

ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PLAN

DEVELOPMENT OF A HOUSING SCHEME AT KUCHLAK ROAD QUETTA BALOCHISTAN UNDER PRIME MINISTER'S HOUSING PROGRAMME



PAKISTAN HOUSING AUTHORITY FOUNDATION (PHA-F)

Ministry of Housing and Works, Government of Pakistan

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FINAL REPORT

(September 2019)

Prepared by



GREEN REVOLUTION

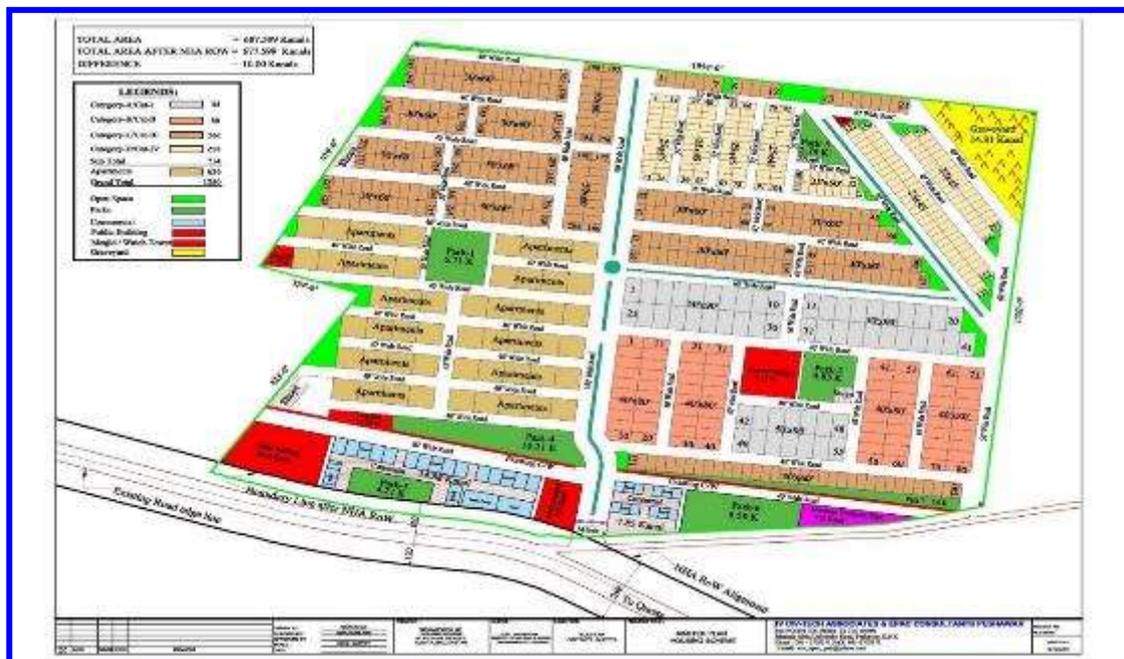
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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR)

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ACKNOWLEDGEMENT AND DISCLAIMER



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ACKNOWLEDGEMENT

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DISCLAIMER

This document is the Environmental Impact Assessment report (EIAR) and the environmental management plan (EMP) of the project titled “Development of a Housing Scheme at Kuchlak Road Quetta, Balochistan under the Prime Minister’s Housing Programme by the Pakistan Housing Authority Foundation (PHA-F)”. The document attempts to evaluate and assess the environmental and social impacts of the project in the context of the existing environmental and social baseline profile of the area and the applicable regulatory framework. The report is project specific and of limited applicability and liability only to the extent of the activities and operations of the instant project, during both its construction and the usage phases. The report has been prepared with a view to seek environmental approval (EA) of the project from Environmental Protection Agency, Balochistan (BEPA).

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ABBREVIATIONS



ABBREVIATIONS

Acronym	Full Text
ADP	Annual Development Programme
BEPA	Balochistan Environmental Protection Agency
BHU	Basic Health Unit
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
dB	Decibel
DHQH	District Headquarters Hospital
DMP	Disaster Management Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ERS	Emergency Response System
ESDMP	Environmental, Social and Disaster Management Plan
ESHU	Environmental Safety and Health Unit
GDP	Gross Domestic Product
GoPk	Government of Pakistan
GoBl	Government of Balochistan
HMP	Hazard Management Plan
HR	Human Resource
IEE	Initial Environmental Examination
IEER	Initial Environmental Examination Report
JICA	Japan International Cooperation Agency
MCH	Mother and Child Healthcare Centre
NEQS	National Environmental Quality Standards
NOC	No Objection Certificate
PakEPA	Pakistan Environmental Protection Agency
PEPA	Pakistan Environmental Protection Act
PHA-F	Pakistan Housing Authority Foundation
PM	Particulate Matter
PSDP	Public Sector Development Programme
RHC	Rural Health Centre
SHC	Sub Health Centre
SPM	Suspended Particulate Matter
SW	Solid Waste(s)
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UBC	Uniform Building Code
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WHO	World Health Organization



CONTENTS



CONTENTS

Sr. No.	Contents	Page No.
	Acknowledgement	i
	Abbreviations/Acronyms	ii
	Report's Contents	iii
	Executive Summary	a
Section-1	The Project and Its Salient Features	1 - 20
1.1	Project's Introduction	1
1.2	Brief Overview of Housing in Pakistan	1
1.3	Brief Description of the Project	2
1.4	Site's Location	15
1.5	Background Information	16
1.6	Objectives Underlying the Project	17
1.7	Construction Schedule	18
1.8	Implementation Stages	18
1.9	Construction Activities	18
1.10	Mode of Implementation	19
1.11	Labour and Human Resource Requirements	19
1.12	Studies and Surveys relating to the Project	19
1.13	Intended and Likely Benefits	20
1.14	Proponent	20
1.15	Environmental Consultant	20
1.16	Focal Persons of the Proponent and the Consultant	20
Section-2	Baseline Data and Environmental Profile of the Site / Area	21 - 40
2.1	Baseline Environmental Settings	21
2.2	Studies and Surveys for Baseline Profile	21
2.3	Environmental Description of the Project Area	22
2.4	Site's Geo-Physical Environment	23
2.4.1	A brief Intro of the Area/District	23
2.4.2	Location of the Site	24
2.4.3	Geography	27
2.4.4	Topography	27
2.4.5	Geology	27
2.4.6	Soil Morphology	27
2.4.7	Seismology	27
2.4.8	Surface Hydrology	27
2.4.9	Hydrogeology and Groundwater	28
2.4.10	Meteorology, Climate, and Air Quality	29
2.4.11	Air Quality	30
2.4.12	Effluent Disposal	30
2.4.13	Background Radiological Characteristics	30
2.5	Eco-Biological Environment	30
2.5.1	Forests, Habitat, and Ecologically Sensitive Areas	31
2.5.2	Local Flora	31
2.5.3	Local Fauna	32
2.5.4	Protected and Ecologically Sensitive Areas	33
2.6	Sociocultural Environment	33
2.6.1	Demographic Profile	33
2.6.2	Land Use/Agricultural Profile	33
2.6.3	Industrial Profile	34
2.6.4	Mining and Minerals Profile	35
2.6.5	Healthcare Facilities	35
2.6.6	Educational Facilities	36
2.6.7	Livestock and Farming	37



2.6.8	Infrastructure Profile	37
2.6.9	Water Supply and Sanitation	38
2.6.10	Socioeconomic Profile	38
2.6.11	Culture, Religion, Customs, and Specialities	39
2.6.12	Historical and Archaeological Sites	39
Section-3	Environmental Impacts and Their Mitigation	41 - 60
3.1	Environmental Impacts and Their Mitigation	41
3.2	Impact Assessment Methodology	41
3.3	Impact Mitigation Strategy	41
3.3	Impacts and Mitigations relating to Design and Planning Phase	42
3.4.1	Design and Layout Planning	42
i)	Likely Impacts	42
ii)	Activities Likely to Produce the Impacts	42
iii)	Mitigation Measures	42
3.5	Impacts and Mitigations relating to Construction Phase	42
3.5.1	Parametric Impacts of the Construction Phase	42
3.5.1.1	Soils and Lands	42
i)	Likely Impacts	43
ii)	Activities Likely to Produce the Impacts	43
iii)	Mitigation Measures	43
3.5.1.2	Surface Water Quality	44
i)	Likely Impacts	44
ii)	Activities Likely to Produce the Impacts	44
iii)	Mitigation Measures	44
3.5.1.3	Groundwater Abstraction and Quality	44
i)	Likely Impacts	45
ii)	Activities Likely to Produce the Impacts	45
iii)	Mitigation Measures	45
3.5.1.4	Wastewaters and Effluents	46
i)	Likely Impacts	46
ii)	Activities Likely to Produce the Impacts	46
iii)	Mitigation Measures	46
3.5.1.5	Air Quality	46
i)	Likely Impacts	46
ii)	Activities Likely to Produce the Impacts	47
iii)	Mitigation Measures	47
3.5.16	Noise and Vibrations	47
i)	Likely Impacts	47
ii)	Activities Likely to Produce the Impacts	48
iii)	Mitigation Measures	48
3.5.2	Non Parametric Impacts of the Construction Phase	48
3.5.2.1	Land use change	48
i)	Likely Impacts	48
ii)	Activities Likely to Produce the Impacts	48
iii)	Mitigation Measures	48
3.5.2.2	Solid Wastes	48
i)	Likely Impacts	49
ii)	Activities Likely to Produce the Impacts	49
iii)	Mitigation Measures	49
3.5.2.3	Access, Easement, Health, Wellbeing, and Worksite Safety	49
i)	Likely Impacts	49
ii)	Activities Likely to Produce the Impacts	50
iii)	Mitigation Measures	50
3.6	Environmental Impacts relating to Project's Operation Phase	51
3.6.1	Parametric Impacts of the Operation Phase	51
3.6.1.1	Soils and Lands	51
i)	Likely Impacts	51



ii)	Activities Likely to Produce the Impacts	52
iii)	Mitigation Measures	52
3.6.1.2	Surface Water Quality	52
i)	Likely Impacts	52
ii)	Activities Likely to Produce the Impacts	52
iii)	Mitigation Measures	53
3.6.1.3	Groundwater Abstraction and Quality	53
i)	Likely Impacts	53
ii)	Activities Likely to Produce the Impacts	53
iii)	Mitigation Measures	53
3.6.1.4	Wastewaters and Effluents	54
i)	Likely Impacts	54
ii)	Activities Likely to Produce the Impacts	54
iii)	Mitigation Measures	54
3.6.1.5	Air Quality	55
i)	Likely Impacts	55
ii)	Activities Likely to Produce the Impacts	55
iii)	Mitigation Measures	55
3.6.2	Non Parametric Impacts of the Operation Phase	56
3.6.2.1	Electricity Usage	56
i)	Likely Impacts	56
ii)	Activities Likely to Produce the Impacts	56
iii)	Mitigation Measures	56
3.6.2.2	Water Usage	56
i)	Likely Impacts	56
ii)	Activities Likely to Produce the Impacts	57
iii)	Mitigation Measures	57
3.6.2.3	Solid Wastes	57
i)	Likely Impacts	57
ii)	Activities Likely to Produce the Impacts	57
iii)	Mitigation Measures	57
3.6.2.4	Noise, Vibrations, and odours	58
i)	Likely Impacts	58
ii)	Activities Likely to Produce the Impacts	58
iii)	Mitigation Measures	58
3.6.2.5	Health, Safety and Community Wellbeing	58
i)	Likely Impacts	59
ii)	Activities Likely to Produce the Impacts	59
iii)	Mitigation Measures	59
Section-4	Environmental, Social and Disaster Management Plan (ESDMP)	62 - 70
4.1	Disaster Management Plan	62
4.2	Institutional Setup for DMP Implementation	62
4.3	Roles and Responsibilities of the ESH Unit	62
4.4	Reporting and Recordkeeping	63
4.5	Future Expansions	63
4.6	Responsibility of Contractor towards Environmental Protection	63
4.7	Environmental Monitoring Plan	63
4.7.1	Internal Compliance Monitoring	64
4.7.2	External Compliance Monitoring	64
4.8	Hazard Management Plan and Emergency Response System	64
4.8.1	Safe Handling of Hazardous Materials	64
4.8.2	Equipment for Emergency	64
4.8.3	Standard Operating Procedures for Emergencies	65
4.9	Budgeting for the ESDMP and ESH Unit	66
4.10	Environmental Guidelines	66
Section-5	Stakeholder's Consultations	71 - 74



5.1	Objectives and Rationale of Consultations	71
5.2	Identification of the Relevant Stakeholders	71
5.3	Consultation Methodology	72
5.4	Issues Discussed	72
5.5	Outcome of the Consultations	73
5.5.1	Design Aspects	73
5.5.2	Construction Aspects	73
5.5.3	Operation Aspects	73
5.6	Measures to Address the Concerns	73
Section-6	Consideration of Alternatives	75 - 76
6.1	Significance and Identification of Alternatives	75
6.2	Possible Alternatives to the Project	75
6.2.1	Abandonment of the Project	75
6.2.2	Changing Project's Scope	75
6.2.3	Shifting the Project	75
6.3	Summary of the Alternatives' Consideration	76
Section-7	Methodology and Approach	77 - 80
7.1	Rationale and Objectives of the Study	77
7.2	Study's Main Components	77
7.3	Study Methodology	77
7.4	Extent and Scope of the Study (Terms of Reference)	78
7.5	Planning Strategy	79
7.6	Data Sourcing Methodology	79
7.7	Summary of the EIA Process	79
7.8	Applicable Laws, Rules and Regulations	80
Section-8	Environmental Legal Framework	81 - 87
8.1	Defining the Environment	81
8.2	Defining IEE/EIA	81
8.3	Purpose of IEE/EIA	82
8.4	Main Objectives of IEE/EIA	82
8.5	Effectiveness of IEE/EIA Process	82
8.6	Differentiating the Primary and Secondary Impacts	82
8.6.1	Spatial Dimension	82
8.6.2	Time Dimension	82
8.6.3	Reversibility	83
8.6.4	Probability	83
8.6.5	Beneficial vs Adverse Effects	83
8.7	Environmental Legal Framework in Pakistan	83
8.7.1	Pakistan Environmental Protection Act (PEPA) 1997	84
8.7.1	Balochistan Environmental Protection Act, 2012	84
8.7.1	Pakistan Environmental Protection Agency Review of IEE and EIA Regulations, (2000)	84
8.7.4	National Environmental Quality Standards (1993, 2000 and 2013)	85
8.7.5	Pak EPA Environmental Guidelines	85
8.7.6	Land Acquisition Act 1894 and Land Acquisition (Balochistan Amendment) Act 1985	85
8.7.7	The Forest Act 1927	85
8.7.8	The Federal Antiquities Act, 1975	85
8.7.9	Balochistan Wildlife (Protection, Preservation, Conservation & Management) Act 2014	85
8.7.10	Balochistan Cultural Heritage Preservation Act 2010	86
8.7.11	Balochistan Drinking Water Policy/Strategy 2017	86
8.7.12	Quetta Master Plan (QDA)	86
8.7.13	QDA Private Housing Schemes Regulations 1995 (Amended 2007)	86
8.8	Environmental Institutional Framework	86
8.8.1	Environmental Protection Agency, Balochistan	87
8.8.2	Forest and Wildlife Department, Balochistan	87



8.8.3	Directorate of Archaeology, Balochistan	87
	Findings and Conclusion	88
	Disclaimer	89
	References	90

TABLES

Table No.	Description	Page No.
1.3a	Category wise Number of Housing Units and Shops	14
1.3b	Cost Estimates	14
1.11	Estimated Manpower and HR Requirements (Construction)	19
1.16	Contact details of Proponent and Environmental Consultant	20
2.2	Noise Record at the Site	22
2.4.8	Surface Water Quality of the Site/District	28
2.4.9a	Number of Tube wells in the District	28
2.4.9b	General Groundwater Quality of the Site/District	28
2.4.9c	Microbiological Quality of Groundwater of the Site/District	29
2.4.10a	Meteorological Features of the Area/District	29
2.4.10b	Month-wise Temperature Profile (Mean of Maximum)	30
2.4.10c	Month-wise Temperature Profile (Mean of Minimum)	30
2.4.10d	Month-wise Humidity Profile	30
2.4.10e	Month-wise Rainfall Profile	30
2.4.11	General Air Quality Profile of the Site/District	30
2.5.2a	Vegetation Zone wise Flora of District Quetta	32
2.5.2b	Some Common Flora of the Area along with Botanical Names	32
2.5.3a	Fauna Distribution in Quetta	32
2.5.3b	Some Common Fauna of the Area along with Zoological Names	33
2.6.1	Demographic Profile of District Quetta	33
2.6.2	Land Use/Agricultural Profile of District Quetta	34
2.6.3	Number of Registered Factories and Employment Status	35
2.6.5a	Healthcare Profile of District Quetta	36
2.6.5b	Some common Diseases of District Quetta	36
2.6.6	Educational Profile of District Quetta	37
2.6.7	Livestock Resources of District Quetta	37
2.6.8	Infrastructure Profile of District Quetta	38
2.6.12	Historical and Archaeological Sites in District Quetta	40
3.2a	Modified Environmental and Social Impact assessment Matrix (Unmitigated Impacts)	60
3.2b	Modified Environmental and Social Impact assessment Matrix (Mitigated and Residual Impacts)	61
4.10	Environmental Management and Monitoring Guidelines	67
5.2a	Stakeholders into the Project and Nature of their Stakes (Construction Phase)	71
5.2b	Stakeholders into the Project and Nature of Their Stakes (Operation Phase)	71
5.6	Summary of Stakeholders' Concerns alongwith Remedial Measures	73

PLATES

Plate No.	Description	Page No.
1.3a	Map of Balochistan showing location of Quetta	3
1.3b	Geographical Map of Quetta	3
1.3c	Master Layout Plan	4
1.3d	Survey Map of the Site	4
1.3e	3D View Category-I (50'x90')	5
1.3f	3D View Category-I (50'x90')	5
1.3g	3D View Category-II (40'x80')	5
1.3h	3D View Category-II (40'x80')	6
1.3i	3D View Category-III (30'x60')	6
1.3j	3D View Category-III (30'x60')	6
1.3k	3D View Category-IV (25'x45')	7



1.3l	3D View Category-IV (25'x45')	7
1.3m	3D View 3-Bed Room Apartments	7
1.3n	3D View 2-Bed Room Apartments	8
1.3o	3D View of Commercial Plaza	8
1.3p	Architectural Plan Category-I (GF)	8
1.3q	Architectural Plan Category-I (FF)	9
1.3r	Architectural Plan Category-II (GF)	9
1.3s	Architectural Plan Category-II (FF)	10
1.3t	Architectural Plan Category-III (GF)	10
1.3u	Architectural Plan Category-III (FF)	11
1.3v	Architectural Plan Category-IV (GF)	11
1.3w	Architectural Plan Category-IV (FF)	12
1.3x	Architectural Plan 3-Bed Room Apartments	12
1.3y	3-Bed Room Apartment (Single Flat)	13
1.3z	2-Bed Room Apartment Block	13
1.3aa	2-Bed Room Apartment (Single Flat)	13
1.4a	Google Earth Imagery of the Site	15
1.4b	Google Earth Imagery of the Site	15
2.3	Site's approximate Zone of Environmental Influence, red rectangle (adopted from Google Earth)	23
2.4.2a	A Google Earth Imagery of the Site	25
2.4.2b	A Google Earth Imagery of the Site	25
2.4.2c	A Google Earth Imagery of the Site	25
2.4.2d	A Google Earth Imagery of the Site	26
2.4.2e	A Google Earth Imagery of the Site	26
2.4.2f	A Google Earth Imagery of the Site	26
7.4	Process Flow Diagram of the IEE/EIA Planning Methodology	80
8.3	Steps of the IEE/EIA Process	82

ANNEXES

Annex No.	Description	Page No.
Annex-1	Balochistan Environmental Protection Act 2012	92
Annex-2	Pakistan Environmental protection Agency (Review of IEE & EIA) Regulations, 2000	112
Annex-3	Pakistan National Environmental Quality Standards (NEQS)	117
Annex-4	QDA Private Housing Schemes Regulations 1995 (Amended 2007)	119
Annex-5	Stakeholders/Persons Consulted	124



EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

ES.1 Prologue

This is a project specific Environmental Impact Assessment report (EIAR). The report contains environmental mitigation and management plan (EMP), presents a detailed account of the environmental and social impacts likely to be confronted from implementation of the project “Development of a Housing Scheme at Kuchlak Road Quetta, Balochistan under the Prime Minister’s Housing Programme”. The examination of the impacts is limited not to the construction phase, but also dilates at length upon the most probable environmental and social impacts of the operation phase of the project housing scheme. The likely and foreseeable impacts have been described with reference to their extent and magnitude on the various environmental parameters and the bio-indicators. The report highlights the activities and the likely sources, as could be responsible for the potentially adverse impacts of the project, with reference to their extent and magnitude on various environmental and social parameters and other sensitive bio-indicators. It would be pertinent to mention that the review, assessment, screening and mitigation of the negative environmental impacts of a project or a development activity is a legal obligation of the proponent under the existing environmental laws. This report is therefore in partial fulfilment of this legal obligation, too.

ES.2 Pakistan Housing Authority Foundation (PHA-F) – A Brief Introduction

The Pakistan Housing Authority Foundation (PHA-F) was established in pursuance to a Cabinet Resolution of 18th May 1999. The PHA-F is an autonomous body of the Ministry of Housing and Works, Government of Pakistan. The objective underlying establishment of the Authority is to provide shelter to low income groups, the poor and the needy. Since after its establishment, the Authority has launched a large number of housing projects for providing housing to the citizens of Pakistan in consonance to Paragraph (d) of Article 38 of the Constitution of Islamic Republic of Pakistan, which requires the state to provide necessities of life including housing to its citizens.

