDS FOR INDUSTRIAL GASEOUS EMISSION (mg/Nm³, UNLESS OTHERWISE DEFINED)."

S. No.	Parameter	Source of Emission	Standards
1	2	3	4
1.	Smoke	Smoke opacity not to exceed	40% or 2 Ringleman Scale or equivalent smoke number
2.	Particulate matter	(a) Boilers and Furnaces	
	(1)	(i) Oil fired	300
		(ii) Coal fired	500
		(iii) Cement Kilns	300



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

26

		(b) Grinding, crushing, Clinker coolers and Related processes, Metallurgical Processes, converter, blast furnaces and cupolas	500
3.	Hydrogen Chloride	Any	400
4.	Chlorine	Any	150
5.	Hydrogen Fluoride	Any	150
6.	Hydrogen Sulphide	Any	10
7.	Sulphur Oxides ⁽²⁾⁽³⁾	Sulfuric acid/ Sulphonic acid plants	
		Other Plants except power Plants operating on oil and coal	1700
8.	Carbon Monoxide	Any	800
9.	Lead	Any	50
10.	Mercury	Any	10
11.	Cadmium	Any	20
12.	Arsenic	Any	20
13.	Copper	Any	50
14.	Antimony	Any	20
15.	Zinc	Any	200
16.	Oxides of Nitrogen	Nitric acid Manufacturing unit.	3000
	(3)	Other plants except power plants operating on oil or coal:	
		Gas fired	400
		Oil fired	600
		Coal fired	1200

Explanations:-

1. Based on the assumption that the size of the particulate is 10 micron or more.
2. Based on 1 percent Sulphur content in fuel oil. Higher content of Sulphur will ease standards to be pro-rated.
3. In respect of emissions of Sulphur dioxide and Nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to Standards specified above, comply with the following standards:-



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

27

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

PART-I

A. Sulphur Dioxide

Sulphur Dioxide Background levels Micro-gram per cubic meter ($\mu\text{g}/\text{m}^3$) Standards.

Background Air Quality (SO ₂ Basis)	Annual Average	Max. 24-hours Interval	Criterion I Max. SO ₂ Emission (Tons per Day Per Plant)	Criterion II Max. ground level increment to ambient (One year Average)
Unpolluted	<50	<200	500	50
Moderately Polluted*				
Low	50	200	500	50
High	100	400	100	10
Very Polluted**	>100	>400	100	10

* For intermediate values between 50 and 100 $\mu\text{g}/\text{m}^3$ linear interpolations should be used.

** No projects with Sulphur dioxide emissions will be recommended.

B. Nitrogen Oxide

Ambient air concentrations of Nitrogen oxides, expressed as NO_x should not be exceed the following:-

Annual Arithmetic Mean	100 $\mu\text{g}/\text{m}^3$ (0.05 ppm)
------------------------	--

Emission level for stationary source discharge before missing with the atmosphere should be maintained as follows:-

For fuel fired steam generators as Nanogram (10^0 -gram) per joule of heat input:

Liquid fossil fuel	130
Solid fossil fuel	300
Lignite fossil fuel	260

Note:-

Dilution of gaseous emissions to bring them to the STANDARDS limiting value is not permissible through excess air mixing blowing before emitting into the environment.



**ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CONSTRUCTION OF ROAD, WALKWAY &
SEAWALL**



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

28

**Sindh Environmental Quality Standards for Motor
Vehicle Exhaust and Noise**

(i) For in-use Vehicles				
S. No.	Parameter	Standards (maximum permissible limit)	Measuring Method	Applicability
1	2	3	4	5
1.	Smoke	40% or on the Ringleman Scale during engine acceleration mode	To be compared with Ringleman Chart at a distance of 6 meters or more.	Immediate effect
2	Carbon Monoxide	6 %	Under idling conditions; Non- dispersive infrared detection through gas analyzer.	
3.	Noise	85 db (A)	Sound-meter at 7.5 meter from the source.	