With regard to achievements of the PHA-F, it would be pertinent to mention that on November 26, 1999, the then Chief Executive of Pakistan ordered a complete review of the PHA-F’s various schemes and directed for their expeditious completion. Consequently, on March 9, 2000 the Cabinet and the National Security Council (NSC) accorded approval for completion of all commercially viable and marketable projects, some of which were already on the Authority’s portfolio. Pursuant to the above-referred decision of the Cabinet and the NSC, PHA-F undertook 18 projects in four major urban centres of the country at Karachi, Lahore, Peshawar and Islamabad involving 4,476 housing units at the estimated cost of Rs. 5.00 billion. The majority of these projects have since been completed and possession handed over to successful buyers. In addition to the above-refereed completed projects, the PHA-F is also undertaking housing schemes for the officers of the federally constituted occupational groups and for the low paid Federal Government employees on ownership basis. The instant project is meant for low-income citizens and the low paid governmental functionaries. As regards its composition, Pakistan Housing Authority Foundation comprises the following:

- Chairman
- Managing Director
- Director General (Coordination and Project Management)
- Director General (Architecture and Planning)
- Director General (Finance and Administration)

The Pakistan Housing Authority Foundation has its Head Office at Islamabad. The Managing Director is its Chief Executive and the Principle Accounting Officer. For carrying on its business, the Authority has established five Wings/Sections, namely Construction and Project Management Wing, Architecture and Planning Wing, Finance and Administration Wing, Land Management Wing, and the Marketing and Allotees Services Department. In order to facilitate the public, the Authority has established three Regional Allotees’ Services Offices in Karachi, Lahore, and Peshawar. The chartered mandate and functions of the Authority, interalia, include the following:

- Preparation and promotion plans for developing housing projects for the poor and the needy in Pakistan
- Preparation of guidelines for implementing various housing programmes
- Coordination with the concerned federal and provincial agencies for implementing the Authority’s housing programmes
- Negotiations for tapping financial resources from national as well as international financing or aid-giving agencies, institutions or organizations and administering the same for the implementation of the Authority’s programmes



- Taking necessary steps towards obtaining land for the execution of the Authority's housing projects, schemes and programmes
- Assisting the applicants in obtaining housing loan facilities through financial institutions keeping in view the financial position or income levels of the applicants
- Selection of professionals, consultants and engineers for the implementation of the projects and the programmes
- Select private developers, site consultants and carrying out surveys on the land earmarked for implementing the programmes
- To supervise advertising campaign, preparation of brochures, pre-qualifications and awards of works to specific site consultants and
- Performance of such other functions as may be assigned to the Authority by the competent forum from time to time

ES.3 Brief Description of the Project

The project essentially is "Development of a Housing Scheme at Kuchlak Road, Quetta Balochistan under Prime Minister's Housing Programme". The project will comprise town planning, development of the site and construction different categories of independent houses, different sized multi-storey apartments, marketplaces, amenity plots, parks and playgrounds, mosques, roads and public utilities.

As per the preliminary master plan, the scheme envisages construction of houses, apartments, commercial areas, amenity plots, roads, civil amenities like water supply, sewerage and sanitation network, waste collection and disposal services, wastewater treatment plant, healthcare and recreational services, mosques, playgrounds and greenbelts etc. The scheme envisions construction of four different categories of houses, based on plot size and covered area. The Category-I (Cat-I) houses will have a plot area of 4500 sft (45'x90') and covered area of 3636 sft each. There will be 55 Cat-I houses that will take up a total land area of 45.65 kanal. The Category-II (Cat-II) houses will have a plot area of 3200 sft (40'x80') and covered area of 2500 sft each. There will be 80 Cat-II houses that will take up a total land area of 47.20 kanal. The Category-III (Cat-III) houses will have a plot area of 1800 sft (30'x60') and covered area of 1629 sft each. There will be 361 Cat-III houses that will take up a total land area of 119.13 kanal. The Category-IV (Cat-IV) houses will have a plot area of 1125 sft (25'x45') and covered area of 1164 sft each. There will be 218 Cat-IV houses that will take up a total land area of 45.78 kanal. There will be two categories of residential apartments i.e., 3-bed and 2-bed apartments. The covered area of 3-bed apartments will be 1460 sft and of 2-bed will be 1195 sft. The apartments will take up an area of 62.30 kanal. As regard the support facilities and infrastructure, commercial plazas will take up 22.73 kanal, shops 6.47 kanal, petrol pump 1.27 kanal, and hotel 1.36 kanal (total commercial 31.83 kanal). Mosques will take up 9.33 kanal, public buildings 14.58 kanal, and graveyard 14.81 kanal. 10 acres have been reserved for NHA's RoW and 228.50 acres for the scheme's roads. The total open area for development of greenbelts and parks will be 58.49 acres. As regards the allotment quota, 30% will be for the federal government employees, 30% for the provincial government employees, 30% will be for the general public, 5% for shuhada (Hazara community) and 5% for employees of the Ministry of Housing and Works. There will be 714 houses and 636 apartments in all, which will provide accommodation for about 1350 families of four to six members each¹.

ES.4 Objectives underlying the Project

The project aims at providing dignified housing accommodation in the city of Quetta, particularly to those who do not own a house². The underlying objective is to reduce the existing shortage between availability and demand of housing in the country by providing affordable housing to Federal, Provincial Government employees and general public. The project will provide housing facilities to around 1350 families at a reasonable cost in Quetta. The shortage of housing units in Quetta could be resolved to some extent. The Master Plan envisages construction of residential area, public buildings, roads and parks as per Quetta Development Authority's (QDA) Bylaws. According to a conservative estimate, the number of household units in Quetta is 222,000, out of which 100,000 are urban and 122,000 are rural housing units. The estimated annual growth rate is 2.95 percent. The estimated current demand of housing units is more than 0.5 million, which is increasing at a projected rate of 5-7% per annum³. The average household size in Quetta is 8.5 persons. In addition to the underlying objective of reducing the gap between demand and availability, uplifting and improving socioeconomic condition of the citizens, boosting the construction industry, creation of new job opportunities and income prospects for those

¹ Ibid

² PHA-F Website www.pha.gov.pk

³ Ministry of Housing, GoPk, Islamabad, 2019



engaged in transportation of raw materials and other construction sector activities can be counted as some secondary or indirect objectives of the scheme⁴.

ES.5 Objectives of the Environmental Examination

The primary objective of this EIA study is to identify and screen out those of the significant adverse environmental and social impacts of the project, which are likely to cause adverse impacts on the local and the general environment around the project. Viewing from this perspective, the potential sources of environmental impacts would be the various activities relating both to construction and inhabitation stages of the project. Such activities will relate to and include transportation of construction materials to the site, excavations and diggings, stockpiling of the raw materials at the site, generation of wastewater and solid wastes, air quality concerns, and the neighbourhood social issues of community living. The degree and quantum of the various environmental impacts will depend on a number of influencing factors. Therefore, the focus of the study is to discern the important environmental concerns of the project and to suggest the ways and means for countering the likely adverse environmental impacts.

ES.6 Scope of the Study

Being an EIA study, the study is limited in its extent and scope to the parameters as defined in the notified Environmental Assessment Guidelines of the Government of Pakistan of 1997⁵. The study encompasses review of the baseline environmental profile of the site in particular and the project district in general, wherever relevant. In addition to identification of the potentially adverse or negative impacts, the following also constitute a few important aspects of the assignment:

- Extent, quantum and magnitude of the adverse and the beneficial impacts
- Assessment of the degree of disturbance in the baseline profile
- Identification of the best-suited measures for mitigating the adverse impacts
- Presenting a workable environmental management plan for ensuring long-term sustainability of the project

Apart from describing the resource consumption potential of the project, particularly of the raw materials and freshwater, and their effects on sustainable availability, the study reviews the short-term and the long-term effects of the groundwater abstraction for the various project activities. Last but not the least, the study presents a detailed discussion on impacts of disposal of the various wastes and effluents on the soil quality, surface water quality, groundwater quality, and the air quality. The study also presents an account of impacts of occupancy of the housing units by about 1350 families with average family size of 6.6 persons per family (about 9000 persons) on various environmental quality parameters and the bio-indicators during occupancy stage of the project.

Although, the primary focus of the study, at this stage, is analysis of the construction phase impacts; nevertheless, operation phase impacts have also been touched upon in briefly. Besides dilating upon the environmental impacts, the study presents detailed account of the various socioeconomic impacts of the project's construction like impacts of land use change, impacts on rights of the neighbouring communities on natural resources, likelihood of opportunities of employment and business, and the greatest positive social benefit of availability of housing for the target population. Presentation of workable suggestions and a set of implementable recommendations in the form of environmental mitigation measures and environmental management plan forms an essential part of the study's scope.

ES.7 Methodology Employed for the Study

The study has relied on both the primary and the secondary data sources. However, greater reliance has been placed on the primary sources, which included visits to the site by the consultant's team of professionals, soliciting relevant information from the key stakeholders (e.g., residents of neighbouring areas, local communities, design and construction contractors, site staff of the PHA-F, and functionaries of the relevant regulatory departments of GoBIn). This methodology helped to solicit viewpoints of the stakeholders with respect to their concerns over the project at a stage when they can be used meaningfully for reviewing the project with respect to their apprehensions. Some data and information, germane to the study, was collected through a specially designed project specific checklist. This checklist was used for collecting both qualitative and quantitative information about the project and its likely impacts onto various environmental parameters. Apprehensions, concerns and perceptions of the stakeholders and the persons consulted during the study were reduced into writing through this checklist. The severity of the adverse impacts of the various project activities, of both construction and operation stages, has been analysed against a modified impact assessment matrix. This

⁴ Project's brief as provided by the PHA-F

⁵ Guidelines for the Environmental Impact Assessment, Government of Pakistan, 1997



impact matrix characterizes important impacts of the project on the selected components of the physical, biological, and social environments. The secondary sources included the backup files and office records of the PHA-F Regional Office, information on the subject obtained from the Environmental Protection Agency Balochistan (BEPA) and information downloaded from browsing a host of websites over the internet.

Employment of the best-suited impact assessment methodology for identification, scoping, and futuristic predictions of the project's interactions with the environmental parameters is a distinguishing feature of the study methodology, besides an analytical and inquisitive approach. The National Environmental Quality Standards (NEQS), as applicable and relevant, have been used as the benchmark for analysis and comparison of the project's impacts. For the sectors/parameters, for which referencing NEQS are not available, internationally accepted standards and guideline values of the international bodies like the (World Health Organization, International Standards Organization etc.) have been used as the referencing standard/source.

The study encompasses all stages of the project activities right from planning to post-completion usage of the project and the intermediary activities of mobilization of machinery and equipment, procurement and transportation of construction materials, onsite constructions, usage of the finished up building, and the routine repair and maintenance of the buildings, in terms of their short-, medium-, and long-term environmental impacts as well as their reversibility and irreversibility characteristics.

ES.8 Project's Significant Environmental and Social Impacts

The project being the construction-installation of a Hot Mix Asphalt Concrete Plant (HMAP) can be designated as an activity likely to affect the environment, primarily during its operation phase, unless appropriate measures are taken for their mitigation. There will hardly be any adverse impacts of erection installation per se because the plant will be a prefabricated ready to install unit. Some of the important environmental and social impacts of the project, of both installation and operation phases, will be as mentioned hereunder:

- **Impacts relating to Land Use Change:** As the project will be constructed on an open, uninhabited, uncultivated and not fit for cultivation parcel of land, situated on Kuchlak road Quetta, there will not be any adverse land use change. On account of its geology and morphology, the land is neither under any profitable or productive agricultural usage, nor can it be applied to any such usage. Therefore, its usage for developing a housing scheme will not affect its utility and the environment in any adverse manner. Rather, construction of the housing scheme on this hitherto unusable land will be beneficial for the environment, as new green areas will be developed alongside tree plantation in the colony (*a design stage impact*).
- **Impacts relating to Easement Rights:** No likelihood of impeachment of sunlight, aeration and ventilation, as not any high rise structures are proposed to be constructed under the scheme, as might interfere with easement rights of the neighbouring communities. The only possibility is if the structures are placed closely to each other (*a design stage impact*).
- **Impacts relating to Freshwater consumption:** More than normal volumes of freshwater may be used during construction of the buildings, houses and other civil structures. However, it will only be a limited time transitional phenomenon and will be over as soon as the active construction phase is over. The consumption of freshwater by the residents will be just the normal for any such like housing colony (*both a construction and operation phase impact*).
- **Impacts relating to Generation of Wastewater:** Generation of large volumes of wastewater, alongwith the attending consequences, is expected to be generated during both construction and operation phases. As a rule, generation of wastewater during lifelong occupancy of a housing scheme, on volumetric basis, is much higher compared to the active construction phase. Furthermore, chemical and biological characteristics of the wastewater generated during occupancy phase of the housing units will be different from the wastewater to be generated during the construction phase (*both a construction and operation phase impact*).
- **Impacts relating to Generation of Municipal Solid Wastes:** Multifarious human activities during both construction and occupancy phases of the project will lead to generation of ordinary municipal type solid wastes. These wastes will comprise food residues, papers, and other miscellaneous items from a large number of residential and commercial activities at the project premises and from preparation and consumption of food by the inhabitants and others. Whereas, generation of solid wastes from construction activities will cease with the completion of construction, generation of ordinary type municipal solid wastes during occupancy phase will be a lifelong phenomenon (*both a construction and operation phase impact*).



- Likewise, there will be generation of household-origin municipal solid waste from the housing units all during operation phase of the project (*an operation phase impacts*)
- **Impacts relating to Generation of Noise:** Undesirable ambient noise is likely to be produced during both construction and the occupancy phases of the housing scheme. Whereas, generation of noise from construction activities will be a transitory phenomenon, it will be a continuous nuisance during entire occupancy life of the project. Generation of ambient noise is an inalienable phenomenon of multifarious construction activities (such as movement of heavy machinery and equipment, loading and unloading of materials, steel fixing and number of similar other activities) and from large number of diverse activities during lifelong occupation of the housing scheme (*both a construction and operation phase impact*)
- **Impacts relating to Ambient Air Quality:** Construction and operation of the scheme may produce undesirable impacts on local air quality because of higher than normal levels of resident atmospheric dust. Atmospheric fugitive dust will be generated from flying-off of the particulates from excavations and diggings, movement of heavy machinery and equipment on the unpaved roads and improper stacking of the loose materials during construction phase. Increased movement of the vehicles to and from the site during both construction and occupation phases may add to local fugitive dust. Similarly, generation of dust during occupancy phase of the project will be mainly from increased vehicular movement and number of unspecified generic activities by the residents (*both a construction and operation phase impact*)
- There could also be the impacts of impairment of air quality from the exhausts coming out from vehicles, generators, and the machinery and equipment running on fossil fuels (*both a construction and operation phase impact*)
- Besides, there could be the impacts on ambient air quality from the particulate dust flying off from the uncovered loose materials, as might be stacked at the site, like sand and soil (*a construction phase impact*)
- There could be the impacts from higher dust levels in the ambient air because of atmospheric suspension of the drag dust originating from increased movement of the carriage and the general vehicles coming to and leaving the site (*mainly a construction phase impact*)
- **Impacts relating to Risks of Personal Injury:** There could be the likelihood of risks of personal injury to the exposed workers all during construction phase, particularly to those working on scaffoldings, doing welding, transporting the materials manually and carrying out similar other activities (*a construction phase impact*)
- **Impacts relating to Consumption of Fossil Fuels and Exhaust Emissions:** Reasonable volumes of the fossil fuels (mainly diesel and petrol) are likely to be consumed during both construction and the subsequent occupation (operation) stages of the housing scheme. Consumption of fossil fuels is likely to produce emissions of exhaust gases, mainly CO₂, which is a greenhouse gas. Therefore, unscrupulous consumption of fossil fuels may add to carbon footprint of the project (*mainly operation phase impact*)
- **Impacts relating to Consumption of Resources:** Construction and subsequent occupation of the houses by the allottees may be associated with consumption of sizeable volumes of the natural and manmade resources. However, owing to their consumption with reasonable predictability, the likelihood of their depletion will be quite remote (*both a construction and operation phase impact*)
- **Impacts relating to Socio-Cultural Aspects:** There could be various social and cultural issues relating to closed community living because of differences of opinions, cultural practices, and the differences of outlook to social value system (*an operation phase impact*)

A detailed account of the genesis of the above-referred adverse impacts, their potentiality to affect the ambient environment and the measures for mitigations has been presented in Chapter 3 of this EIA Report. However, it would be suffice to state here that if construction and development of the scheme is carried out in a sustainable manner and in accordance with the ESDMP and the other mitigation measures, as are given in this EIA study, then the majority of these adverse impacts would become insignificant and nullified.

ES.9 Measures for Mitigation

Besides presenting analysis of the environmental and social impacts of the project, the EIA report details a set of comprehensive mitigation measures and strategies for avoiding and countering the adverse environmental and social impacts of the project. Additionally, measures for addressing the impacts emanating from occupancy of the houses by the allottees have also been presented in the report.



The majority of the mitigations measures are activity based. For example, wasteful consumption of freshwater during construction can be avoided by promoting practices of water use conservation by the construction contractor, such as curing the masonry and the newly constructed concrete structures with wet gunny wraps instead of their direct showering with freshwater streams. Similarly, freshwater consumption during project's operation phase (the stage of occupancy by the allottees) can be economized by fitting auto-shutoff taps and metering the water connections. Impacts on the surface- and the ground-water quality can be mitigated by avoiding direct discharges of the untreated effluents and wastewaters onto lands and or into nearby water channels, if any. The air quality impacts, like blowing of fugitive dust during construction, can be avoided by cordoning off the active construction sites and by regular water sprinkling of the bare soils and stockpiled loose materials. Similarly, dust blowing from bare surfaces during occupancy phase of the project, can be avoided by paving the footpaths and planting trees and grass on the bare soils. Dust blowing from movement of vehicles, particularly during operation phase, can be curtailed by constructing speed breakers to control high speed driving. Adverse impacts of the sanitation origin wastewater can be avoided by constructing septic tanks with each housing/residential unit or by constructing a central wastewater treatment plant, if feasible.

The negative social impacts of the project such as interpersonal conflicts and intolerant behaviours of the neighbourhood livings can be mitigated by fostering good neighbourhood relations through Neighbourhood Committee (NC) and by instituting some dispute resolution mechanism. It is recommended that at the time of handing over the project to the allottees, the proponent constitutes a "Neighbourhood Committee" for managing the project and for resolving disputes and problems of the residents all during operational life of the project. The NC may initiate awareness raising programmes for the education and training of the residents. Similarly, good offices of the Imams of the masjids in the project can be used for fostering good neighbourhood relations and mutual respects amongst the residents.

As far as positive social impacts are concerned, the project is likely to provide housing to around 1350 families (approx. 9000 persons @ 6.5 persons per family) from all sections of the society at affordable prices near the city of Quetta. This singular social benefit outweighs almost all the negative or adverse impacts of the project. One cannot think of owning a house in Quetta at such a low price, as is being offered by the PHA-F. The other significant social benefits and positive impacts of the project will be the opportunities of employment, training, and the skill development both for the professionals and for the general cadre personnel who would be working on the project. Another social benefit of the project will be the income prospects for a large population (traders, shopkeepers, suppliers, vendors, service providers, mechanics, and artisans etc.) who would be providing goods and services for the residents occupying the houses. This alone can be reckoned as one of the biggest leap forward towards revival of the local economy.

ES.10 Conclusion and Recommendations

Housing is a fundamental human need and an indomitable essentiality for the sanctity of family life. Due to number of factors and reasons, Pakistan is today facing a shortfall of more than 4.50 million housing units. It is therefore need of the time to take up construction of new housing units on war-footing basis by constructing as many housing units as is physically possible within the available resources. There is no doubt that housing should be declared a priority area and fast track construction should be taken up. But at the same time, environment should be accorded the due importance, while planning and constructing the housing projects. Construction of new housing schemes should not affect the environment adversely by bringing about unfavourable land use change, large-scale exploitation of natural resources, and pollution of the air, water, and soil environment from emissions, effluents, solid wastes and other contaminants. It is therefore imperative that before undertaking any housing or urban development project, the project should be subjected to compulsory environmental impact assessment, as envisaged under the Balochistan Environmental Protection Act 2012, to ascertain the adverse impacts relating to both construction and operation phases.

As far as the instant project is concerned, the majority of the foreseeable environmental impacts are of low significance and controllable by implementing the proposed mitigation measures and by complying with the environmental laws of the country. In this particular case, implementation of the environmental mitigation measures and guidelines, as given in this document, are expected to bring down the negative environmental impacts of the project within the acceptable level. Nevertheless, to ensure long-term environmental sustainability of the project, institutional arrangements must be put into place for controlling the adverse impacts all during operational life of the project.



1

INTRODUCTION AND BRIEF DESCRIPTION OF THE PROJECT



1. INTRODUCTION AND BRIEF DESCRIPTION OF THE PROJECT

1.1 Introduction

The Pakistan Housing Authority Foundation (PHA-F), an autonomous body of the Ministry of Housing and Works, Islamabad, has been setup with the exclusive mandate of providing housing to citizens of Pakistan. The PHA-F, being a premier public sector housing provider, has been implementing housing programmes for all income groups across the country. Under its latest initiative, named “Prime Minister’s Housing Programme”, the PHA-F intends to construct a large number of housing units all over the country, particularly for the low-income strata in all major cities of the country. The project titled “Development of a Housing Scheme at Kuchlak Road, Quetta Balochistan is one of the projects under Prime Minister’s Housing Programme. The project envisages development of a sizeable housing colony at Kuchlak road Quetta over an available and vacant site.

The project essentially is construction of a housing scheme for the low-income and the middle-income sections of the society. It is hoped that construction of the residential units under the project will help in reducing shortage of housing in the country, which currently is around 4,500,000 housing units⁶. The housing scheme will be spread over an area of 86 acres, which can accommodate construction of 714 houses and 636 apartments for about 1350 families⁷. Allotment will be as per the prescribed quota for various categories of eligible persons⁸.

1.2 Overview of Housing in Pakistan

According to the 1998 Census, the total number of housing units throughout the country is 19.3 million. According to the said Census, 67.7% housing units are in rural areas and 32.3% in urban areas. The overall housing stock comprises 39% katcha⁹ houses, 40% semi-pacca¹⁰ houses and 21% pacca houses. As per the Census report, the housing backlog at the time of the Census was over 4.30 million units¹¹. According to the Ministry of Housing, Government of Pakistan, the estimated additional requirement of housing is around 570,000 units per annum, whereas the annual production is just around 300,000 housing units, which is resulting in a recurring annual backlog of 270,000 housing units¹². According to the Ministry of Housing, GoPk, the average household size in the country is 6.6 persons and the occupancy per room is 3.3 persons¹³. It is estimated that in order to make up the backlog and to meet the shortfall in the next 20 years, the overall housing production has to be raised to 500,000 housing units annually¹⁴.

Appreciating the gravity of the situation and realising the potential of housing and construction as a productive sector of economy, the Ministry of Housing and Works, GoPk formulated the National Housing Policy, which was approved by the President / the Chief Executive of Pakistan during a presentation by the Ministry of Housing and Works on the 22nd June 2001¹⁵.

The major emphasis of the National Housing Policy, 2001 is on resource mobilization, land availability, incentives for homeownership, incentives to developers and constructors, and promotion of research and development activities to make construction cost effective. The underlying objective is to create affordability, especially for the middle-income and the low-income groups. One of the cornerstones of the Policy is to ensure development of housing for the poor and the needy as well as housing for the rural population through the use of different instruments like free land, cross-subsidy, concessionary finance, etc¹⁶.

One of the important initiatives of the Policy is to declare housing and construction as a priority industry in category “C”. As a result of this single step, the usual privileges, concessions, exemptions and remissions have become applicable to this industry in accordance with the policy of the Board of Investment (BOI) as applicable to industrial sectors. The objectives of this initiative are to¹⁷:

⁶ Pakistan Economic Survey, Economic Division, GoPk, 2018

⁷ Project brief as provided by the PHA-F

⁸ Bylaws governing allotment and the eligibility criteria are available at PHA-F website www.pha.gov.pk

⁹ Made of mud and or alike materials

¹⁰ Made of bricks, cement and steel etc.

¹¹ National Census Report 1998, Statistics Division, GoPk, 2000

¹² Office Files, Ministry of Housing and Works, GoPk, 2019

¹³ Pakistan Housing Authority Foundation, 2019

¹⁴ National School of Public Policy, Lahore 2019

¹⁵ Full text of the NHP is available at the website www.moh.gov.pk

¹⁶ National Housing Policy, Ministry of Housing and Works, GoPk, 2001

¹⁷ Ibid



- Accelerate housing activity and contribute towards employment generation and economic development
- Facilitate provision of housing inputs including land, finance, building materials, institutional and legal framework
- Analyse the culture of poverty and the forces generating ever increasing slums and katchi abadies including political, public, socioeconomic, bureaucratic and environmental forces
- Promote ways and means for housing development by enhancing affordability, saving capacity, human tendencies and potential
- Provide safeguards against malpractices, bureaucratic inefficiencies, institutional weaknesses and mafia assaults
- Develop indigenous and cost effective approaches particularly for the low income groups
- Make the Government as a catalyst and facilitator in case of land policy, financial policy, improvement of katchi abadies and slums, research and development and institutional development

Construction of the PHA-F's instant housing project is in line with the National Housing Policy and the Prime Minister's Housing for All Programme. Under the latter, the Government of Pakistan will construct five million housing units to reduce the existing backlog and to provide housing to the shelter-less¹⁸.

1.3 Brief Description of the Project

As mentioned earlier under the subsection on project's introduction, the project essentially is "Development of a Housing Scheme at Kuchlak Road, Quetta Balochistan under Prime Minister's Housing Programme". As per the master layout plan, the project will comprise the following major components:

- Construction of various category of housing units and apartments blocks as per the master plan
- Construction of various support infrastructure, amenities and public utilities as per the master plan
- Construction of internal roads/pathways
- Provision of parking areas
- Provision of essential amenities
- Beautification and external development
- Construction of greenbelts and grassy ground
- Construction of facilities infrastructure (generator, tube well operator)

As per the preliminary master plan, the scheme envisages construction of houses, apartments, commercial areas, amenity plots, roads, civil amenities like water supply, sewerage and sanitation network, waste collection and disposal services, wastewater treatment plant, healthcare and recreational services, mosques, playgrounds and greenbelts etc. The scheme envisions construction of four different categories of houses, based on plot size and covered area. The Category-I (Cat-I) houses will have a plot area of 4500 sft (45'x90') and covered area of 3636 sft each. There will be 55 Cat-I houses that will take up a total land area of 45.65 kanal. The Category-II (Cat-II) houses will have a plot area of 3200 sft (40'x80') and covered area of 2500 sft each. There will be 80 Cat-II houses that will take up a total land area of 47.20 kanal. The Category-III (Cat-III) houses will have a plot area of 1800 sft (30'x60') and covered area of 1629 sft each. There will be 361 Cat-III houses that will take up a total land area of 119.13 kanal. The Category-IV (Cat-IV) houses will have a plot area of 1125 sft (25'x45') and covered area of 1164 sft each. There will be 218 Cat-IV houses that will take up a total land area of 45.78 kanal. There will be two categories of residential apartments i.e., 3-bed and 2-bed apartments. The covered area of 3-bed apartments will be 1460 sft and of 2-bed will be 1195 sft. The apartments will take up an area of 62.30 kanal. As regard the support facilities and infrastructure, commercial plazas will take up 22.73 kanal, shops 6.47 kanal, petrol pump 1.27 kanal, and hotel 1.36 kanal (total commercial 31.83 kanal). Mosques will take up 9.33 kanal, public buildings 14.58 kanal, and graveyard 14.81 kanal. 10 acres have been reserved for NHA's RoW and 228.50 acres for the scheme's roads. The total open area for development of greenbelts and parks will be 58.49 acres. As regards the allotment quota, 30% will be for the federal government employees, 30% for the provincial government employees, 30% will be for the general public, 5% for shuhuda (Hazara community) and 5% for employees of the Ministry of Housing and Works. There will be 714 houses and 636 apartments in all, which will provide accommodation for about 1350 families of four to six members each¹⁹. **Plate 1.3a and 1.3b** are geographical maps of Balochistan and Quetta. **Plates 1.3c and 1.3d** are the master layout plans. **Plates 1.3e to 1.3o** are the 3-D elevations of the housing units. **Plates 1.3p to 1.3z** are the architectural maps of the individual units and apartments.

¹⁸ Home page at www.pha.gov.pk

¹⁹ Ibid

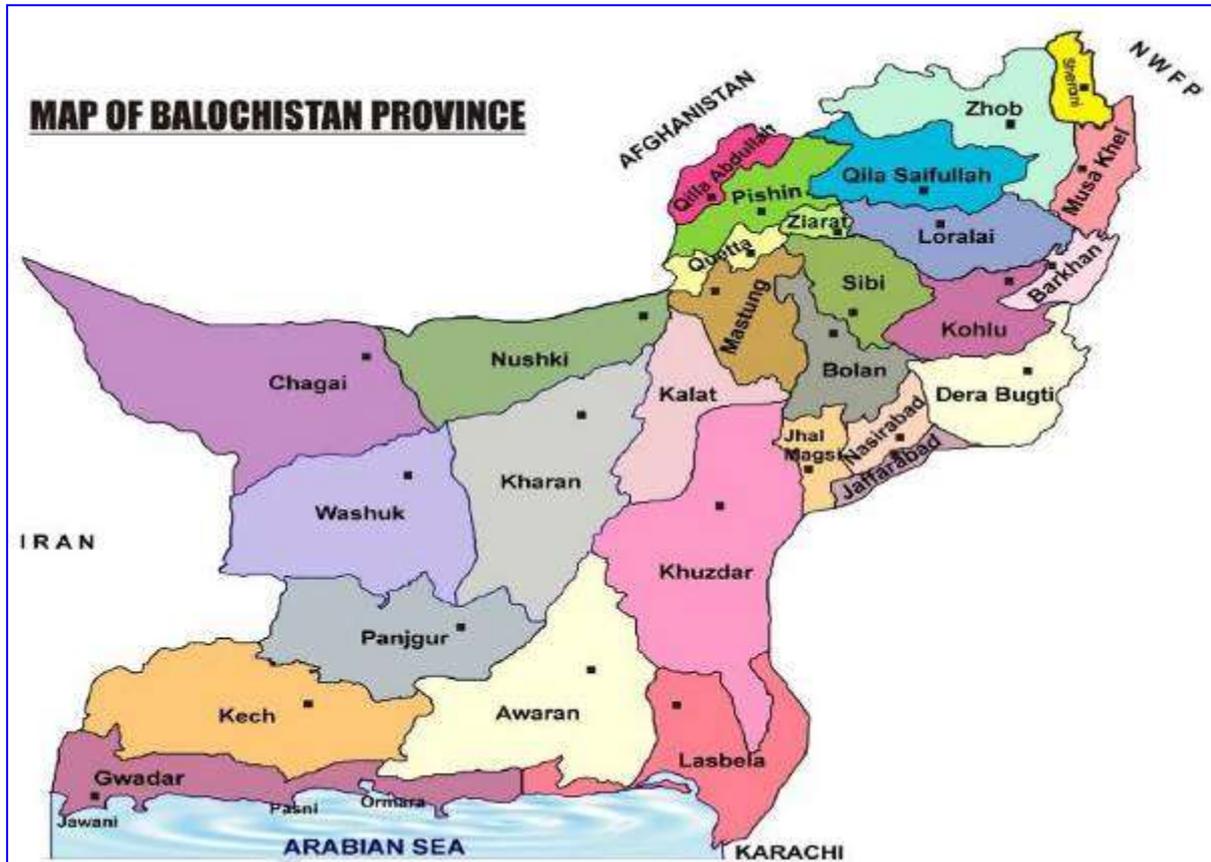


Plate 1.3a: Map of Balochistan showing location of Quetta



Plate 1.3b: Geographical Map of Quetta

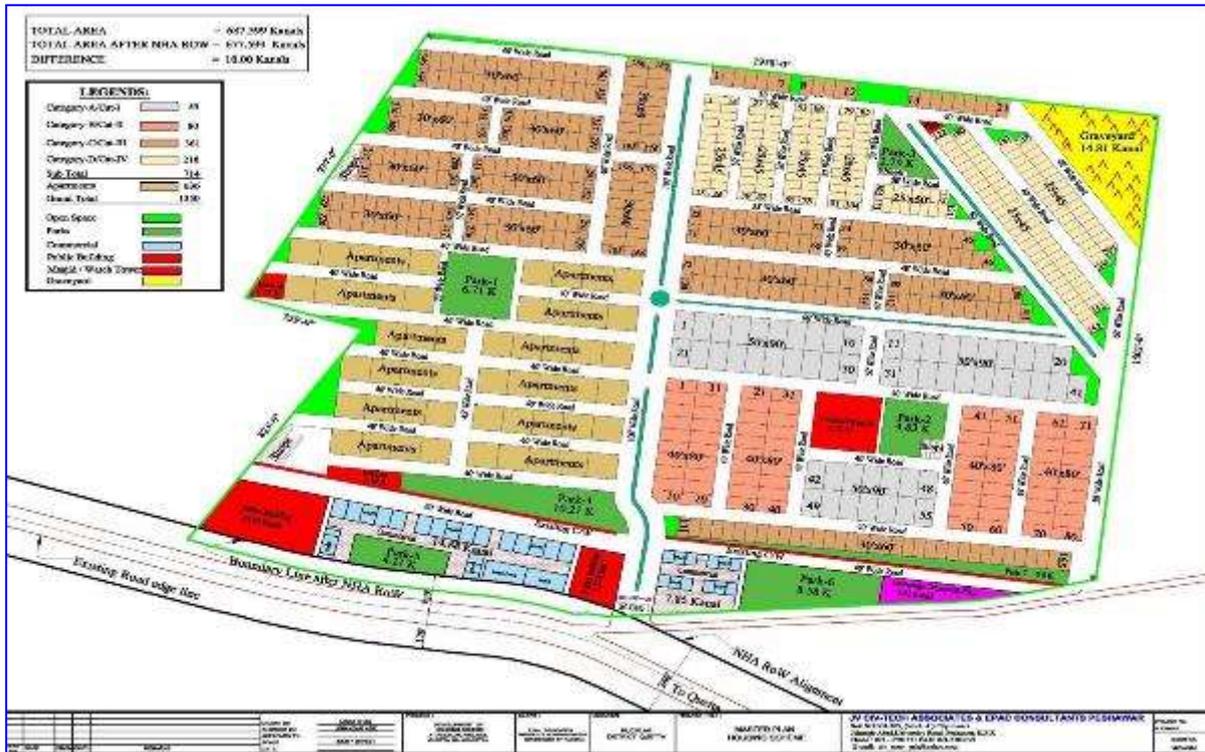


Plate 1.3c: Master Layout Plan



Plate 1.3d: Survey Map of the Site



Plate 1.3e: 3D View Category-I (50'x90')



Plate 1.3f: 3D View Category-I (50'x90')



Plate 1.3g: 3D View Category-II (40'x80')



Plate 1.3h: 3D View Category-II (40'x80')



Plate 1.3i: 3D View Category-III (30'x60')



Plate 1.3j: 3D View Category-III (30'x60')



Plate 1.3k: 3D View Category-IV (25'x45')



Plate 1.3l: 3D View Category-IV (25'x45')



Plate 1.3m: 3D View 3-Bed Room Apartments



Plate 1.3n: 3D View 2-Bed Room Apartments



Plate 1.3o: 3D View of Commercial Plaza



Plate 1.3p: Architectural Plan Category-I (GF)

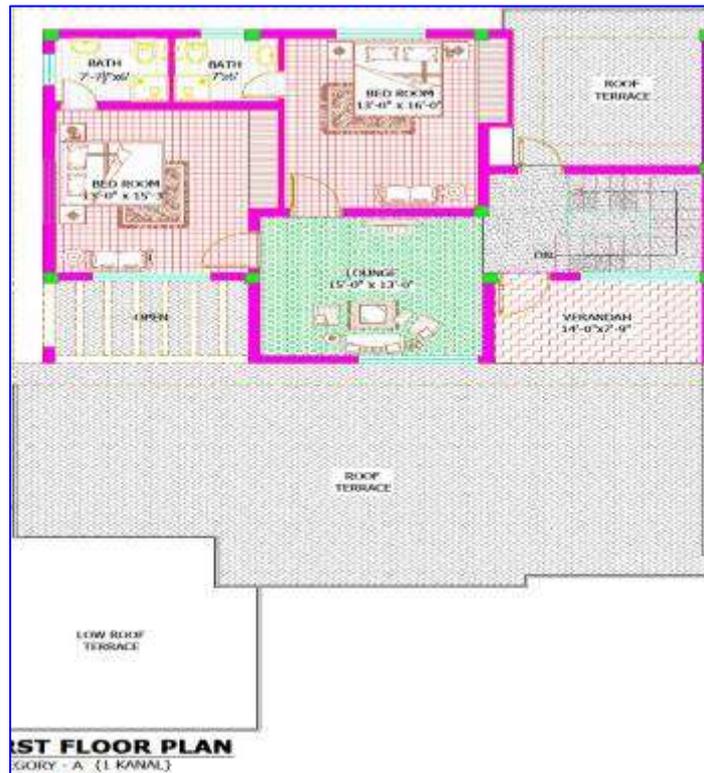


Plate 1.3q: Architectural Plan Category-I (FF)



Plate 1.3r: Architectural Plan Category-II (GF)



Plate 1.3s: Architectural Plan Category-II (FF)



Plate 1.3t: Architectural Plan Category-III (GF)

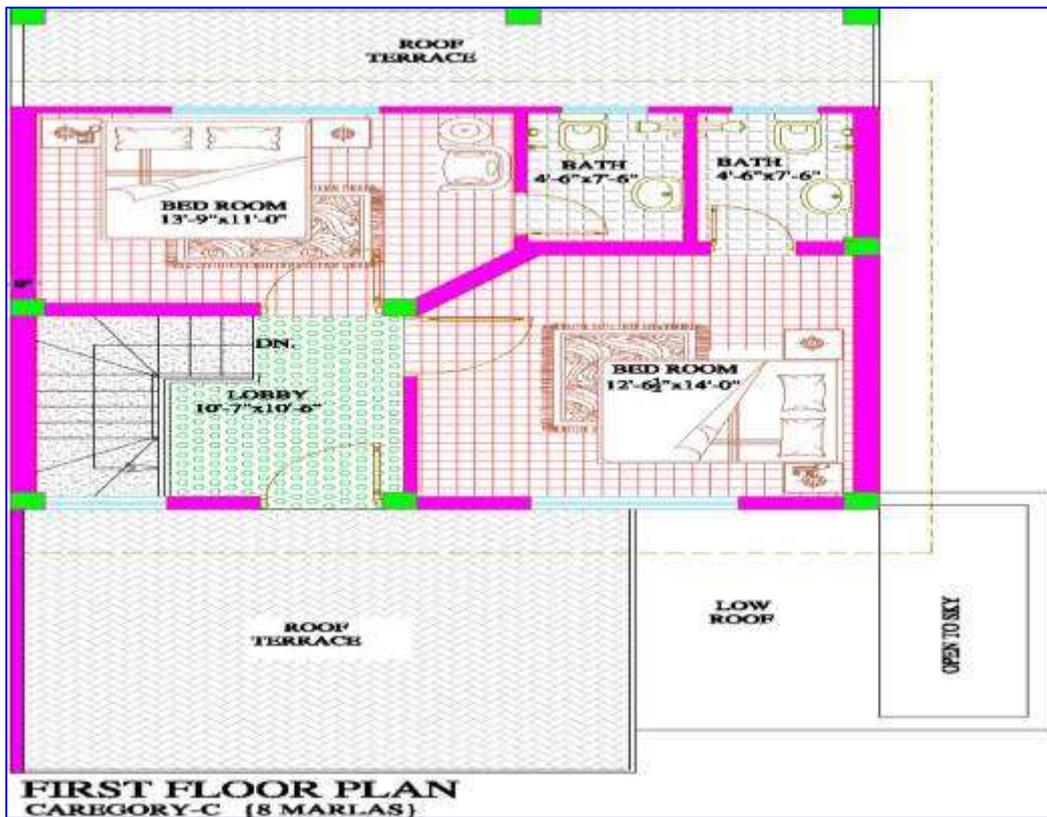


Plate 1.3u: Architectural Plan Category-III (FF)

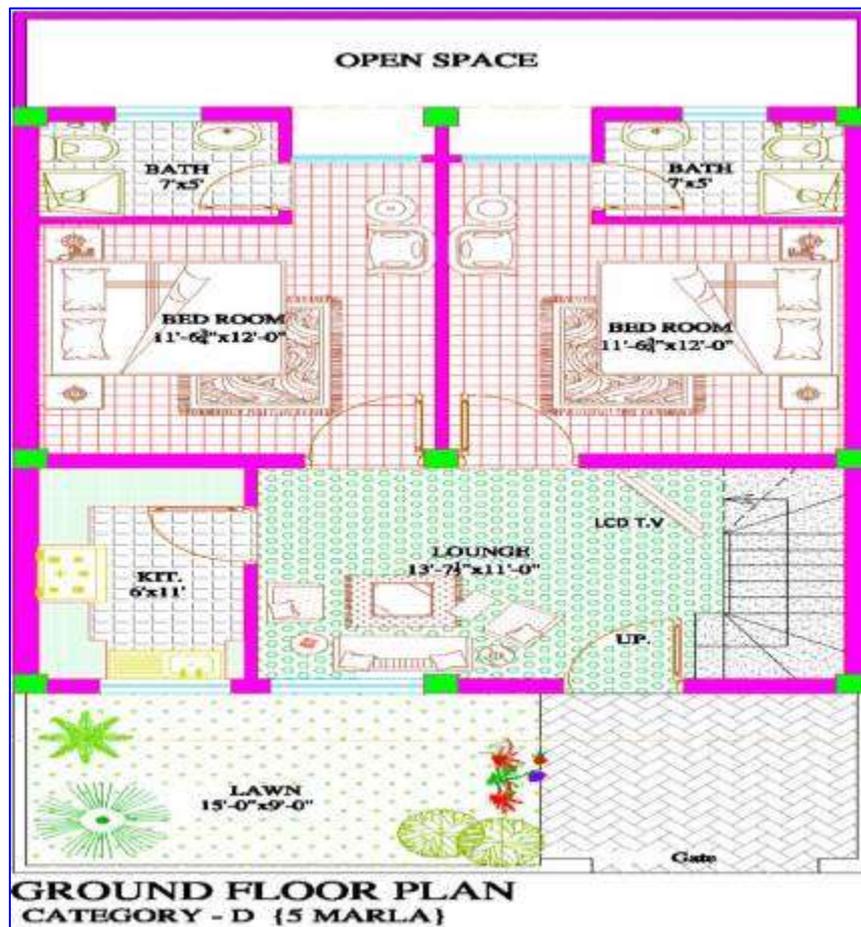


Plate 1.3v: Architectural Plan Category-IV (GF)