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

29

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

PART-I

For new Vehicles

EMISSION STANDARDS FOR DIESEL VEHICLES

(a) For passenger Cars and Light Commercial Vehicles (g/Km)

Type of Vehicle	Category/Class	Tiers	CO	HC+ NOx	PM	Measuring Method	Applicability
1	2	3	4	5	6	7	8
Passenger Cars	M 1: with reference mass (RW).	Pak-II, IDI	1.0	0.7	0.08		All imported and local manufactured
	up to 2500 kg, Cars with RW over 2500 kg, to meet NI Category standards	Pak-II, DI	1.0	0.9	0.10	NEDC (ECE 15+ EUDCL)	Diesel vehicles with effect from 01-07-2012
Light Commercial Vehicles	NI-I (RW<1250 Kg)	Pak-II, IDI	1.0	0.70	0.08		
		Pak-II, DI	1.0	0.90	0.10		
	NI-II(1250kg< RW < 1700 Kg)	Pak-II, IDI	1.25	1.0	0.12		
		Pak-II, DI	1.25	1.3	0.14		
	NI-III(RW<.1700 Kg)	Pak-II, IDI	1.50	1.2	0.17		
		Pak-II, DI	1.50	1.6	0.20		



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

30

Parameter Standards (maximum permissible limit) Measuring method

Noise	85 db (A)	Sound-meter at 7.5 meters from the source
-------	-----------	---

(b) For Heavy Duty Diesel Engines and Large Goods Vehicles (g/Kwh)

Type of Vehicle	Category/ Class	Tiers	CO	HC	NOx	PM	Measuring Method	Applicability
1	2	3	4	5	6	7	8	9
Heavy Duty Diesel Engines	Turks and Buses	Pak-II	4.0	1.1	7.0	0.15	ECE-R-49	All imported and local manufactured diesel vehicles with the effect 1-7-2012
Large goods Vehicles	N2(2000 and up	Pak-II	4.0	7.0	1.10	0.15	EDC	

Parameter Standards (maximum permissible limit) Measuring method

Noise	85 db (A)	Sound-meter at 7.5 meters from the Source
-------	-----------	---

Emission Standards for Petrol Vehicles (g/km)

Type of Vehicle	Category/ Class	Tier	Co	HC+	Measuring Method	Applicability
1	2	3	4	5	6	7
Passenger Cars.	M 1: with reference mass (RW): upto 2500 kg. Cars with RW over 2500 kg. to meet N1 Category standards	Pak-II	2.20	0.5	NEPC (ECE 15) EUDCL	All imported and new models* locally manufactured* petrol vehicles with effect from 1 st July, 2009**



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

31 THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016 PART-I

Light Commercial Vehicles	NI-I (RW < 1250 kg) NI-II (1250 kg > kg) RW < 1700 Kg)	Pak-II	2.20	0.5	
		Pak-II	4.0	0.65	
		Pak-II	5.0	0.08	
	NI-III (RW > 1700 kg)				
Motor Rickshaws & Motor Cycles	2.4 strokes < 150 cc	Pak-II	5.5	1.5	ECER 40
	2.4 strokes > 150cc	Pak-II	5.5	1.3	

Parameter Standards (maximum permissible limit) Measuring method

Noise source 85 db (A) Sound-meter at 7.5 meters from the

Explanations:

- DI: Direct Injection.
- IDI: Indirect Injection.
- EUDCL: Extra Urban Driving Cycle.
- NEDC: New European Driving Cycle.
- ECE: Urban Driving Cycle.
- M: Vehicles designed and constructed for the carriage of passenger and comprising no more than eight seats in addition to the driver's seat.
- N: Motor vehicles with at least four wheels designed and constructed for the carriage of goods.
- * New model means both model and engine type change.
- ** The existing models of petrol driven vehicles locally manufactured will immediately switch over to Pak-II emission standards but no later than 30th June, 2012.