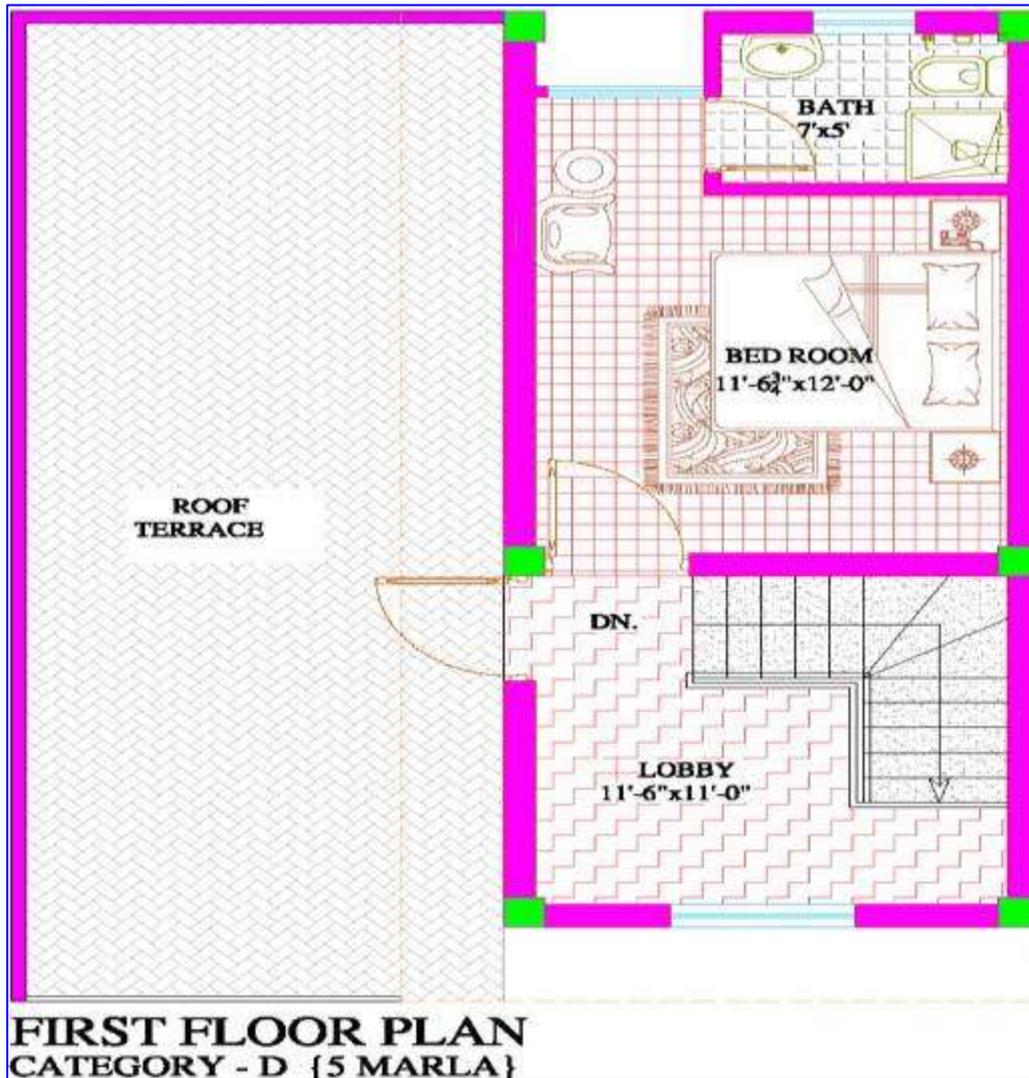


Plate 1.3w: Architectural Plan Category-IV (FF)



Plate 1.3x: Architectural Plan 3-Bed Room Apartments

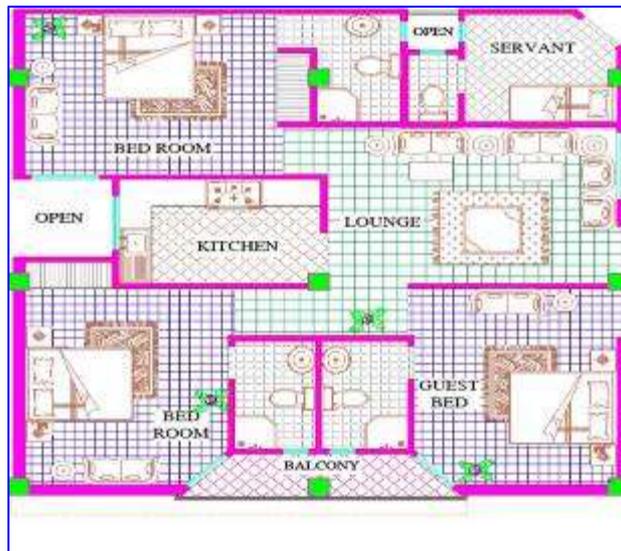


Plate 1.3y: 3-Bed Room Apartment (Single Flat)



G+2 FLOOR PLAN
(2-Bed Rooms Apartment)
Covered Area = 911.28
Outside and Stairs = 234.28
Use File = 1145.56

Plate 1.3z: 2-Bed Room Apartment Block

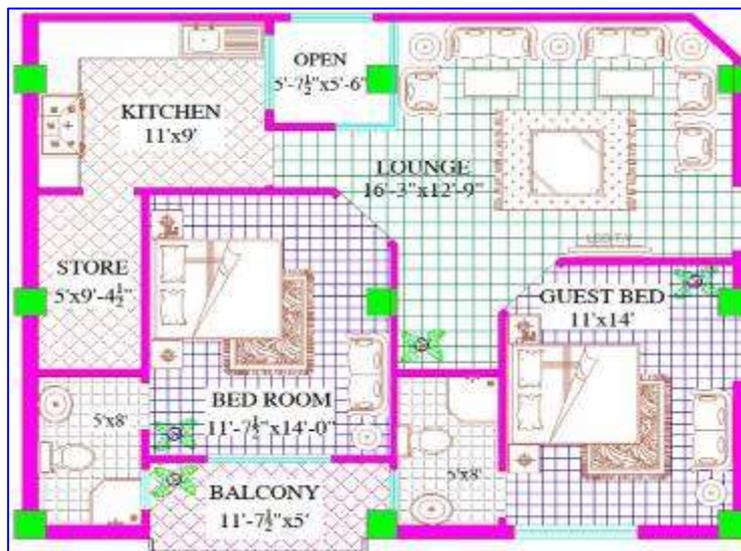


Plate 1.3aa: 2-Bed Room Apartment (Single Flat)



The project also provides for construction of internal roads and footpaths for providing access to the apartments. Whereas, the footpaths will be paved with tough tiles, the roads will be triple surface treated blacktop ones. The parking has been provided in the form of a collective parking area for the occupants, as shown in the layout plan.

The residential units will be fitted with almost all major civic amenities like water supply, sanitation, electricity etc. There will be number of overhead tanks for storing and providing round the clock supply of water to the occupants. In order to ensure healthy ambience and green environment, the project will have reasonable number of greenbelts and grassy lawns at various locations inside the colony premises. Besides providing recreational facilities, these greenbelts will provide playing areas for the young children. As per the master plan, approximate 15~25% land area is being reserved for developing the greenbelts.

As regard the number of housing units and the cost, the project envisages to construct different numbers of various categories of housing units, as depicted in the **Table 1.3a**, below. **Table 1.3b** depicts the tentative cost estimates based on applicable scheduled rates of Pak PWD and the NHA.

Table 1.3a: Category wise Number of Housing Units and Shops

Sr.	Category	Size	Number	Area (Kanal)	%	QDA Bylaw
1.	Category-I	50' x 90'	55	45.65		
2.	Category-II	40' x 80'	80	47.20		
3.	Category-III	30' x 60'	361	119.13		
4.	Category-IV	25' x 45'	218	45.78		
5.	3-Bed Apartment	C-Type (40' x 40')	216	62.30		
6.	2-Bed Apartments	C-Type (40' x 40')	420	--		
	Total Residential			320.06	46.55	55% Max
7.	Shops/Offices	13'-3" x 9'-6"	765	22.73		
8.	Sector Shops	10' x 15'	72	6.47		
9.	Petrol Pump		1	1.27		
10.	Hotel		1	1.36		
	Total Commercial			31.83	4.63	5% Max
	Total Open (Green Areas)			58.49	8.51	7% Min
11.	Mosque (Centre + Sector)			9.33		
12.	Public Buildings			14.58		
	Total Public Buildings			23.91	3.48	3% Min
13.	Graveyard		1	14.81	2.15	2% Min
14.	NHA RoW			10		
15.	Internal Roads/Paths			228.50	33.23	28% Min
	Grand Total			687.59	100	

Table 1.3b: Cost Estimates

Abstract of Cost	Description	Cost (Millions Rs.)
A		
1	Roads	243.732/-
2	Sewerage and Drainage	146.355/-
3	Water Supply	139.242/-
4(i)	Sui Gas	38.861/-
4(ii)	WAPDA	100.000/-
5	Landscaping	106.568/-
6	Additional Items	344.839/-
B	Building	2663.218/-
C	Apartments	2436.49/-
D	Commercial and Public Building	579.932/-
F	Consultancy Fee	200.96/-
G	Miscellaneous Cost	414.954/-
H	Cost of Land	--
I	Escalation	530.34/-
	TOTAL	7945.494/- M



1.4 Site's Location

The project will be located at Kuchlak road Quetta at the geographical coordinates 30°19'07.17"N, 66°56'29.55"E; 30°18'51.87"N, 66°56'23.34"E; 30°18'57.82"N, 66°56'01.08"E; and 30°19'17.03"N, 66°56'05.49"E and an elevation of 1610 metres above sea level (Plate-1.4a-1.4c). The site is approximately 14 km from the city of Quetta and other major offices of the GoBIn. The Colony will be well serviced by internal blacktop roads. The main approach road to the scheme will be Kuchlak road, which connects a large number of settlements situated along the said road. In this way, the site will be linked to Quetta and various other destinations. Resultantly, the site is easily accessible from all parts of the city, which will be of immense advantage for the residents. As regards the neighbourhood ambience, the site is an open, vacant and uninhabited parcel of land situated in the peripheral suburbs of Quetta city. The site, as per master plan of Quetta city is a vacant and unutilized parcel of land. Currently, the site per se is a clear parcel of land, owned by provincial Government of Balochistan, possession of which will be handed over to the proponent after completion of the due legal and codal formalities. The prominent key important around the site are:

- To the east: Private land owned by different landowners
- To the North: Approach road of the site
- To the west: Private land owned by different landowners
- To the south: Private land owned by different landowners



Plate 1.4a: Google Earth Imagery of the Site

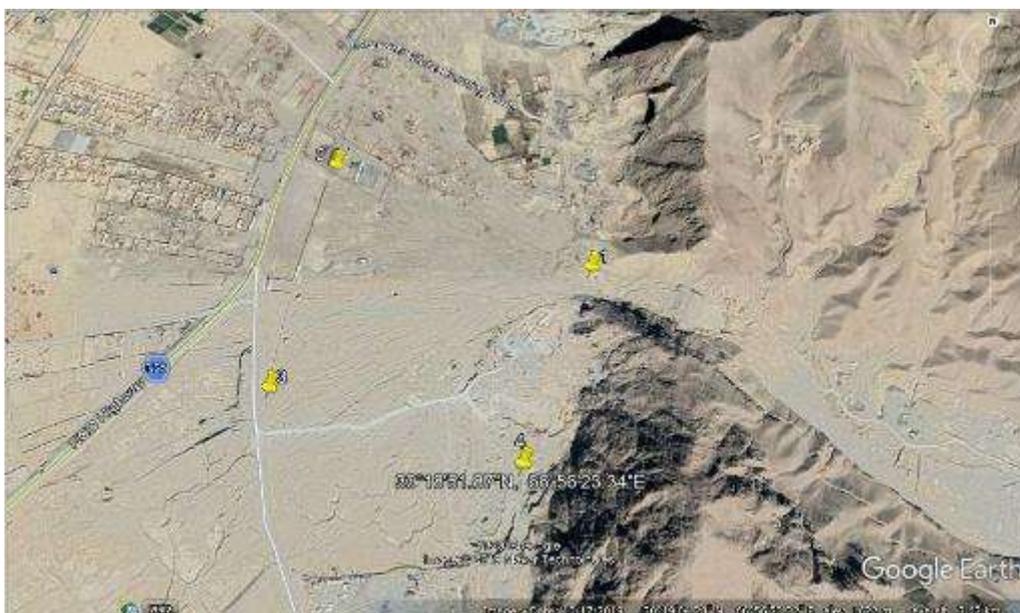


Plate 1.4b: Google Earth Imagery of the Site



The project will be located at a convenient place near the city of Quetta. Facilities of public transport, education, healthcare, and shopping will be made available for the residents of the scheme. Likewise, healthcare and other allied facilities will be made available for the occupants. The scheme will also have its own marketplaces, shopping areas, superstores and amenities within the scheme's premises. The main facility sites of Quetta and around will be easily approachable from the scheme. The site will also be accessible easily from the Air Port, Railway Station, and the General Bus Stand.

1.5 Background Information

Since the adoption of "Universal declaration of Human Rights" and its subsequent reaffirmation at the 1996 UN Habitat Conference, "Adequate Shelter for All" has been recognized as a basic human need²⁰. All Governments have been made responsible to take appropriate steps in order to promote protect and ensure proper realization of provision of adequate housing for its citizens. Despite being a signatory of the Declaration *ibid*, because of number of restraints and limitations, Pakistan could not make much headway in this respect. Resultantly, housing situation in Pakistan has deteriorated badly over the past many years and most of the policies announced for buttressing the sector, the latest being the National Housing Policy 2001, could not produce the desired results.

Realizing the fact that housing is one of the major pillars of the country's economy and that there is continuous degradation of housing quality and ever increasing shortfall in the housing stock, the Government decided to review various measures and policies formulated in the past in order to come up with such policy measures which are pragmatic and implementable. The emphasis of the Government would be to focus on the fundamental requirements of creating a favourable and conducive environment in the country, and to promote and facilitate this sector where the role of Government would change from provider to facilitator. Government resolves to evolve, implement and support such policy measures that would ensure adequate housing to all its citizens through proper planning and management, incentives and motivations. Special emphasis would be given to provision of micro finance to low income communities. The current housing impasse is the result of several problems confronting the country, including the political and economic environment, failure of the government to intervene on behalf of the consumer, the "Coop. Scandals", acute scarcity of credit, growing poverty, deliberate neglect of the housing sector, political ploy of katchi abadies issue, and archaic institutional and legal framework at all levels.

Housing and construction are well recognised to generate maximum employment opportunities and have contributed to economic revival and growth. Its multiplicative effects on the economy have the robust potential to generate industrial activities, develop small and medium enterprises (SMEs), self-employment opportunities, business, commerce and trade activities and at the same time encouraging utilization of indigenous natural and man-made resources. It will create social cohesion and environmental improvements. More significantly, the private and informal sectors play a very vital role in housing construction. It is high time that to alleviate the slump in the current economic situation in the country, housing and construction sector is harnessed to its fullest potential. The major housing problems and issues confronting the country can be summarized as hereunder:

- There is multiplicity of housing related issues in the country, which have primordial nexus to population explosion. The population of the country has grown from 84.254 million in 1981 to 130.580 million in 1998, showing an overall increase of 54.98 per cent. The current projected population is 219.736 million which is expected to increase to 221.388 million by 2021, based on an average growth rate of 2.61 per cent per annum.
- According to the 1998 census, the total number of housing units, throughout the country, was 19.3 million. 67.7% housing was in rural areas and 32.3% in urban areas. The overall housing stock comprised 39% katcha houses, 40% semi-pacca houses and 21% pacca houses. The housing backlog, as estimated according to the 1998 census, was 4.30 million units. The annual additional requirement is estimated around 570,000 housing units whereas the annual production is estimated around 300,000 housing units resulting in a recurring backlog of 270,000 housing units annually against the estimated household size of 6.6 persons and the occupancy per room of 3.3 persons.
- Continuing and unchecked growth of squatter settlements and creation of katchi abadies through encroachment of the state and the privately owned vacant land is a direct outcome of the housing shortage. It is estimated that 50% of the urban population lives in katchi abadies, slums, and squatter settlements. This in it itself is a challenge of great magnitude for replacement, rehabilitation and upgradation of the outlived housing stock. The Government, in January 2001, announced policy measures in this area, which were later on incorporated into the National Housing Policy.

²⁰ www.un.org/Conferences/habitat



- Land suitable for housing is becoming scarce particularly in and around urban centres. Prices of the land continue to increase with unchecked tendencies of speculation resulting in virtual non-availability of affordable land especially for the low-income groups
- The Housing stock is also rapidly aging and the present estimate suggest that more than 50% are over 50 years old and rapidly deteriorating due to general neglect, civic apathy on the part of the households and non-availability of housing finance at affordable mark-ups.
- Shortage of finance continues to be the major constraint in the production, maintenance and growth of housing. The share of housing, particularly in the public sector development portfolio, has remained scanty and continues to decline. From 10.9 percent in the First Five Year Plan, it dropped to 5.9 percent in the Seventh Five Year Plan and continues to decline further. The banking, insurance and investment agencies do offer mark-ups, which are affordable for the majority of the population. Therefore, their activity is confined to a narrow market of high-income groups. HBFC, the only formal public sector housing finance institution has constraints and remained inoperative for quite some time as its operations were to be made “Sharia Compliant”. It is necessary that HBFC expands its operations for maximum coverage and offer packages to low income groups besides financing of housing projects.
- Due to inflationary trends in the economy, cost of the building materials have sky rocketed. According to a recent survey, 81% of the households have a monthly income below Rs 7,000/- per month, which is indicative of growing income–shelter gap and deteriorating affordability of the majority of the households especially the low-income groups.
- There continues a lack of adaptation of innovative technologies and materials and lack of support to the research carried out in this field resulting in extravagant and skewed investment patterns in constructions and unreasonably high construction costs.
- Planning and building code standards and procedures need to be rationalized and simplified. Coordination of functionality and institutional capacity building within agencies concerned with the built environment i.e. municipality, development authorities, cantonment boards, etc. is the need of the time.

In the backdrop of the above discussion, Quetta, which is the largest metropolis and a hub of economic activities in the province of Balochistan, is facing acute shortage of housing. Thousands of people migrate to Quetta every year in search of economic prospects, jobs, and education. Its population, as per 1998 Census, is 0.760 and the estimated population for 2019 is 2.408 million. The district has a number of industries such as food processing industry, iron foundries, small steel mills, textile units, chemical factories and many others. The district is also famous for handmade carpet manufacturing in Pakistan. Quetta has the largest stock exchange in the province of Balochistan. It also has reasonable number of federal and provincial Government offices, corporate offices of many multinational companies, as well as other business houses. Real estate business is flourishing in Quetta, which has resulted in a thriving construction industry and initiation of several large housing projects in the city.

Quetta is also the cultural, intellectual and artistic centre of the province. Its faded elegance, busy streets and a variety of Islamic and British architecture makes it a city full of tradition, colour, contrast and surprise. The warm and receptive people of Quetta are known for their traditional hospitality. This is a city of vivid differences and of haunting nuances, where bustling bazaars, frenetic streets, glorious fading elegance, British Architecture and echoing atmosphere of city's masjids merge into a history that is both dramatic and fascinating. Its colourful life makes it the undisputed centre of cultural life of the province and it is no wonder that it is known as the cultural capital of the region.

Owing to geopolitical, cultural, economic, and historical importance, the influx of migrants and visitors to the city is increasing with every passing year. One of the outcomes of this heavy exodus is the persistent, rather growing, shortage of residential and living accommodation in the city. Unless this deficiency of accommodation is made-up, it is likely to increase with time. Despite construction of a large number of residential and housing projects by both the public and the private sector, there still is formidable shortage of housing in Quetta, which is attributable partly to heavy influx of migrants from other parts of the country and rural areas of Balochistan. Construction of new housing units will be a perpetual and unceasing activity.

1.6 Objectives Underlying the Project

The project aims at providing dignified housing accommodation in the city of Quetta, particularly to those who do not own a house²¹. The underlying objective is to reduce the existing shortage between availability and demand of housing in the country by providing affordable housing to Federal, Provincial Government employees and general public. The project will provide housing facilities to around 1350 families at a reasonable cost in Quetta. The shortage of housing units in Quetta could be resolved to some extent. The Master Plan comprises

²¹ PHA-F Website www.pha.gov.pk



of residential area, public buildings, roads and Parks as per Quetta Development Authority's By Laws. According to a conservative estimate, the number of household units in Quetta is 222,000, out of which 100,000 are urban and 122,000 are rural housing units. The estimated annual growth rate is 2.95 percent. The estimated current demand of housing units is more than 0.5 million, which is increasing at a projected rate of 5-7% per annum²². In addition to the objective of reducing the gap between demand and availability, uplifting and improving socioeconomic condition of the citizens, boosting the construction industry, creation of new job opportunities and income prospects for those engaged in transportation of raw materials and other construction sector activities can be counted as some secondary or indirect objectives of the project²³.

1.7 Construction Schedule

Although, construction schedule of the project has not been finalized, yet it is expected to be spanned over a period of two years from groundbreaking. Construction will start following completion of the requisite codal and legal formalities and grant of NOCs from the respective governmental regulatory agencies. Handing over of the constructed houses to the allottees is scheduled at the end of 2021.

1.8 Implementation Stages

Implementation of the project includes the following essential stages:

a. Preconstruction Stage

- Conducting feasibility study including the cost benefit analysis of the project
- Preparation of the project documents, layout plan and engineering drawings
- Conducting various investigative studies such as geo-technical studies, environmental impact assessment, and economic feasibility studies
- Obtaining consents, approvals, and NOCs from different agencies and departments of the Government
- Selecting the appropriate and the best suited machinery and equipment for manufacture of the intended products according to required standards
- Signing the contracts for various jobs, procurements, installations, and implementation of the project facilities
- Inviting applications from the Federal Government employees, Provincial Government employees, general public and other eligible for allotment of the housing units and holding of balloting for allotment in case the number of applicants is greater than the number of the housing units being offered

b. Construction Stage

- Procurement of constructional materials and their onsite stacking and storage
- Construction of campsite office and the labour camp including temporary toilets for the labour
- Demarcating the site structures and carrying out excavation and digging for construction of foundations
- Construction of superstructures
- Construction of a water storage tank for storing water for constructional needs
- Installation of generator and laying of temporary wiring for carrying on constructional activities
- Establishing an onsite testing laboratory and machinery repair and maintenance shop
- External development, landscaping, pavements, beautification, and floral ornamentations

c. Post Construction Stage

- Routine as well as emergency repair and maintenance works which may include repair and maintenance of machinery, equipment, infrastructure, superstructures, building and fittings etc.
- Maintaining round the clock water supply through overhead water reservoirs
- Regular and periodic cleaning and disinfection of the overhead water reservoirs
- Maintenance and upkeep of the greenbelts, trees, and grass
- Maintaining a trouble free wastewater disposal system and preventing choking of the sewer lines
- Ensuring uninterrupted functionality of the wastewater treatment system, if any
- Environmental management including wastewater collection and disposal, solid waste collection and disposal, janitorial services, horticulture, and beautification (plantation of trees, exotic shrubs, and flowers)
- Attending to and addressing the complaints of the residents and occupants in the scheme
- Regular environmental audit and compliance monitoring as per the schedule recommended by BEPA

²² Ministry of Housing, GoPk, Islamabad, 2019

²³ Project's brief as provided by the PHA-F



1.9 Construction Activities

The main activities for accomplishment of the project include the following:

- Essential topographic, hydrological, geological, and tectonic studies and surveys to determine the essential and the most appropriate engineering parameters for construction and structural designing
- Detailed architectural, engineering, environmental, economic, social, and cost-benefit feasibility and technical studies
- Completion of the codal and legal formalities and obtaining NOCs and go ahead clearances from the concerned regulatory agencies of the Government
- Preparation of the project documents containing project's scope of activities, mode of execution, and mechanism for supervision of construction
- Awarding of contract for construction and allied works as per proponent's code of practice
- Monitoring and supervision of the work for ensuring its proper execution quantitatively as well as qualitatively
- Removal of unspent materials, constructional wastes and debris
- Post execution operations, maintenance, and monitoring of all project activities and operations

1.10 Mode of Implementation

The development and construction of the housing scheme will be taken up as a staged activity right from laying of the foundation stone to complete construction of superstructures. The proponent (MD, PHA-F) intends to outsource various components to respective contractors to ensure quality construction under a third party monitoring and supervision mechanism and to effect timely completion of the project.

1.11 Labour and Human Resource Requirements

The project, being a medium sized developmental activity, will provide a good number of job opportunities for the skilled and the unskilled personnel. It is estimated that 70 to 90 persons of various trades will work at one time during construction phase and about 10-15 will be permanently engaged for repair and maintenance services during operation phase of the project. The number of indirect job opportunities and income prospects will be three to four times the direct opportunities. **Table 1.11** presents estimated HR requirements of the project during both stages.

Table 1.11: Estimated Manpower and HR Requirements (Construction)

Sr.	Job Category	Construction	Operation
1	Senior Engineers	02	00
2	Junior Engineers	06	01
3	Surveyors / overseers	04	02
4	Computer Operator	00	01
5	Field Laboratory Staff	03	00
6	Skilled Workers	20	05
7	Unskilled and Semiskilled Workers	40	05
8	Others (drivers, security guard etc.)	05	01
	Total	80	15

1.12 Studies and Surveys Relating to Environmental Assessment

The team of environmental experts in conjunction with the proponent undertook various studies and surveys relating to the project, such as:

- Studies and investigations into the baseline environmental profile of the project area
- Physical, geological, hydrological, and topographical studies and related surveys of the project area
- Survey for the assessment of noise levels and their likely impacts on the environment
- Water quality investigations and lab analyses
- Socioeconomic surveys and public consultations to ascertain stakeholders' concerns

The above-mentioned studies consisted of physical surveys of the site, taking samples for assessing water quality parameters, and visual observations of the site area. Random public consultations were conducted to ascertain apprehensions and perceptions of the resident population over the project. Direct interviewing and asking short questions was found the most suitable mode of soliciting the requisite information. Collective public gatherings were also found a reasonable mode of knowing public perceptions and learning their viewpoint. Whereas, the majority of the vicinity residents showed a kind of disinterest into the project. Their primary concern, nevertheless, was that construction of multi-storey buildings would jeopardize the privacy and purdah of their



low height houses. Their rooms and courtyards will be viewable from the multi-storey apartments, which is unacceptable to them. The above said objections of the neighbouring residents are graded as the major social concerns and a potential precursor of social conflicts in the future.

1.13 Intended and the Likely Benefits

The project is likely to provide housing facility and shelter to around 1350 families. Given the increasing cost of construction and relatively low income of the majority of the population, owning a house is becoming a farfetched dream of the masses. In this backdrop, the project can be termed as a silver line for the poor and needy primarily because of its affordable price. Although construction of the proposed number of housing units and apartments, when compared to overall shortfall of housing in the country, which runs into millions, is just peanuts; yet it can be graded as a beginning of a bigger target. Apart from providing housing and shelter, the project will also bring-in the opportunities of jobs, income generation and prospects of business for large number of persons.

1.14 Proponent

The Managing Director, Pakistan Housing Authority Foundation (MD, PHA-F) is the principal proponent of the project. However, the proponent may delegate his authority and powers to any of his subordinate in accordance with Authority's bylaws for carrying out all necessary acts with respect to the project's construction including preparation of architectural design and engineering drawings, conducting the environmental impact assessment, procurement of machinery and equipment, and other similar activities and removal of bottlenecks and troubleshooting.

1.15 Environmental Consultant

Green Revolution, who are leading environmental management house in the country, are the accredited consultant for conducting a detailed and in-depth EIA study of the project in accordance with the rules, regulations, and guidelines and provisions of other relevant laws in vogue. Green Revolution have their Head Office at Lahore with branch offices in all the four provincial capitals and the federal capital, Karachi, Peshawar, Quetta and Islamabad.

1.16 Focal Persons of the Proponent and Consultant

Focal persons each of the proponent and consultant with respect to the instant project will be as hereunder:

Table 1.16: Contact details of Proponent and Environmental Consultant

Proponent	Consultant
Managing Director Pakistan Housing Authority Foundation Ground Floor, Shaheed-e-Millat Secretariat, Jinnah Avenue, Islamabad email: info@pha.gov.pk	Mr. Kashif Ikram Sh. Chief Executive, Green Revolution Office No. 5, Ground Floor, Al-Majeed Centre Link Faridkot Road, Lahore email: greensul101@gmail.com



2

BASELINE ENVIRONMENTAL & SOCIOECONOMIC PROFILE



2. BASELINE ENVIRONMENTAL AND SOCIOECONOMIC PROFILE

2.1 Baseline Environmental Settings

The baseline or the existing environmental profile of the project's radius of influence serves as the standard benchmark against which various project activities are assessed with respect to their potential of affecting the environment adversely. It is therefore always essential to first establish the baseline profile in order to examine or predict the foreseeable impacts. The baseline settings serve as the yardstick for comparing the pre-construction and the post-construction scenarios. This very section outlines the pertinent features of the physical, biological, ecological, social, and cultural environment of the project area, which is followed in the next chapter by detailed deliberations on the foreseeable, or the likely environmental impacts of the project's construction and the operation phases with respect to their interactions with various components of the existing environmental profile.

Description of the environmental settings (also referred to as "baseline", "existing", "background", or "affected environment") is an integral part of an environmental impact/environmental examination study. There are two major purposes of describing the environmental settings in an impact study, namely:

- To ascertain and evaluate the existing environmental quality, as well as environmental impacts of the alternatives being studied, including the no-action or no-project alternatives, and
- To identify environmentally significant factors or geographical areas that could preclude the development of a given alternative or alternatives

Additional purposes of describing the baseline settings include, but not limited to, provision of sufficient information so that the decision makers and the study reviewers, who might be unfamiliar with the general location, may develop an understanding of the project needs as well as environmental characteristics of the study area.

One of the significant environmental impacts of a developmental scheme would be the changes likely to take place in the land use profile. If a developmental scheme substantially alters the land use pattern in a manner that involves massive conversion of agriculturally useful lands into agriculturally or otherwise less useful lands, or leading to deterioration of the ecological environment, then the impacts on the environment can be labelled as deleterious and harmful. If a developmental scheme envisages very little or negligible changes in the existing land use scenario or the new usages is of superior nature, then the scheme is considered an environment friendly activity to the extent of this parameter.

It would not be out of place to mention here that usually the format of an IEE/EIA is either project specific or area specific or a combination of both. Because of the nature of this project, the instant EIA has been prepared according to the combination format and the baseline environmental conditions, therefore, have been described according to this format approach. The text following hereafter contains a description of the baseline characteristics of the project area and the project district, wherever relevant.

2.2 Studies and Surveys for Baseline Profile

The team of experts, in conjunction with the proponent and other concerned agencies, undertook various studies and surveys relating to the proposition, such as:

- Study and investigation into the baseline environmental profile of the proposition area
- Physical, geological, hydrological, and topographic environmental survey of the proposition area
- Socioeconomic survey of the proposition area
- Health condition and nutritional status of the community
- Soil quality survey and investigations (not carried out)
- Water quality investigations and analyses (not carried out)
- Ambient noise profile at and in the vicinity of the project
- Social study surveys

The objectives of the social study survey were:



- Finding impacts of the project on the health, hygiene, life style and social value system of the inhabitants
- Any probable dislocation of the persons and property and removal of encroachments if involved
- Assessing the prospects of employment and job opportunity and impacts on the economic portfolio of the beneficiary population in the project area

The above-mentioned studies included visits and physical surveys of the sites and the nearby populations within a radius of 0.5 km from the site. The social surveys were carried out through random selection of the neighbouring residents. The residents and the communities surrounding the site, being the important stakeholders, were particularly consulted to solicit their views over various aspects of the project. Direct interviewing and asking short questions was found the best mode of soliciting the requisite information. By and large, the residents who were consulted during the study did not raise any serious objections onto construction of the project except of generation of noise from the heavy earthmoving machinery to be deployed during construction of the housing scheme. They were also of the view that construction of apartments will deprive them of open free spaces in the area. In order to examine the noise potential of the project, the study team carried out a noise measurement survey, results of which are presented in [Table 2.2](#).

Table 2.2: Noise Record at the Site

Date	Time	Noise (dB)	Date	Time	Noise (dB)
30.09.19	00:00	50	30.09.19	12:30	70
30.09.19	00:30	45	30.09.19	13:00	70
30.09.19	01:00	45	30.09.19	13:30	70
30.09.19	01:30	40	30.09.19	14:00	75
30.09.19	02:00	40	30.09.19	14:30	75
30.09.19	02:30	35	30.09.19	15:00	75
30.09.19	03:00	30	30.09.19	15:30	75
30.09.19	03:30	30	30.09.19	16:00	70
30.09.19	04:00	35	30.09.19	16:30	75
30.09.19	04:30	30	30.09.19	17:00	70
30.09.19	05:00	35	30.09.19	17:30	75
30.09.19	05:30	35	30.09.19	18:00	75
30.09.19	06:00	40	30.09.19	18:30	70
30.09.19	06:30	45	30.09.19	19:00	70
30.09.19	07:00	45	30.09.19	19:30	75
30.09.19	07:30	50	30.09.19	20:00	80
30.09.19	08:00	55	30.09.19	20:30	80
30.09.19	08:30	55	30.09.19	21:00	75
30.09.19	09:00	60	30.09.19	21:30	75
30.09.19	09:30	60	30.09.19	22:00	65
30.09.19	10:00	65	30.09.19	22:30	60
30.09.19	10:30	60	30.09.19	23:00	55
30.09.19	11:00	65	30.09.19	23:30	55
30.09.19	11:30	65	01.10.19	00:00	50
30.09.19	12:00	65	01.10.19	00:30	45

2.3 Environmental Description of the Project Area

The site is bound by the geographical coordinates 30°19'07.17"N, 66°56'29.55"E; 30°18'51.87"N, 66°56'23.34"E; 30°18'57.82"N, 66°56'01.08"E; and 30°19'17.03"N, 66°56'05.49"E and an elevation of 1610 metres above sea level. For the purpose of environmental description, a concentric area upto 0.5 km from the site has been taken as the project's zone of environmental influence ([Plate 2.3](#)). The site is situated in the periphery of the Quetta city on Kuchlak road, approx. 15 minutes' drive from the main city. The wider area around the site is fully inhabited and has turned into a big town near the city of Quetta. The scheme for residential colony at the site has been conceived by the PHA-F under the Prime Minister's Housing Programme. Accordingly, Government of Balochistan has provided around 86 acres of land for developing the housing scheme. The scheme will be located on Kuchlak road, which is an important busy provincial highway. On account of its location on Kuchlak road, the scheme is rated as one of the good liveable scheme. All major civic amenities like electricity, natural gas, groundwater, sewerage and drainage system will be made available in the scheme. Because of its strategic location, the site is approachable easily from the downtown Quetta. Large number of housing units and the newly developed urban areas surround the site. The predominant land use in the area is residential cum commercial.



Plate 2.3: Site's approximate Zone of Environmental Influence, red rectangle (adopted from Google Earth)

2.4 Site's Geophysical Environment

The geophysical environment is that part of the overall environmental profile of the area that relates to the geological and physical entities in the immediate radius of influence of the site. Amongst a number of environmental parameters, description of the geophysical environment includes particularly the description of the site, location of the project and geology, hydrology, and atmospheric features of the area surrounding the site. The subsections following hereinafter describe the pertinent features of the geophysical environmental of the project area and the district like geography, topography, geology, hydrology, seismology, meteorology, and other tangible components of the geophysical environment within the immediate radius of influence of the project.

2.4.1 A brief Intro of the Area/District

District Quetta has an area 2653 km² and area-wise ranks as the 4th smallest district in Balochistan. It lies between 66°41'40" to 67°17'25" East longitudes and 30°01'29" to 30°28'25" North latitudes. Administratively, the district consists of 2 Tehsils and 67 Union councils. It is at a distance of 690 km (aerial distance) south-west of Pakistan's capital city, Islamabad. Quetta was granted the status of district in 1975. The name originates from Pushto word Kawatta, which means a fort. Formerly, the town was situated within the walls of fort "A Miri", which is now used as an arsenal. Quetta is the provincial capital of Balochistan. It shares boundaries in the east with Ziarat, in the west with Qila Abdullah, in the north with Pishin, and in the south with Mastung districts. Locally, Quetta is also known by its ancient name of Shal or Shalkot based on its location at the north end of the Shal Valley. It is about 1,690 meters above sea level. Although a small city, Quetta has over the years acquired the typical hustle and bustle of a provincial metropolis. The city and cantonment continue to modernize at an equally fast pace. Quetta is attractive to tourists for its thrilling location, full of adventure and enjoyment. Some prominent bazaars of Quetta are Qandhari bazar, Liaquat bazar and Suraj Ganj bazar. Quetta has the 4th largest airport in Pakistan.

Until the middle of the eighteenth century, the history of Quetta was similar to the history of Qandhar in Afghanistan. In the eleventh century, it was part of the Graeco-Bactrian Empire. After that, it remained under the Kingdom of the Amir Sabuktigin and Mahmood Ghaznavi until the thirteenth century. In 1470, the Qandhar Kingdom was succeeded by the Timurs'. Between 1530 and 1545, the Province of Qandhar was in the possession of Mirza Kamran (The brother of a Mughal ruler). In 1622, the kingdom was brought under the sway of the Safavid Dynasty and remained there until 1709. Later Ghilzai came into power and ruled the area. Thereafter, Quetta was transferred to Nadirs. Later on, history relates that Ahmed Shah Durrani finally conferred Quetta to the Khan of Kalat as a "shall" (present). The British Government occupied Quetta during the first Afghan war in 1839. After Just three years, in 1842, it came back into the hands of the Khan of Kalat. Due to its strategic importance, it was re-occupied by Sir Robert Sandeman in 1876.



On 26 May 1876, a treaty was signed by Amir Yaqoob Khan of Afghanistan with the British Government at Gandamak. Thus, the conflict, which emerged as a result of the first and second Afghan war, came to an end. In 1883, Quetta was formed into a separate single administrative unit (Quetta Pishin District). Due to its geo-strategic importance, the British built Quetta as a garrison town. They extended the roads and railway network to Afghanistan and Iran. This situation remained unchanged until partition of the Sub-continent in 1947. Under the One-Unit system from 1955 to 1970, Quetta and Kalat were the administrative units in West Pakistan. After abolishing the unitary system, Quetta was declared as Capital of Balochistan. Until 1975, Quetta-Pishin was a single administrative unit. In that year, Pishin was declared a separate district. Very little is known about the history of the settlement in the district. However, it is certain that the Afghans and Brahvis are recent immigrants. The Pashtoons appear to have entered the district from the north east, emigrating from their home round Takht-e-Suleiman. Kasi (A branch of Afghan) are said to have migrated from their home around the Takht-i-Suleiman about eight centuries ago. They made their first settlement at Samli, a village near Quetta city. The Brahvis are offshoot from the Kalat territory and their presence in the district dates back to the eighteenth century. With the passage of time, Quetta began to expand and soon it turned into a beautiful small town. The British paid special attention to its cleanliness.

However, 31st May 1935 was a black day in the history of Quetta. An earthquake destroyed the Quetta city completely. The cantonment area, however, survived to a great extent. The reconstruction started soon after. Until 1947, Quetta was a small town. People used to call it Little London. But rapid population growth in terms of rural urban migration, and influx of Indian refugees increased the population at Quetta. Influx of Afghan refugees during the 1980s helped the slums to grow. New settlements in the form of housing schemes emerged at Satellite Town, Jinnah Town, Samungali Town, Model Town and Shahbaz Town. In Kachi Abadies, slums also began to develop. The process of settlement continues even today. Now Quetta has turned into an over-populated city. The most important archaeological site is Quetta Miri (a mass of indurated clay). The base of Miri is 183 meter long by 122 meter wide and rises 24.4 meter above the plain. The Miri is now used as an Arsenal. Some noticeable mounds are Kasiano Dozakh, between Katir and Kuchlak, Tor Ghund near Baleli and Tor Wasi between Panjpai and Muhammad Khel. Besides, some Karez of archaeological interest are found at Kirani, Sariab and Kachi Baig.

There is no perennial river in the district. The Quetta Lora comes out near Sariab and traverses the western side of Quetta valley. This Lora carries rain and wastewater near Baleli and continues northward through the Kuchlak Valley. Water of Quetta Lora is used for irrigation in villages like Khazi, Samungali and Nohsar. Hanna stream is one of the important sources of drinking and irrigation water in the district. It rises in the western slopes of the Zarghoon Range near Urak, about 21 km northeast of Quetta. It enters in Quetta valley near the Staff College and drains its northern parts. The Hanna stream is joined by Sora Khula and Ghundak Rud Nalla above Sheikh Manda village.

Quetta District is a multicultural and multi-linguist area. The principal ethnic groups in the district are Pashtoon, Baloch, Brahvi, Hazara and Punjabi. The Kasi, Bazai, Mashwani and Syed are sub-tribes residing in the area. Urdu, Punjabi, Pashto, Balochi, Brahvi, Sindhi, Siraki, Hindko and Persian are the languages spoken in the district. Urdu is commonly spoken by all ethnic groups. The international boundary line between Pakistan and Afghanistan at Chaman is at the far end of the Kuchlak road (Quetta Qila Abdullah road). Being in close proximity to Afghanistan, Quetta is the most suitable choice for visitors, zaireen and businesspersons coming from Afghanistan to Pakistan either by road or by air.

Quetta has been playing an important and vital role in country's politics, economy, culture, trade, and social life. The district has always been politically significant and produced a large number of leaders of stature and standing including the former Prime Minister and the Chief Minister of Balochistan. There have been many provincial and federal ministers, ministers of state, and advisors from the district. The district is also known for the wide variety of culture reflecting the traditions and customs of the area.

2.4.2 Location of the Site

The site is bound by the geographical coordinates 30°19'07.17"N, 66°56'29.55"E; 30°18'51.87"N, 66°56'23.34"E; 30°18'57.82"N, 66°56'01.08"E; and 30°19'17.03"N, 66°56'05.49"E and an elevation of 1610 metres above sea level. It is situated on Kuchlak road approx. 12 km northwest of Quetta city. The site is accessible from Kuchlak Road, which is a main and a busy road that links Quetta with district Qila Abdullah and various other important towns, cities, districts and other destinations. The essential civic amenities like electricity, groundwater, sewerage and drainage system will be made available at the site. **Plates 2.4.2a to 2.4.2f** present geographical location of the site as taken from Google Earth.