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

32

SINDH ENVIRONMENTAL QUALITY STANDARDS FOR AMBIENT AIR

Pollutants	Time-weight average	Concentration in Ambient Air	Method of measurement
Sulphur Dioxide(SO ₂)	Annual Average*	80 µg/m ³	Ultraviolet Fluorescence method
Oxides of Nitrogen as (NO)	24 hours**	120 µg/m ³	Gas Phase Chemiluminescence
Oxides of Nitrogen as (NO ₂)	Annual Average*	40 µg/m ³	Gas Phase Chemiluminescence
O ₃	24 hours**	40 µg/m ³	Non dispersive UV absorption method
Suspended Particulate Matters (SPM)	1 hour	130 µg/m ³	High Volume Sampling (Average flow rate not less than 1.1 in 3 minutes)
Respirable Particulate Matter PM10	Annual Average*	360 µg/m ³	B-Ray absorption method
Respirable Particulate Matter PM10	24 hours**	500 µg/m ³	B-Ray absorption method
Respirable Particulate Matter PM2.5	Annual Average*	120 µg/m ³	B-Ray absorption method
Lead Pb	24 hours**	40 µg/m ³ ***	B-Ray absorption method
Carbon Monoxide(CO)	Annual Average*	75 µg/m ³	ASS Method after sampling using EPM 2000 or equivalent filter paper
	24 hours**	1 µg/m ³	
		1.5 µg/m ³	
	8 hours**	5 mg/m ³	Non Dispersive Infra Red (NDIR) method
	1 hours**	10 mg/m ³	



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

33

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

PART-I

*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week, 24 hourly and at uniform interval.

** 24 hourly/8 hourly values should be met 98% in a year, 2% of the time. It may exceed but not on two consecutive days.

*** Annual Average limit of $40\mu\text{g}/\text{m}^3$ or background annual average concentration plus allowable allowance of $9\mu\text{g}/\text{m}^3$, whichever is lower.

Sindh Standards for Drinking Water Quality

Properties / Parameters	Standard Values for Sindh	WHO Standards	Remarks
Bacterial			
All water intended for drinking (E.Coli or Thermo tolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water entering the distribution system (E.Coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water in the distribution system (E.coli or thermo tolerant coliform and total 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 present in 95% of the samples taken throughout any 12-month period	Must not be detectable in any 100 ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period	Most Asian countries also follow WHO standards
Physical			
Colour	≤ 15 TCU	≤ 15 TCU	
Taste	Non objectionable/Acceptable	Non objectionable/Acceptable	
Odour	Non	Non	



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

34

	objectionable/Acceptable	objectionable/Acceptable	
Turbidity	< 5 NTU	< 5 NTU	
Total hardness as CaCO ₃	< 500 mg/l	---	
TDS	< 1000	< 1000	
pH	6.5 - 8.5	6.5 - 8.5	
Chemical			
<i>Essential Inorganic</i>	<i>mg/Litre</i>	<i>mg/Litre</i>	
Aluminium (Al) mg/l	≤ 0.2	0.2	
Properties / Performance	Standard Values for Pakistan	Who Standards	Remarks
Antimony (Sb)	≤ 0.005 (P)	0.02	
Arsenic (As)	≤ 0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
Barium (Ba)	0.7	0.7	
Boron (B)	0.3	0.3	
Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
Chloride (Cl)	< 250	250	
Chromium (Cr)	≤ 0.05	0.05	
Copper (Cu)	2	2	
<i>Toxic Inorganic</i>	<i>mg/Litre</i>	<i>mg/Litre</i>	
Cyanide (CN)	≤ 0.05	0.07	Standard for Pakistan similar to Asian developing countries
Fluoride (F)*	≤ 1.5	1.5	
Lead (Pb)	≤ 0.05	0.01	Standard for Pakistan similar to most Asian developing countries
Manganese (Mn)	≤ 0.5	0.5	
Mercury (Hg)	≤ 0.001	0.001	
Nickel (Ni)	≤ 0.02	0.02	