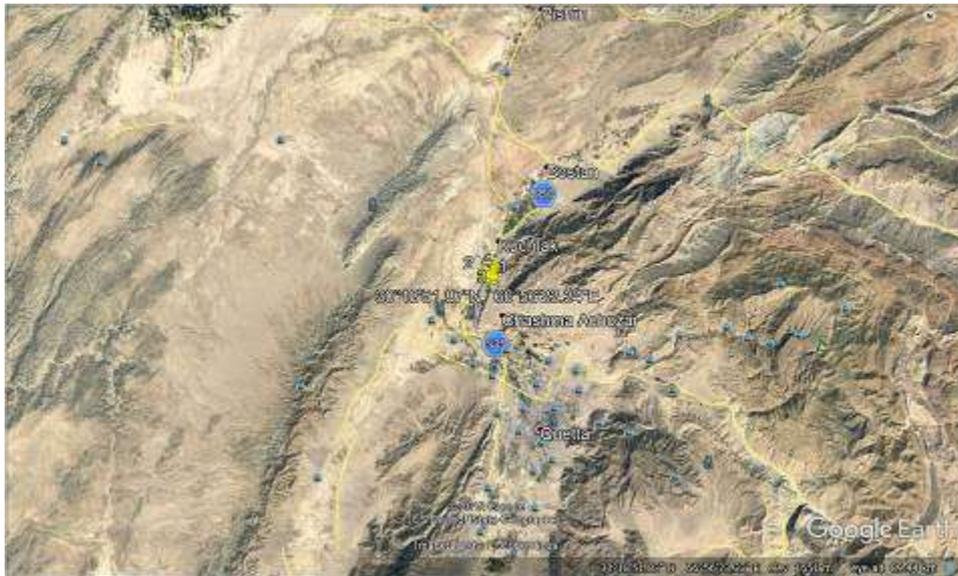


Plate 2.4.2a: A Google Earth Imagery of the Site



Plate 2.4.2b: A Google Earth Imagery of the Site

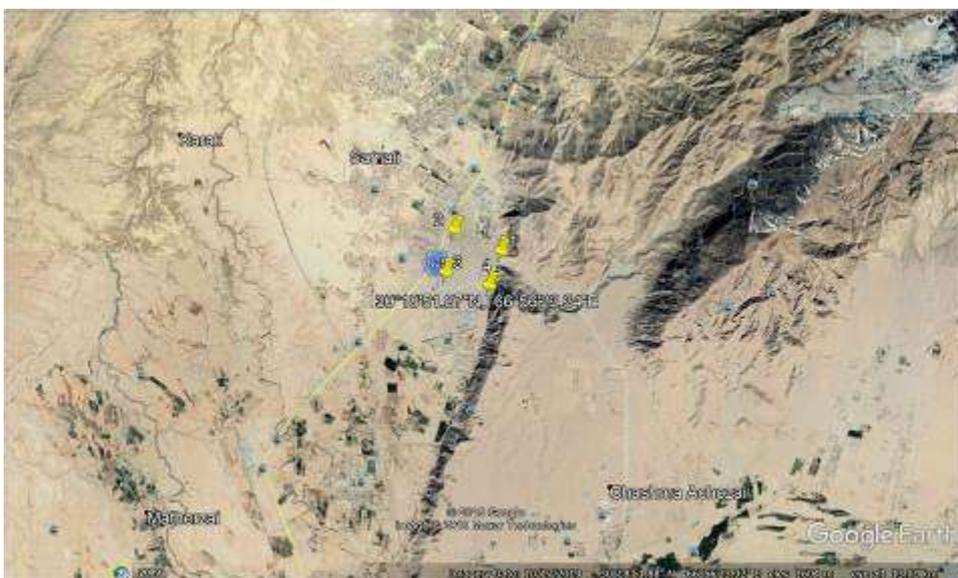


Plate 2.4.2c: A Google Earth Imagery of the Site

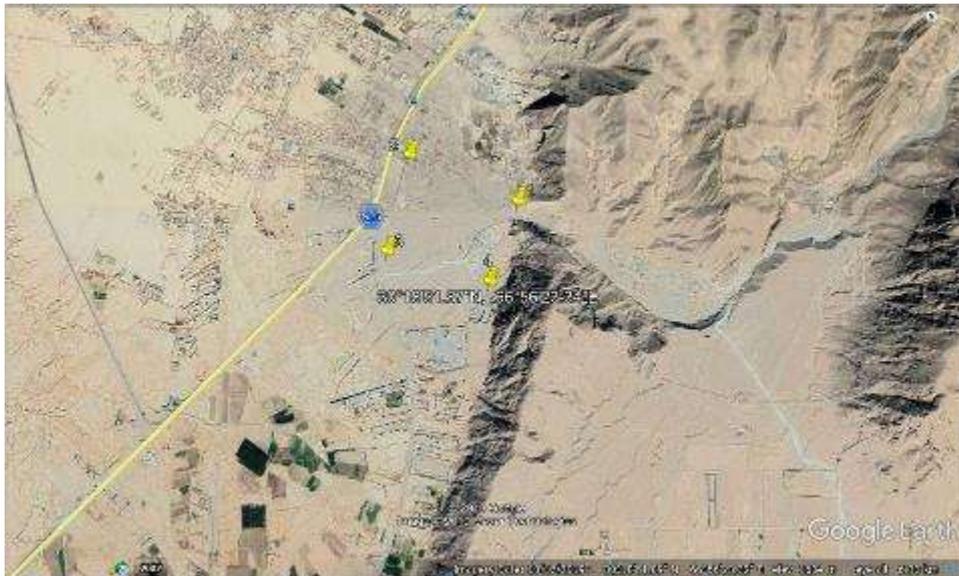


Plate 2.4.2d: A Google Earth Imagery of the Site

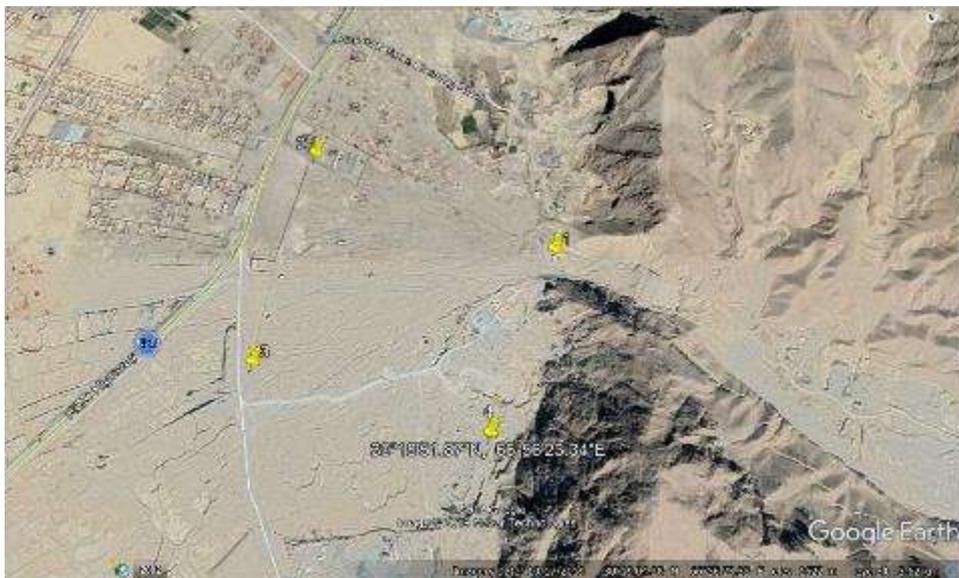


Plate 2.4.2e: A Google Earth Imagery of the Site

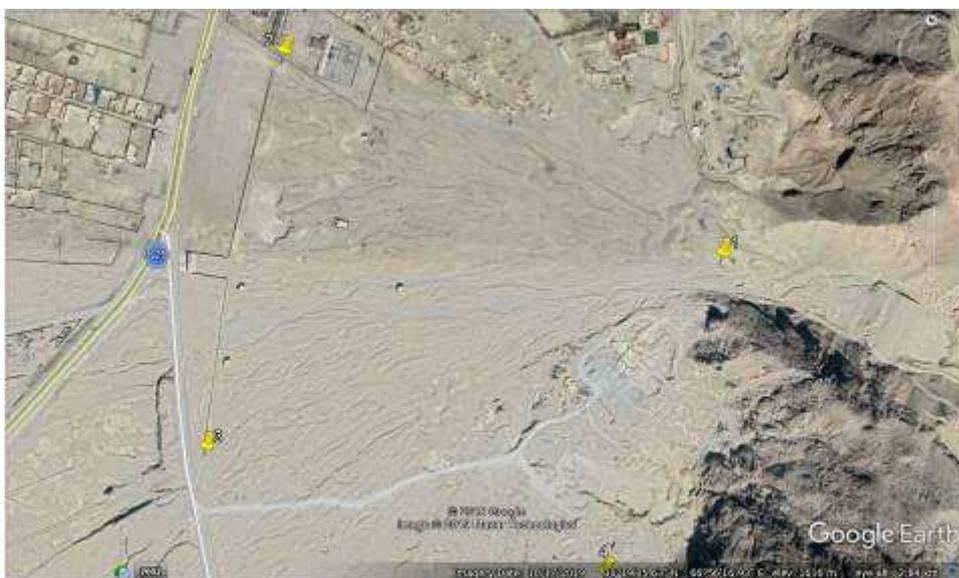


Plate 2.4.2f: A Google Earth Imagery of the Site



2.4.3 Geography

The site is bound on the west by an existing road, which will also serve as the approach road to the site; on the north, south and east by private land owned by different landowners. The housing scheme will be developed on an available and vacant parcel of land, owned by Govt of Balochistan, on Kuchlak road. Barring the above description, there are no other structures of prominence, monuments, antiquities or any important landmarks at, around or near the site.

2.4.4 Topography

Currently, the site is a vacant parcel of land situated on Kuchlak road, Quetta. Topographically, the site, being a part of district shares similar topographical features. Geographically, Quetta District is mountainous. The hill ranges are fairly uniform in character consisting of long central ridges from which frequent spurs descend. These spurs are intersected by innumerable gorges and torrent beds with varied ground in elevation of 1,254-3,500 meters. The Mashlakh, Chiltan, Murdar and Zarghoon are the important mountain ranges in the district. Quetta lies in the active seismic region. Therefore, earthquakes occur from time to time. The worst earthquake occurred in May 1935, when a large part of Quetta was destroyed and 60,000 people died. In February 1997, an earthquake measuring 7.1, on the Richter scale hit Balochistan that resulted in death of many persons in semi urban areas of the city. Apart from the above-mentioned aspects, the district does not exhibit any other special physical, geological and geomorphologic features²⁴.

2.4.5 Geology

Geologically, lands at and around the site, being a part of the wider area of Quetta, are mantled lightly with sedimentary calcareous deposits, which have been consolidated over the centuries. The underlying bedrock is composed of Precambrian to Metamorphic and Tertiary consolidated rocks. The overlying crust consists of Pleistocene to recent unconsolidated deposits of sand, clay, silt and rock stone. The formation age of the strata dates back to Pleistocene to recent times, the latter being predominant near the torrential paths and the former near the rocks²⁵.

2.4.6 Soil Morphology

By composition, soils at the site, which are contiguous with soils of Quetta district, are granular to amorphous mix of sand, silt, clay, and rock stone. The texture, morphology, and moisture holding capacities of these soils show some intrinsic variations as one travels from north to south and from east to west. The soil crust is composed of sedimentary deposits consisting of silt, clay, sand, and rock stone. Clay and silt formations occur in discontinuous layers with limited lateral extent. Their thickness is generally less than five meters²⁶. Because of their morphology, fertility and the yield per acre of the soils is good²⁷.

2.4.7 Seismology

According to the Seismic Survey Map of Pakistan, Quetta falls in the seismic zone, which has seismic activity equivalent to zone "2A" of the Earthquake Zones Classification of the United States Uniform Building Code, 1997 (UBC-97). This zone conforms to Zone-3 of the Earthquake Zoning of Pakistan and is associated with unknown geological conditions and the reported earthquake damage is "moderate". Nevertheless, earthquakes of magnitude up to seven on the Richter scale, which generate ground acceleration up to 0.1 g, have been reported for this zone²⁸. No major earthquake has been reported during past two decades in the district²⁹.

2.4.8 Surface Hydrology

There is not any perennial river in Quetta. The principal source of surface water are the seasonal torrents that rundown from the four mountains around Quetta valley. Hanna Urak basin is the main source of surface water for the city.

The pollution of surface waters in Pakistan has assumed serious proportions, primarily because of pouring of the untreated industrial and municipal effluents into the nearby rivers with impunity. This problem is more conspicuous in case of rivers that pass through or along the industrial districts. As a result of the unscrupulous pouring in of the effluents, the water quality of the rivers has been deteriorating. The canals are also not saved

²⁴ Wikipedia

²⁵ Geological Survey of Pakistan <www.gsp.com.pk>

²⁶ Ibid

²⁷ Ibid

²⁸ Ibid

²⁹ Ibid



from this nuisance of direct pouring of the raw sewage. However, Quetta is saved from this menace, as there is no perennial river here. **Table 2.4.8** presents typical surface water quality of the site/district.

Table 2.4.8: Surface Water Quality of the Site/District

Sr.	Parameter	Unit	Value
1	Alkalinity	m.mol/l	7.11
2	Bicarbonates	mg/l	369
3	Calcium	mg/l	50
4	Chlorides	mg/l	51
5	Hardness	mg/l	375
6	Iron	mg/l	0.07
7	Nitrate	mg/l	1.69
8	Phosphate	mg/l	0.28
9	Sulphates	mg/l	121
10	TDS	mg/l	780
11	Turbidity	NTU	0.8
12	pH	--	6.9
13	Total coliform	In 100 ml	5 – 8

(Source: Sub Soil Water Quality of the Site)

2.4.9 Hydrogeology and Groundwater

Owing to its location in a semi-arid zone, outside the monsoon belt, the rate of groundwater recharge at the site, through downward infiltration is poor. No hand pump was found installed near the site because usage of hand pumps for groundwater abstraction is fast declining mainly because of persistently lowering water table. Motorized pumps have replaced the hand pumps. The general quality of the groundwater near the site is satisfactory and meets the WHO Guidelines for potable water. The overland rainfall and infiltration from the precipitation runoff is a major source of groundwater recharge.

The Water and Sanitation Agency (WASA), which is the principal agency for water supply in the district, has installed number of tube wells in the district for drawing-up the groundwater and supplying it to domestic and commercial consumers. However, many residential and commercial establishments in the area also have their own private tube wells, with which they extract the groundwater directly. The number of existing tube wells and the pace of water abstraction exhibit the groundwater aquifers to be of small reserve. Construction of a new tube well is included in the work scope of the project. The groundwater at the site is of acceptable quality and fit for intended purposes.

The irrigation sources include tube wells and karez or springs. Most of the tube wells are privately owned and are maintained by community. Whereas, government installed tube wells are maintained by Irrigation Department. Majority of the crop cultivation area (6,972 hectares) is irrigated by means of tube wells, encompassing the 71.04% of the total irrigation sources, followed by Karez/Spring (29%) sharing thereby the area (2,842 hectares) in total. The total number of tube wells (141) installed by the government at 18.8% as against the privately installed (610) at 81.2%, is very low. More tube wells might be installed by the government, especially in those areas, where the culturable wasteland is lying fallow and uncultivated for the last couple of years but provided underground water position allows the potential for exploiting more water resources is to be envisaged. **Tables 2.4.9a, 2.4.9b, and 2.4.9c** present typical quality of groundwater at the site³⁰ and the number of tube wells in the district³¹.

Table 2.4.9a: Number of Tube wells in the District

Total			Diesel			Electric		
Pvt.	Govt	Total	Pvt.	Govt	Total	Pvt.	Govt	Total
610	141	751	--	--	--	610	141	751

(Source: Balochistan Development Statistics, 2018)

Table 2.4.9b: General Groundwater Quality of the District

Sr.	Parameter	Unit	WHO Desirable Level	WHO Max Permissible Level	Value
1.	Temperature				34°C

³⁰ Lab Report of the Groundwater of the Site

³¹ Balochistan Development Statistics, 2018



2.	pH	--	7.0~8.5	6.5~9.2	7.50
3.	Odour	--	Unobjectionable		Odourless
4.	Colour	P.C.U	05 Units	50 Units	Colourless
5.	Taste	--	Unobjectionable	Unobjectionable	Tasteless
6.	Turbidity ppm Silica Units	NTU	05 Units	25 Units	1.20
7.	Total Dissolved Solids	--	500	1500	620
8.	Calcium as Ca ⁺⁺	ppm	75	200	36
9.	Magnesium Mg ⁻⁻	ppm	50	150	15
10.	Total hardness as CaCO ₃	ppm	100	500	150
11.	Total alkalinity as CaCO ₃	ppm			350
12.	Sulphate as SO ₄ ⁻	ppm	200	400	140
13.	Chloride as Cl ⁻	ppm	200	600	24
14.	Conductivity at 25°C	µs/cm			880

(Source: Water Quality Testing Lab of PHE Deptt, GoBln, 2019)

Table 2.4.9c: Microbiological Quality of Groundwater of the District

Sr.	Parameter	Value
1.	Total plate count / ml	--
2.	Total coliforms (MPN/100 ml)	--
3.	Faecal coliforms (MPN/100 ml)	--
4.	E. coli (MPN/100 ml)	Not detected

(Source: Water Quality Testing Lab of PHE Deptt. GoBln, 2019)

2.4.10 Meteorology, Climate and Air Quality

The site, like rest of the district of Quetta, exhibits a cold and dry climate with moderate rainfall³². According to meteorological profile of Quetta, summers are generally not very hot with moderate humidity. Whilst, winters exhibit extreme cold and the temperature may drop to zero Celsius. Spring and autumn are the pleasant parts of the year. The mean winter temperature (December/January) ranges between 10.5°C to 14.5°C. The mean summer temperature remains around 30°C to 33°C with spikes crossing 38°C. The mean of the maximum temperature ranges between 29-30°C and mean of the minimum from 15-16°C³³. Approximately 50 percent of the average annual rainfall occurs during the months of July and August³⁴. The past climatic records indicate that rain rich years have been occurring at a cycle of 15-20 years with intervening dry period³⁵. The site being a part of the low lying hills of Central Balochistan, the general climatic pattern is characterized by a dry climate except during extreme summers, whence the humidity level in the air is a little higher than average. Quetta is outside the monsoon zone of the country. Therefore, there is hardly any rainfall during the monsoon period. The average annual precipitation of the district for the past 10 years (2009~2019) has been around 160 mm. The wind flow is gentle during most of the year with occasional and sporadic dust storms during peak summer. The rate of evapotranspiration in the built-up areas, where there are massive concrete structure, is lower compared to the open grassland/cropland in the periphery of the City. The wind flow at the site is remains gentle during most of the year with occasional and sporadic dust storms during peak summer. **Tables 2.4.10a to 2.4.10e** present meteorological profile, rainfall, temperature and humidity profile of the area³⁶.

Table 2.4.10a: Meteorological Features of the Area/District

Parameter	Description
Classification of climate	Sub mountainous (cold / dry)
Predominant wind direction	East / Northeast
Wind intensity	Weak to moderate
Average annual precipitation	160 mm
Rainy season	Unspecific
Dry season	Unspecific
Average annual temperature	22-23 °C
Average summer temperature	29-31 °C
Average winter temperature	10-12 °C

(Source: Pakistan Meteorological Department, GoPk, 2018)

³² Pakistan Meteorology Department, Quetta, 2018 (soft copy)

³³ Ibid

³⁴ Ibid

³⁵ Ibid

³⁶ Ibid



Table 2.4.10b: Month-wise Temperature Profile (Mean of Maximum)

Stn.	Month / Temperature (°C) (Mean of Maximum)												Avg
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Qta	15.7	17.3	19.9	26.5	33.9	36.8	38.4	35.4	31.3	27.6	21.1	20.2	27.0

Table 2.4.10c: Month-wise Temperature Profile (Mean of Minimum)

Stn.	Month / Temperature (°C) (Mean of Minimum)												Avg
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Qta	0.5	-0.5	7.5	10.1	15.6	20.8	22.5	18.5	12.5	7.0	1.4	0.7	9.7

Table 2.4.10d: Month-wise Humidity Profile

Stn.	Month / Humidity Level												Avg
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Qta	31.5	21.0	41.4	23.5	14.2	17.0	14.5	15.0	12.0	15.0	21.5	25.4	21.0

Table 2.4.10e: Month-wise Rainfall Profile

Stn.	Month / Rainfall (Precipitation)												Avg
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Qta	56.0	0.0	80.0	2.0	2.0	14.0	5.0	0.0	0.0	0.0	0.0	1.0	160

2.4.11 Air Quality

The air quality profile of district Quetta shows concentrations of some of the quality parameters higher than the WHO Guideline Values and those prescribed under the NEQS. According to a joint air quality investigation of the major districts in the country by the Pak-EPA and the Japan International Cooperation Agency (JICA), the average suspended particulate matter (SPM) in the study districts was 6.4 times higher than WHO Guideline Values. The levels of sulphur dioxide, carbon monoxide, and oxides of nitrogen also exceeded the acceptable standards in some areas, but the average levels were below the Guideline Values³⁷. Another similar study revealed higher concentrations of SPM in the ambient air³⁸. However, barring congested urban centres, air quality in rest of the province generally conforms to WHO Guideline Values³⁹. At the time of visit inspection, the general atmosphere in and around the site, was found smeared with low-lying suspended particulates but with reasonably fair visibility. **Table 2.4.11** presents typical air quality profile of the site/district⁴⁰.

Table 2.4.11: General Air Quality Profile of the Site/District

Parameter	Ozone (ppb)	SO ₂ (ppb)	NO _x (ppb)	NO (ppb)	CO (ppm)	Dust ug/m ³	Humidity (%)	W/speed (m/s)
Conc.	6.3	10.0	41.3	29	8	423.7	25-45	1.0-2.1

(Source: Air Quality Monitoring Data, Pakistan Meteorological Department, Quetta, 2018)

2.4.12 Effluent Disposal

Currently, there is not any sewerage and drainage system for the site. A fully functional and appropriate wastewater collection, drainage and treatment system will be developed and constructed as a part of the master plan of the scheme alongside construction of a storm water collection and disposal network. The sanitation and sewerage system of the site will ultimately join with the main sewerage system of WASA, Quetta.

2.4.13 Background Radiological Characteristics

There are no known background radiological characteristics in and around the site. The X-ray machines, scanners, and the radiotherapy equipment in use at the biomedical facilities at Quetta city do have radioactive sources installed in them. However, the quantum of emission of radioactivity from these sources is negligible and does not contribute much towards background ambient radioactivity levels⁴¹.

2.5 Ecological and Biological Environment

The ecological and biological environment of an area is generally considered sensitive to large-scale developments. Disturbances and imbalances in the ecological and or biological environment can adversely affect

³⁷ 3-Cities Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad), JICA/Pak-EPA, 2001

³⁸ 2-Cities Investigation of Air and Water Quality (Gujranwala and Faisalabad), JICA/Pak-EPA, 2003

³⁹ Air Quality Monitoring in Six Districts of Punjab using Physico-Chemical Techniques, EPD, GoPb, 2005

⁴⁰ Ibid

⁴¹ Based on site visit by Experts Team



the biodiversity features of an area. The biodiversity of an area generally reflects the abundance and richness of the biological and or the ecological resources.

2.5.1 Forests, Habitat and Ecologically Sensitive Areas

The site per se is devoid of any specific or major plantation except a few ordinary trees, the number of which is less than ten. There are no major forest plantations within the zone of influence of the project. However, there are fifteen (15) notified forests in Quetta district, which include Dhobi Ghat, Zangi Lora, Zarghoon North, Zarghoon Central, Marri Chak, Spin Karez, Karkhasa, Mazar, Khur, Tur, Tagha Torghar, Babri, Maslakh, Southern Maslakh, and Takatu, measuring 108,008 hectare in total. All the above named forest plantations are located far away and outside the radius of influence of the site. Moreover, there are no horticulture and or wildlife parks and planned gardens at or around the site. The linear plantations along the roads, railway line, and water channels constitute another floral resource of the district⁴².

It may be mentioned as a passing reference that owing to consistent human interventions over centuries, the existing natural habitat of the area is largely a modified form of the original habitat of tropical thorn forests. This has led to a changed landscape and loss of wildlife. The predominant habitat of the district is the Tropical Thorn Forest.

2.5.2 Local Flora

Apart from some scattered and isolated trees at the site, there are no other large-scale plantations in and around the site. Site observation revealed that there are no known floral resources at the site except some indigenous varieties of trees. The major portion of the site is devoid of any tree plantation. The major tree species are Obusht Apurs or (*Juniperous excelsa polycarpus*), Wild Ash (*Fraxinus Xanthoxyloides*), Shinay or Wild pistachio (*pistatio khinjak*), Surai (*Rosa beggeriana*), Anjir (*Ficus johannis*), etc. In the valleys, Ghaz (*Tamarix spp*) is found in streambeds. The main shrubs and bushes are Adang (*Lonicera hypoleuca*), Chank (*Cerasus rechingrii*), Delako (*Convolvulus spinosus*), Gringosehchob (*Spiraea brahuica*), Makhi (*Caragana ambigua*), Mateto (*Salvia cabulica*), Mazhmunk (*Amygdalus brahuica*), Phiphal (*Daphne mucronata*), Saisubai (*Onobrychs cornuta*), Sehchob (*Cotoneaster afghanica*), Shenalo (*Astragalus stocksii*), Tharkha (*Artemisia maritime*), Oman (*Ephedra nebrodensis*), Wild almond (*Prunus ebernea*), Zralg (*Berberis lyceum*) etc. The ground cover is constituted mainly by Herbs like Atambae (*Valerianella szovitsiana*), Cheir (*Ferula costata*), Kamha (*Ferula ovina*), Sagdaru (*Heliotropium dasycarpum*), Ushi (*Ferula oopoda*) etc. and grasses like Adin (*Phacelurus speciosus*), Gasht (*Stipa trichoides*), Hawae (*Cymbopogon jawarancusa*, *C. commutatus*), Kaj (*Chrysopogon aucheri*), Kholambae (*Avena sterilis*), Lashabae (*Poa bulbosa*), Sarandu (*Biossiera squarrosa*), etc.

The district has a reasonable area under forest and a considerable area has been conserved as State Forest or Wildlife Protected Area. The rest of area is unclassified wasteland (mostly community owned). Overall naturally occurring vegetation, including shrubs, bushes and grass can aptly be termed as rangelands. These rangelands are substantially contributing to the local economy of the district as forage source for their livestock. There are fifteen (15) notified forests in Quetta district, which include Dhobi Ghat, Zangi Lora, Zarghoon North, Zarghoon Central, Marri Chak, Spin Karez, Karkhasa, Mazar, Khur, Tur, Tagha Torghar, Babri, Maslakh, Southern Maslakh, and Takatu, measuring 108,008 hectares in total. Moreover, there is one (1) notified protected area, which is Hazarganji Chiltan National Park, measuring as 27,427 hectare in total. Management of most of the notified forests, presently, does not match with the objectives initially designed, because of lack of ownership by stakeholders and managerial authorities. Such a situation, coupled with increasing population, has increased the rate of degradation of these forests manifold. The Hazarganji Chiltan National Park was established in 1980 for the conservation of Chiltan Markhor (Wild Goat), its associated biodiversity and habitat. The park is an excellent example of the representative fauna and flora of Quetta valley. There are 18 mammals, 106 birds, 17 reptiles and 225 plant species found in this park. Every year, students, adventurers and general visitors visit this park for pleasure and research. At the entrance of the park, a natural history museum has been established, which provides information, regarding flora and fauna, to the visitors. The Forest and Wildlife department is also managing two recreational parks in Quetta; these are Mianghundi Recreational Park and Karkhasa Recreational Area. These parks are excellent examples of eco-tourism concept. Roadside plantations have been established along almost all major roads in Quetta city, which may include Eastern By-pass, Western By-pass, Quetta Chaman Road, Airport Road, Hazarganji-Dasht Link Road, Sariab Road and Zarghoon Road plantations. In fact, raising linear plantations along roads is a real challenge, which has been met over years with patience. With restructuring (widening) and new alignments of roads, such plantations have been uprooted time and again in Quetta town to reach the present shape. **Tables 2.5.2a and 2.5.2b** present the vegetation zone distribution and common flora of the wider area.

⁴² Brief on Forest Department, GoBl, 2019


Table 2.5.2a: Vegetation Zone wise Flora of District Quetta

Sr.	Vegetation Zone	Description
1.	Uphill steep rocky cliffs	Like Chiltan, Takatu, Murdar and Zarghoon hills, where <i>Juniperus Excelsa polycarpus</i> is the predominantly climax species associated with <i>Pistacia khinjak</i> and <i>Fraxinus xanthoxyloides</i>
2.	Foot hills and Piedmont Plains	Mostly modified for urbanization, agriculture and other land uses. However, wherever the area is still undisturbed, it is dominated by a variety of shrubs like <i>Artimesia meritima</i> (Tharkha), <i>Prunus ebernea</i> (Wild almond), <i>Caragana ambigua</i> (Makhi), <i>Berberis lyceum</i> (Zralg) and <i>Sophora grifithii</i> (Ghuzaira) associated with herbs and grasses
3.	Dry stream beds	Tamarix Spp. is commonly seen

Table 2.5.2b: Some Common Flora of the Area along with Botanical Names

Sr.	Common / Local Name	Botanical Name
1.	Juniper	<i>Juniperus excelsa polycarpus</i>
2.	Artemisia	<i>Artemisia meritima</i>
3.	Ephedra	<i>Ephedra nebrodensis</i>
4.	Ephedra	<i>Ephedra intermedia</i>
5.	Morae/Ajwain	<i>Thymus surphyllum</i>
6.	Zralg	<i>Berberis lycium</i>
7.	Surai	<i>Rosa beggeriana</i>
8.	Shinshobae	<i>Perowskia abrotanoides</i>
9.	Sursanda	<i>Hymenocrater sessilifolius</i>
10.	Kala Zira	<i>Carum bulbocastanum</i>
11.	Spandae	<i>Paganum hermala</i>
12.	Valanae	<i>Mentha sylvestris</i>
13.	Walaghunai	<i>Dephne oleoides</i>
14.	Gung	<i>Vitex agnus-castus</i>
15.	Jand	<i>Prosopis spicigera</i>
16.	Van	<i>Salvadora obeoides</i>
17.	Peelu	<i>Salvadora Percica</i>
18.	Keekar	<i>Acacia Nilotica</i>
19.	Shisham	<i>Dalbergia</i>
20.	Baqain	<i>Azadrachta indica</i>
21.	Shreen	<i>Albizzia Lebeck</i>
22.	Popular	<i>Popules deltoids</i>
23.	Sufeda	<i>Euclptus canaldulensis</i>
24.	Pippal	<i>Phycus Religiosa</i>

(Source: Forestry and Wildlife Department GoBln, 2019)

2.5.3 Local Fauna

There is no specific fauna either indigenous to the site or even within the radius of influence of the project. Similarly, there are no special resident or migratory species of aviary, aqua, or wildlife indigenous to the site. As such, the biodiversity features are insignificant. The site being fully urbanized, no wildlife is seen around the site. Wildlife habitat type is Dry Steppe. Hazarganji Chiltan National Park is an outstanding example of representative fauna of the district. The key habitats of the district are Chiltan, Takatu, Murdar and Zarghoon hills, where following species could be found. **Tables 2.5.3a and 2.5.3b** present the wildlife distribution and common fauna of the wider area.

Table 2.5.3a: Fauna Distribution in Quetta

Sr.	Type	Description
1.	Mammals	Suleiman Markhor, Chiltan Markhor, Wolf, C common red fox, Blanford's or Afghan fox, Asian jackal, Striped hyena, Indian crested porcupine, Cape hare, Hedgehog, Migratory Hedgehog, Beech or stone marten, Marbled pole cat, Afghan pika, House mouse, Long tailed hamster, Grey hamster, Persian jird, etc.
2.	Birds	Accentor, Bulbul, Bunting, Chat, Chough, Chukar partridge, Eagle, Falcon, Lark, Magpie, Owl, Shrike, See partridge, Vulture etc.



3.	Reptiles	Lizards (<i>Agama</i> , <i>Monitor</i>), Afghan Tortoise (<i>Agrionemys horsfieldii</i>), Saw-scale viper (<i>Echis carinatus</i>), Levantine viper (<i>Macrovipera lebetina</i>), etc.
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Table 2.5.3b: Some Common Fauna of the Area along with Zoological Names

Sr.	Common / Local Name	Zoological Name
1.	Geedarh	<i>Cannis aurius</i>
2.	Sayyarh (Khargosh)	<i>Lepus capensis</i>
3.	Percupine (Seh)	<i>Hysterix Indica</i>
4.	Black partridge (Teetar)	<i>Electoris melanocephala</i>
5.	Eagle (Cheel)	<i>Mitrus migrans</i>
6.	Vultures (Giddh)	<i>Gyps futros</i>
7.	Bulbul	<i>Pycnonodus xynthopygos</i>
8.	Pigeon (Kabootar)	<i>Treron waalia</i>
9.	Dove (Fakhtha)	<i>Streptopilia roseogrisera</i>
10.	Ducks (Batakh)	<i>Anas spp</i>

(Source: Forestry and Wildlife Department GoBln, 2019)

2.5.4 Protected and Ecologically Sensitive Areas

There are no notified ecologically sensitive areas at or around the site. There is one (1) notified protected area, which is Hazarganji Chiltan National Park, measuring 27,427 hectare in total⁴³. However, it is situated far off the site. Likewise, there is no wetland of national or international importance located in the district. However, Hanna Lake and Spin Karez support migratory bird population during their seasonal migration.

2.6 Socio-Cultural Environment

The sociocultural environment represents the demographic profile, social traditions, cultural practices, economy, lifestyle, religious and social aspects and the community’s overall cultural value system at a particular area. The pertinent features of socioeconomic environment of the project area/district have been highlighted in this subsection.

2.6.1 Demographic Profile

As reliable data about the population within the radius of influence of the site is not available, the demographic profile of the district, of which the site is a part, has been taken as the mainstay for establishing the baseline conditions pertaining to this aspect. The land area of Quetta is 2,635 square kilometres, and its population, according to 1998 Census, is 760,000. The urban population is 565,000 persons (74.4%), and the rural population is 194,000 persons (25.6%). The male population is 412,000 (54.2%) and the female population is 348,000 (45.8%). The male to female ratio is 118:100⁴⁴. The population density is 286.4 per km². The projected figure for the year 2019 is 2,480,000 persons. **Table 2.6.1** presents demographic profile of the area/district.

Table 2.6.1: Demographic Profile of District Quetta

Tehsil	Area (km ²)	1951	1961	1972	1981	1998	2019
Quetta	2635		142	252	382	760	2480

(Source: Balochistan Development Statistics, 2018)

(Thousands)

2.6.2 Land Use/Agricultural Profile

The land parcel earmarked for the housing scheme is a vacant land, which will be converted into a properly designed housing scheme. Being a bedrock, the site is not suitable for agriculture. Quetta falls in the tropical agro-ecological zone bearing a total potential agricultural area of 45,368 hectares, which is approximately 26.9% of the total geographical area of the District. The potential area available for cultivation was 45,368 ha of the total geographical area. The current fallow land increased from 0% to 26.8% between 2005 and 2009, which means more area was made available for cultivation and the net sown area was reduced from 100% to 73.2% between 2005 and 2009. The major Rabi crop is wheat followed by barley sharing 72.9% and 7.7% of the total Rabi crop area respectively. The major Kharif crop is fruits followed by onion sharing 80.1% and 7.4% of the total Kharif crop area respectively. The fodder production was 6,190 tons, which remained the highest for the year 2008-09 followed by wheat at 5,872 tons. Among the fruits, pomegranate produce was the highest with 13,000 yield kg per hectare. Other major fruit produce included apple, apricot, grapes, peach, plum, pear, pomegranate and cherry. The major irrigation sources included tube wells (71%) and dug wells, karez and spring (29%). There

⁴³ List of Protected Areas, GoBln, 2019

⁴⁴ Balochistan Development Statistics, 2018



are 141 tube wells installed by government and 610 privately installed. Total cut flowers were grown on an area of 27.9 acres, in which roses and gladiolus cuttings were maintained during the year 2008-09.

Despite some industrialization, agriculture farming is still a source of livelihood for a large section of population in the district. It is because of agriculture and farming that the peripheral rim around the city limits has been able to supply meat, poultry, fresh milk, fruits and vegetables for the city residents. Apart from mainline agricultural pursuits, the sideline agricultural pursuits like sericulture, horticulture, floriculture, and aviculture are also gaining popularity. Investments in honeybee- sheep-, goat-, fish-, poultry, and dairy farming are also increasing. The major seasonal crops include wheat, rice, maize, and vegetables. Other agricultural products include fodder, fresh vegetables, and lattice⁴⁵.

The agriculture in Quetta is confined to rural and peripheral areas around the city. The principal modes of irrigation are the hill torrents supplemented by tube wells. Rainfall accounts only for a small proportion of the irrigation supplies. The major seasonal crops are wheat, rice, maize, and vegetables. Other agricultural products include fodder, fresh vegetables, and lattice⁴⁶. Sericulture, horticulture, and aviculture are also a flourishing agriculture related activity. Honeybee farming is also a growing trade. Sheep, goat, fish, and poultry farming are also gaining popularity. The geographical area of District Quetta is 169 thousand hectares out of which 12.9% (21,853 hectares.) is unavailable for cultivation. The potential area available for agricultural crops cultivation is 45,368 hectares. Further, agricultural growth and development possibilities are almost nil due to the extended demographic thrust, followed by construction of increased number of buildings, housing societies, business and market centres etc. However, water scarcity and the day-by-day depletion of ground water level, is a major constraint to both agricultural development as well as the facility of potable drinking water for the living societies. The number of tube wells, installed by the Government (141) is 18.8% as against private installations i.e. (610) having a share of 81.2%. From the year 2004-05 to 2006-07, under current fallow land, it is interesting that no land was left unsown. But, in the next two years 2007-09, the area under current fallow land drastically increased from 0.2% (25 hectares.) to 26.8% (3,530 hectares.) respectively. **Table 2.6.2** present the land use profile of the district⁴⁷.

Table 2.6.2: Land Use/Agricultural Profile of District Quetta

Description	2005-06	2006-07	2007-08	2008-09	Mean
Total geographical area	169	169	169	169	169
Total arable land	10 (22%)	10 (23%)	11 (24%)	13 (29%)	24
Total potential area for cultivation	45 (27%)	45 (27%)	45 (27%)	45 (27%)	27
Net sown area	10 (100%)	10 (100%)	11 (100%)	10 (73%)	95
Current fallow land	0 (0%)	0 (0%)	0 (0%)	4 (27%)	5
Culturable waste	35 (78%)	35 (77%)	34 (76%)	32 (71%)	76
Forest	81 (48%)	81 (48%)	81 (48%)	81 (48%)	48
Area unavailable for cultivation	22 (13%)	22 (13%)	22 (13%)	22 (13%)	13

(Source: Balochistan Development Statistics, 2018)

(Thousand hectares)

2.6.3 Industrial Profile

Industrial development in Balochistan started after 1970 when Provincial Government, because of availability of raw material such as minerals, agricultural crops, fruits and vegetables took keen interest in the development of industrial estates. Quetta, on account of its being the provincial capital, became the centre of commercial activities, as it lies on the main trading routes to Afghanistan and Iran. Moreover, it is a gateway to the Central Asian States. Trade also involves the inflow and outflow of goods and services from other provinces. The value of legal inflow and outflow of goods is recorded at the borders but illegal trading activities also take place. There is a general belief that the magnitude of illegal trade (smuggling) is far greater than the legal one. The last two decades have witnessed substantial industrial growth in Quetta but now it is not only a commercial and trading centre but also becoming an industrial city. This has been the outcome of a liberal industrial policy and a package of incentives given by the Government to the private sector. Major reasons for the expansion of industrial sector in Quetta have been specific incentives given for Balochistan. Income tax holidays, exemption of customs duty, and sales tax on imported machinery and credit facilities etc. It is hoped that with further expansion of infrastructure facilities and incentives, the industrial sector will gain further momentum. There are two industrial estates in Quetta. The first one is located at Sirki road, it is considered as Mini Industrial Estate. The other is located at Sariab By-Pass, 13 Km away from Quetta, which was established in 1986-87. All the utility requirements are available. The Quetta Industrial and Trading Estate is divided into four phases. 380 NOCs were

⁴⁵ Balochistan Development Statistics, 2018

⁴⁶ Balochistan Development Statistics, 2018

⁴⁷ Balochistan Development Statistics, 2018



issued to the industrialist for different type of industries out of which 42 units are completed and functional and 64 units are under construction, while the others are open plots. In total 117 units with 29 different types of industries are operating. Very small units and printing press are not included in the list. The Industrial Units hesitate to provide the actual number of their regular and temporary/daily wages employees. They only provide the number of their regular employees, because if the number of their workers exceeds 10 or equals to 10, then according to the Registration Act of the Labour Department i.e. clause 2(j) and 5(j), they have to register themselves. There are more than 2 thousand and 5 hundred (2500) persons employed in the units. The number of females and children involved in the industrial sector is not known. **Tables 2.6.3** present glimpses of industrial profile of the district⁴⁸.

Table 2.6.3: Number of Registered Factories and Employment Status

Industry	0-10	10-35	35-65	65-100	100+	Total	Worker
Food	22	21	-	-	-	43	419
Marble	9	-	-	-	-	9	28
Furniture	4	3	-	1	-	8	32
Steel Mill	1	6	-	-	-	7	94
PVC Pipe	5	-	-	-	-	5	18
Power Generation	-	1	-	-	-	1	35
Chemical/Soap	1	2	1	-	1	5	259
Cement	2	-	-	-	-	2	18
LPG	5	-	-	-	-	5	17
RCC Pipe	7	-	-	-	-	7	45
Ice/Cold Storage	8	-	-	-	-	8	65
Other	15	1	-	-	1	17	727
Total	79	34	1	1	2	117	1757

(Source: Balochistan Development Statistics, 2018)

2.6.4 Mining and Minerals Profile

Mining concessions are granted for coal, which is the major mineral. Limestone, ordinary stone, marble, fluorite and clay are other minerals for which leases are granted. Whereas, occurrences of glass sand, dolomite, silica (sand) are also given. Sor range, Degari, Sinjidi, Pir Ismail Ziarat and Marwar Coal fields are well known in District Quetta. These coal deposits were identified in 1891 with 61 million ton of reserves. Coal is found at 28 km east and southeast from Quetta. It is subbituminous in quality and contains low proportions of sulphur contents. Quetta is the nearest railway station for the Sor range, Spezand, Degari and Pir Ismail Ziarat coalfields, which have depth of 1,100 meters. Pir Ismail Ziarat is 60 km east of Quetta and covers over 20 square kilometres, having two seams- upper and lower seams, while their thickness ranges between 0.6-0.7 meters and 0.4-0.45 meters respectively and their depth ranges between 200-1,000 meters. These fields are the major coal producing areas of the country, where besides coal, limestone, fluorite and ordinary stone is produced in significant quantity. Fluorite mineralization in Quetta district occurs in Chiltan Limestone of Jurassic age. Fluorite occurs in veins in fracture zones. Its mining is in progress and the deposits are not fully determined. Several hundred meters thick layers of limestone have been found at places. Dolomite occurs in Chiltan formation of Jurassic age in Quetta (Brewery Gorge). The main mining method is open pit method but several stone crushers are installed in the district. The crushed stone is used in the construction of buildings and roads. Chiltan Limestone formation exposed widely from Quetta towards Khuzdar in Zawar Khan about 29 kilometre northeast of Quetta. The glass sand deposits of good quality are exposed. The deposits are White Sand Stone at the base of Ghazig formation. Several private sector cutting machines factories are working on commercial basis in and around the city. Due to recent hike in the oil prices, the demand of Coal has been increased. Coal is used in brick-kiln, lime burning and domestic use in cement factories and also in power generation.