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

35

THE SINDH GOVT. GAZETTE, EXT. JAN. 28, 2016

PART-I

Properties / Performance	Standard Values for Pakistan	Who Standards	Remarks
Nitrate (NO ₃)	≤ 0.50	50	
Nitrite (NO ₂)	≤ 3 (P)	3	
Selenium (SE)	0.01 (P)	0.01	
Residual chlorine	0.2-0.5 at consumer end 0.5-1.5 at source	---	
Zinc (Zn)	5.0	1	Standard for Pakistan similar to most Asian developing countries

Properties / Performance	Standard Values for Pakistan	Who Standards	Remarks
Organic			
Pesticides mg/L		PSQCA No. 4639, 2004, Page No. 4 Table No. 3 Serial No. 20.58 may be consulted. ***	Annex II
Phenolic compounds (as Phenols) mg/L		≤ 0.002	
Polynuclear aromatic hydrocarbons (as PAH) g/L		0.01 (By GC/MS method)	
Radioactive			
Alpha Emitters bq/L or pCi	0.1	0.1	
Beta emitters	1	1	

*** PSQCA: Pakistan Standards Quality Control Authority

Proviso:

The existing drinking water treatment infrastructure is not adequate to comply with WHO guidelines. The Arsenic concentrations in some parts of Sindh have been found high then Revised WHO guidelines. It will take some time to control arsenic through treatment process. Lead concentration in the proposed standards is higher than WHO Guidelines. As the piping system for supply of drinking water in urban centers are generally old and will take significant resources and time to get them replaced. In the recent past, Lead was completely phased out from petroleum



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

PART-I

THE SINDH GOVT. GAZETTE EXT. JAN. 28, 2016

36

products to cut down Lead entering into environment. These steps will enable to achieve WHO guidelines for Arsenic, Lead, Cadmium and Zinc. However, for bottled water, WHO limits for Arsenic, Lead, Cadmium and Zinc will be applicable and PSQCA Standards for all the remaining parameters.

Sindh Environmental Quality Standards for Noise

S. No.	Category of Area / Zone	Effective from 1 st Jan, 2015		Effective from 1 st January, 2015	
		Limit in dB(A) Leq *			
		Day Time	Night Time	Day Time	Night Time
1.	Residential Area (A)	65	50	55	45
2.	Commercial Area (B)	70	60	65	55
3.	Industrial Area (C)	80	75	75	65
4.	Silence Zone (D)	55	45	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 6:00 a.m
3. Silence zone: Zones which are declared as such by the 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.

3. Repeal and Savings.

- (1) The provisions of the Statutory Notification dated 10th August, 2000 and 18th October, 2010, issued by the Ministry of Environment, Government of Pakistan, to the extent of the Province of Sindh are hereby repealed.
- (2) All actions taken, proceedings initiated shall be deemed to have been taken and initiated validly under the the provisions of these Rules.

DIRECTOR GENERAL
SINDH ENVIRONMENTAL PROTECTION
AGENCY

Karachi: Printed at the Sindh Government Press
28-1-2016



ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL



DOC NO. EIA/KDA/CRWSW/1224/01

Annexure 4: Copy of Lab Report of Ambient Air Quality



CERL

Climate & Environmental Research Laboratory

Job Ref No: CERL/KDA/Jan-25/082

Lab Ref No: CERL/KDA/Jan-25/AQ/706

EPA Certified
No.
EPA/LAB/CR-01/34/23

Dated: 08-01-2025

Report to:

M/s. Karachi Development Authority

Construction of Road, Walkway and Seawall at Sea Front between Dolmen Mall and China Port, Clifton, Karachi.

Sample ID:

Ambient Air Quality

Sample Description:

Ambient Air Monitoring

Sampling Date:

6-Jan-2025

Sample Type:

Air/Random Sample

Analyzed By:

CERL Representatives

Analysis Description:

Quality Parameters from SEQs for Ambient Air Monitoring.

ANALYTICAL TEST REPORT

Sr. #	Parameter(s)	Method(s)	Unit	Result			SEQ(s) Limit
				Min	Max	Avg	
1	Carbon monoxide (CO)	EPA RFCA 098-054	mg/m ³ /hr	1.34	7.66	4.5	10
2	Ozone (O ₃)	EPA50270 1999	µg/m ³ /24hr	6.4	9.38	7.9	130
3	Nitrous Oxide (NO)	EPA RFNA 1829-074	µg/m ³ /24hr	16.8	17.05	16.9	40
4	Nitrogen dioxide (NO ₂)	EPA RFNA 1829-074	µg/m ³ /24hr	28.39	28.72	28.6	80
5	Sulfur dioxide (SO ₂)	EPA EQSA0486-060	µg/m ³ /24hr	6.11	10.73	8.4	120
6	Suspended Particulate Matter (SPM)	EPA 40CFR50 App B	µg/m ³ /24hr	261.3			500
7	Particulate Matter PM ₁₀	EPA 40CFR50	µg/m ³ /24hr	111.8	130.8	121.3	150
8	Particulate Matter PM _{2.5}	EPA 40CFR50	µg/m ³ /24hr	47.0	67.0	57.0	75
9	Lead (Pb)	EPA 40CFR50	µg/m ³ /24hr	<0.1	<0.1	<0.1	1.5

Method: ASTM=American Standard Testing Method, EPA=United State Environmental Protection Agency Methods, SEQs=Sindh Environmental Quality Standard for Ambient Air Quality, SEP Act Regulation 2014 No. EPA/TECH/739/2014.

Reading Measured by:

Chemist - CERL



Verified by:

Manager Lab - CERL

Note:

- 1 Report is valid for current batch (Sample)
- 2 This Report is not valid for any other certification / Publication or Judicial Purposes.

101, First Floor, Plot No. H-3/B, Sector-5, EBM Causeway, Korangi Industrial Area, Karachi.
Tel : 021-35071077, Cell : 0305-2529997, Email: cerl.envlab@gmail.com

	ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION OF ROAD, WALKWAY & SEAWALL	
	DOC NO. EIA/KDA/CRWSW/1224/01	

Annexure 5: Copy of Lab Report of Ambient Noise



CERL
Climate & Environmental Research Laboratory

Job Ref No: CERL/KDA/Jan-25/082
Lab Ref No: CERL/KDA/Jan-25/NM/707

EPA Certified
No.
EPA/LAB/CR-01/34/23

Dated: 08-01-2025

Report to:
M/s. Karachi Development Authority
Construction of Road, Walkway and Seawall at Sea Front between Dolmen Mall and China Port, Clifton, Karachi.

Sample ID:	Noise Monitoring	Sampling Date:	6-Jan-25
Analyzed By:	CERL Representatives	Reporting Date:	8-Jan-25
Method:	ASTM E-1124	SEQs Limit:	70 dBA
Analysis Description: Quality Parameters from SEQs for Ambient Noise			

ANALYTICAL TEST REPORT

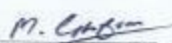
Sr. #	Sample Description	Unit	Noise Value		
			Min	Max	Avg
1	Location 1 (24.810275, 67.008934)	dBA	53	56	54.5
2	Location 2 (24.808035, 67.007496)		54	58.9	56.5
3	Location 3 (24.805415, 67.006809)		53.6	57.8	55.7
4	Location 4 (24.803594, 67.006809)		55.2	60.4	57.8
5	Location 5 (24.804680, 67.012903)		51	55.8	53.4
6	Location 6 (24.803372, 67.014819)		46	54	50.0
7	Location 7 (24.798678, 67.028635)		48.4	52	50.2
8	Location 8 (24.800517, 67.030963)		61.7	68	64.9

Method: ASTM = American Standard Testing Method,
SEQS = Sindh Environmental Quality Standard for Noise, SEP Act Regulation 2014 No. EPA/TECH/739/2014.

Reading Measured by: 

Chemist - CERL



Verified by: 

Manager Lab - CERL

Note:

- Report is valid for current batch (Sample)
- This Report is not valid for any other certification / Publication or Judicial Purposes.

101, First Floor, Plot No. H-3/B, Sector-5, EBM Causeway, Korangi Industrial Area, Karachi.
Tel : 021-35071077, Cell : 0305-2529997, Email: cerl.envlab@gmail.com