In District Quetta alone, 58 prospecting licenses and 61 mining leases have been granted over an area of 62,210 acres in for coal, limestone, ordinary stone, marble and fluorite. During the years 2005-2010, the production of coal has decreased from 604,927 to 356,087 metric tons. During the fiscal year 2009-10, the position of licenses alongwith production of minerals for the period of five years 2005-06 to 2009-10 remained satisfactory.

2.6.5 Healthcare Facilities Profile

The number of healthcare facilities, their service level, and the area-coverage in Quetta is reasonable and satisfactory. There is fair number of large size general and specialized hospitals that provide round-the-clock medical care services. There is a special cardiac hospital and a dental hospital. Almost all teaching hospitals have

⁴⁸ Balochistan Development Statistics, 2018



nursing schools for training of nurses and some offer different paramedical and laboratory technician courses as well. The teaching hospitals offer internship facilities for the fresh medical graduates. There are number of private healthcare facilities of comparable standard and quality. The number of private clinics has grown in the recent past. The public sector healthcare facilities include large hospitals, RHCs, BHUs, Rural Dispensaries⁴⁹. These are providing primary to secondary level outdoor and indoor healthcare services for the affording patients. Health Care delivery System of district Quetta is a mix of public and private sector. Both public and private sector facilities are spread across the district, varying in terms of range of services. The public sector is spread across urban and rural areas, while private sector is predominantly in urban areas. Anecdotal evidence suggests that majority of government practitioners spend part of their duty or post duty hours in private hospitals. Public sector provides services through a large network of health facilities including the Tertiary Care Hospitals, Secondary Care Facilities, First Level Care Facilities and Preventive and Outreach Worker Programmes. The highly subsidized public healthcare system is the major provider of curative and preventive care services to the local population. The health facility infrastructure includes 6 Public Sector Hospitals, 3 Rural Health Centres (RHCs), 34 Basic Health Units (BHUs), 9 Civil Dispensaries (CDs), and 13 Maternal and Child Health Centres (MCHCs), 1 TB Clinic and 1 School Health Unit. There are 2018 beds, out of which 30 are situated in RHCs. Apart from the above Health Facilities, one 50 bed (public sector) hospital and one RHC is under construction in the district. Similarly, there are 41 private hospitals with 1,003 beds and four private hospitals with 456 beds and two MCH Centres. Moreover, there are 5 Federal Government hospitals of different departments with 133 beds, five Local Government Dispensaries, two PMDC Dispensaries and a Jail Dispensary (with 16 beds) functioning in the district. According to District Health Information System reports, during 2009-10 a total of 485,653 patients with new cases of common illnesses, visited the government health facilities. Respiratory Tract Infections, Gastro Intestinal, Urinary Tract Infection and Diarrhoea/Dysentery were the most common diseases reported from health facilities. Other communicable diseases included Malaria, Meningitis, Fever and Scabies. **Table 2.6.5** presents healthcare profile and **Table 2.6.5b** some common diseases prevalent in the district⁵⁰.

Table 2.6.5a: Healthcare Profile of District Quetta

Sr.	Facility	No. of Doctors (M/F)	No. of Nurses (M/F)	No. of Paramed (M/F)	No. of Beds (M/F)	No. of Units
1.	Hospital	509/238	26/580	336/2	1988	6
2.	RHC				30	3
3.	BHU					34
4.	CD	54/41		213/71		9
5.	MCH					13
6.	TB					1
7.	Other					1
8.	Total	842+327=1169	606	622	2018	67
9.	Unit/Population Ratio	1057	2038	1986	612	18434

(Source: Balochistan Development Statistics, 2018)

Table 2.6.5b: Some common Diseases of District Quetta

Sr.	Disease	Sr.	Disease
1.	Influenza (endemic)	2.	Typhoid fever
3.	Whooping cough	4.	Leprosy
5.	Measles	6.	Conjunctivitis
7.	Infantile diarrhoea	8.	Dermatitis
9.	Amoebic dysentery	10.	Glaucoma
11.	Bacillary dysentery	12.	Pneumonia
13.	Infectious hepatitis	14.	Mumps
15.	Viral hepatitis	16.	Arthritis
17.	Tuberculosis	18.	Allergic rhinitis
19.	Malaria	20.	Nutritional deficiency

2.6.6 Education Facilities Profile

The educational facilities in the district range from primary level community schools upto universities and highly specialized research institutions or centres of excellence. There are more than three universities in Quetta in both the public and the private sector. There are also a good number of technical and vocational training

⁴⁹ Health Department, GoBIn, 2019

⁵⁰ Balochistan Development Statistics, 2018



institutions and a fair number of special education institutions in the district run by the Technical Education and Vocational Training Authority (TEVTA) and the Department of Special Education, respectively⁵¹. The literacy rate of the district, as per 1998 Census, Literacy is the key that opens the doors of awareness and gives socio-economic uplift. Since independence, Governments has planned and developed various schemes and educational policies for achieving a high literacy rate. However, the impact of these programs has been limited. According to Pakistan Social and Living Measurement Survey (PSLM) 2008-09, the literacy rate of age 10+ in Quetta District was 80% among males and 51% among females, with an overall literacy rate at 67%. The definition of literacy has been relaxed in this survey that asks only for stated ability to read and write with understanding. The literacy rate, if measured on international standards, would be lower than this level.

The Federal Government has launched the program to uplift the literacy status in the selected districts, especially for females that have been deprived of this basic right due to social norms and limited opportunities. Quetta District was not focused in the subject project. Currently, 120 adult literacy centres are being run in the district for males and females by NCHD for 3,600 beneficiaries. An overwhelming majority of the adult literacy centres are for females. As per BEMIS school census 2009-10, there are 417 primary schools (269 male and 148 female), 70 middle schools (35 male and 35 female), 60 high schools (32 male and 28 female), 3 Inter colleges (2 male and 1 female) and 9 degree colleges (3 male and 6 Female) in Quetta District. Moreover, University of Balochistan, Sardar Bahadur Khan Women University, Balochistan University of Information Technology and Management Sciences, a Medical College, an Agriculture College, 2 Poly Technical Institutes (1 Male and 1 Female) and a College for Education are also functioning in the district. There are a few privately owned schools, academies and tuition centres, but at some distance from the site. The total number of primary, middle and high schools in Quetta is 637. Out of this, 395 are the boys' schools and 242 are the girls' schools. **Table 2.6.6** presents education profile of the district⁵².

Table 2.6.6: Educational Profile of District Quetta

Community Schools	Primary Schools	Middle Schools	High Schools	Colleges
6	445 (310+135)	96 (44+52)	96 (41+55)	19 (7+12)

(Source: Balochistan Development Statistics, 2018)

2.6.7 Livestock and Farming

Livestock production and goat- and sheep-farming are also gaining popularity in the district. In a way, livestock is complimentary and dependent to agricultural farming. Usage of the husbandry for ploughing and farming purposes is at the decline and being replaced rapidly by mechanical the implements of farming. Government and commercial financial institutions are granting liberal loans to farmers and growers for purchasing agricultural machinery. Planned and institutional livestock production is being witnessed in the form of sheep, goats, cattle, fish, and poultry farms. The highest reported population among all the ruminants was 164 thousand of sheep. This shows that sheep are the preferred farm animals that people like to keep and grow as compared to any other livestock species probably due to the suitable weather conditions and the ease of keeping it. **Table 2.6.7** presents livestock resources of the district.

Table 2.6.7: Livestock Resources of District Quetta

Sr.	Livestock	1986	1996	2006
1.	Sheep	90	67	164
2.	Goat	47	40	120
3.	Cattle	6	10	11
4.	Buffalo	N.A	5	26
5.	Camel	2	2	1
6.	Poultry	279	100	128

(Source: Balochistan Development Statistics, 2018)

2.6.8 Infrastructure Profile

The housing scheme will have all necessary infrastructure facilities including roads, amenity facilities, water supply, sewerage and sanitation, storm water drainage, electricity and waste collection and disposal system. Currently, the site is an open virgin land, on which there is not any important infrastructure worth the name. There are wide variations in the availability of infrastructure facilities in the district. Whereas, availability and condition of roads in the city of Quetta is reasonable, it is deplorable in the rural areas of the district⁵³. Construction of roads under various developmental programs has substantially improved agricultural marketing

⁵¹ Balochistan Development Statistics, 2018

⁵² Balochistan Development Statistics, 2018

⁵³ Ibid



and timely transportation of the farm produce to markets⁵⁴. The total length of roads in Quetta is 1,168 km, out of which, 766 km is black topped road (metaled road) and the rest are shingle roads. Black topped roads are almost 66 percent of total length of roads in Quetta, which is the highest ratio of metaled roads in the province. Quetta is linked with almost all other districts of Balochistan through a well-developed network of roads. It is also directly linked with other provinces. **Table 2.6.8** presents infrastructure profile of the district⁵⁵.

Table 2.6.8: Infrastructure Profile (Length of Roads) of Quetta

Year	Blacktop (km)	Shingles (km)	Total length
2002	254	402	656
2008	766	402	1168

(Source: Balochistan Development Statistics, 2018)

(Kilometres)

2.6.9 Water Supply and Sanitation

Access to safe drinking water, sanitation and solid waste disposal is considered to be the fundamental right of every human being and it is the duty of the state to provide these facilities by practicing comprehensive policies and good governance. Provision of safe water and sanitation services are effective interventions that help reduce the mortality caused by water-borne disease by an average of 65% and the related morbidity by 26%. Inadequate sanitation and water availability not only result in more sickness and death but also in higher health costs, lower worker productivity and lower school enrolment. The water and sanitation indicators for Balochistan are far lower compared to the national average and this disparity increases further in the rural areas. Situation in district Quetta is relatively better when compared with rest of the province. Recent surveys have shown marked increase in the use of drinking water and sanitation facilities. The situation in Zarghoon town, compared to Chiltan Town, declined as recent surveys have shown a curtailment in the use of drinking water and sanitation facilities. Since 2003-04, overall use of improved drinking water sources has declined in Quetta Zarghoon town when the improved water sources were 97%. Although, the use of improved drinking water sources has improved in Quetta Chilton town, since 2003-04, when the improved water sources were 77%. This improvement may be due to the development of water supply schemes by the Public Health Engineering Department (PHED), Government of Balochistan.

2.6.10 Socioeconomic Profile

The site, being a socio-cultural outpouring of the city of Quetta, exhibits the same socio-cultural traits as that of the main city itself. The social organization in the district is mainly tribal, while some modern patterns are also adopted in urban areas, and the social structure is patriarchal. Being a male dominated society, women are given very limited choice in family and social affairs. Quetta district is ethnically diverse. There are five principal communities: Pashtoon, Baloch, Brahvi, Hazara and Punjabi. Under each community, there are a large number of heterogeneous groups. Muhajir, Saraiki, Hindko, Afghans and Sindhi are in minority. The decision of the family head is final in all domestic affairs. The tribal chiefs enjoy the power of decision-making at community and tribal level. The people are predominantly dependent on trade, transport, government jobs, agriculture and mining.

Quetta is the largest metropolis and an important urban centre of the province of Balochistan. As far as employment is concerned, opportunities exist in every sort of business, economic, trade, social, educational, and general activities. A large section of population is absorbed in services sector, in the army, and in the civil government. Many are working abroad as expatriates and some are engaged in agricultural sector. The mean income level of the city residents is higher than many other towns and cities of the country. There are more than one lac registered vehicles in the district and the number of vehicle on the city roads is increasing with every passing day. Communication system in the form of regular landline and mobile telephone connections is one of the fast growing areas. Quetta is famous for the variety of its delicious and tasty foods. The evenings and nights are colourful and outdoor dining is getting popularity.

Quetta is the cultural, intellectual and artistic centre of Balochistan. Its faded elegance, busy streets and bazaars, and wide variety of Islamic and British architecture make it a city full of atmosphere, contrast and surprise. The warm and receptive people of Quetta are known for their traditional hospitality. This is a city of vivid differences, of haunting nuances, where bustling bazaars, frenetic streets, glorious fading elegance, British Architecture and echoing atmosphere of city's many mosques merge into a history that is both dramatic and fascinating. Being the centre of cultural and literary activities, it may rightly be called the cultural capital of Balochistan.

⁵⁴ Balochistan Development Statistics, 2018

⁵⁵ Balochistan Development Statistics, 2018



Communication facilities in the form of regular landline, broadband wireless telephony, and mobile telephone connections is one of the fast growing areas. There are various radio and cable networks broadcasting in the district, such as FM 95, FM 100 and FM 101. Internet facility through dialup and broadband high-speed wireless DSL is available in the area. The site is connected with all major cities of Pakistan through fibre optic communication system. Almost all educational institutions of the area in the public and private sector have computers for teaching and for practical computer laboratory work.

2.6.11 Culture, Religion, Customs and Specialties

The population of the wider area around the site consists predominantly of Muslims. However, there is reasonable number of Christians residing at the surrounding areas. Balochi and Pashto are the native languages and spoken widely in the province. However, Urdu is gaining popularity and is becoming the lingua franca, particularly amongst the youngsters. People generally respect *chadar* and *chardewari*, i.e. they do not mingle up with women publically and stay away from others houses and respectfully wait to be called in or the residents to come out from their houses. A reasonable proportion of womenfolk observe the *pardah* etiquette, i.e. they remain secluded from outsiders. However, womenfolk do participate in almost all sort of social, cultural, economic, educational, and service activities⁵⁶.

Although Joint family system was noticed in number of households in the surrounding areas, yet the nucleus or small family is fast emerging as the preferred mode because of socio economic compulsions and attitudinal shifts in the youth. In urban areas, nuclear family system is preferred to a joint family system. Due to limited income, people in urban areas prefer to live independently, whereas in rural areas, the majority of people live in joint families. The eldest male member takes care of all the family members. His decision is final in family affairs. On the other hand, nuclear families are very rare in rural areas. The trend for nuclear family is rising in urban areas. Family institution is very important, as it provides social security during un-employment and financial crisis. It also plays an important role in social interaction and conflicts.

The food eaten consists principally of wheat as staple food and meat as main meal. However, bajra, rice, butter and milk etc. are also commonly used. Muhajir and Punjabi groups have different dietary habits. Well-to-do families eat meat and fish frequently. Mostly, people take meals twice a day. Fruit, sweets and confectionaries are becoming frequent in eating habits in the area. Famous regional foods include Sajji roast and Kabli pulao.

Quetta is a multi-cultural area, where a variety of cultural and modern dresses can be observed. The traditional dress consists of a qameez, shalwar with turban in rural areas; coat and a pair of trousers are also worn but in urban areas and that too by few people. Jinnah, Pashtoon and Balochi caps are also used. The dress of women differs from that of men. The traditional dress includes long chadar, loose trousers, but the shirt is much longer and has silk embroidery. Women also wear silver ornaments. Modern dresses worn in urban areas consists of shalwar, qameez without chaddar. The Afghani and Balochi style embroideries on women's dresses are distinct cultural identities.

As the society is predominantly patriarchal, decision-making is in the hands of men and the decisions are binding upon the women. In Rural areas, women have no say in the decision-making process while in some urban families they are allowed to give their opinion to a limited extent. Society is structured on kinship bases and each group is attached to a particular tradition, founded on different rules of social organization. Most of these rules and traditions have undergone a considerable transformation over time. The political organization is built upon two principles: hereditary authority and personal bonds of allegiance, in which protection is exchanged for loyalty. Many elected representatives are tribal chiefs and sardars.

Quetta experiences different ethnic socio-cultures. Among the Brahvis, the element of central authority exists. The hierarchical system of authority is vertical, with downward flow from the Sardar (head of tribe) to Takkari (head of sub clan) following the younger men in the clan and family. Sardar's position is supreme. Pashtoons lack central authority while religious leaders are the influential ones. Tribes have an almost equal social position, with the exception of the occupational groups, who enjoy higher status.

2.6.12 Historical and Archaeological Sites

There are ten historical sites of antiquity and fame in Quetta, as declared under the Antiquities Act 1975. However, there is not any UNESCO notified world heritage site in the entire Quetta district.

⁵⁶ Balochistan Development Statistics, 2018

**Table 2.6.12: Historical and Archaeological Sites in District Quetta**

Federally Protected Sites	Provincially Protected Sites
<ul style="list-style-type: none">▪ Mound No. 2, Village Samungali, west side of Airport, Quetta▪ Mound No. 1, Village Kotwal Near Killi Gul Muhammad, Quetta▪ Mound No. 3, Damb Sadat, 14 miles from Quetta, Quetta▪ Mound No. 5, Ahmad Khan Zai, Quetta▪ Mound No. 6, Shahi Khan, near Pir Ballo or Sariab Road, Quetta▪ Mound No. 7, Kachlak on Chaman Road, Quetta▪ Mound NO. 8, Village Samali (Dosak-i-Khasyan), Quetta▪ Mound No. 9, Village Metar Zai, Quetta▪ Mound No. 10, Shaikh Manda on Chaman Road, Quetta▪ Mound No. 11, Village Vauhisar, Quetta	<ul style="list-style-type: none">▪ N.A.

(Source: Balochistan Archaeological Department, GoBln, 2018)



3

ENVIRONMENTAL IMPACTS AND THEIR MITIGATIONS



3. ENVIRONMENTAL IMPACTS AND THEIR MITIGATIONS

3.1 Environmental Impacts and their Mitigation

Like any other developmental project, the instant project because of its scale and magnitude is likely to produce impacts on physical, biological and social environments. The sections and subsections, following hereinafter, present a discussion and analysis of the foreseeable environmental and social impacts of the project during both its construction and the subsequent operation (occupancy) phases. Besides analysis of the impacts, the discussion presents outline of the mitigation strategy and suitable mitigation measures for avoiding and addressing the identified adverse impacts. Primary and secondary, as well as direct and indirect impacts have been discussed with respect to their immediate and the ultimate effects on various environmental quality parameters and the social factors of significance.

The environmental impacts of the project are likely to arise mainly from consumption of materials and resources for constructing and running the project, usage of energy, withdrawal of groundwater (during both phases), noise generation, emissions and discharges into air, disposal of wastes, and disposal of wastewater. The majority of the construction phase impacts are likely to abate with the completion of the project's construction e.g., noise pollution, debris generation, construction materials' consumption etc.

Apart from the negative impacts, there will also be some positive impacts of the project such as availability of jobs to both skilled and unskilled persons, income prospects for the persons involved in carriage transport sector, and above all reduction in housing shortage in the city. The premier most positive benefit of the project is provision of houses to thousands poor and needy persons who cannot otherwise think of having a house of their own. Because of this singular benefit, it will suffice to state that the positive impacts of the project will outweigh the potentially negative potential impacts, particularly, whence most of the latter are mitigable. The likely impacts of the project during its operation i.e., occupation of the housing by the residents, will pertain to water usage, liquid effluent generation, solid waste generation, noise generation, and the social issue of large scale community living in a housing scheme.

3.2 Impact Assessment Methodology

A comparative analysis of both the negative and the positive impacts has been carried out with respect to the baseline conditions. The said comparison follows a parametric and a non-parametric scheme i.e., how and to what extent various environmental quality parameters (e.g., relating to soil, air, water, and aesthetics) and non-parametric aspects (economy, social value system, employment, lifestyles, and behavioural patterns) will be influenced by the various project activities within project's radius of influence.

Modified Impact Assessment Matrices (**Tables 3.2a and 3.2b**) have been used for identification, screening, and characterization of the unmitigated as well as the residual impacts on the physical, biological, and social aspects using a numerical scale from (-)2 to 0 to (+)2 respectively. The value (-)2 denotes high adverse impacts, (-)1 low adverse impacts, 0 insignificant impacts, (+)2 high beneficial impacts, (+)1 low beneficial impacts, and N denotes nil impacts. This scaling of the impacts magnitude helps easy appreciation of the quantum of the impacts.

3.3 Impact Mitigation Strategy

The mitigation measures, as presented in this document, are intended to prevent and reduce the foreseeable impacts of the project activities during both construction and the subsequent operation phases. The mitigation strategy for countering the adverse impacts is built on the following hierarchy of choices:

- Avoiding a particular impact altogether by taking or not taking a certain action or activity
- Minimizing the impact by limiting the degree or magnitude of the action and its implementation
- Rectifying the impacts by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impacts over the time by preserving and maintaining the operations all during life of the action
- Compensating for the impacts by replacing or providing substitute resources or environments
- Installing pollution control equipment and devices wherever indicated and necessary
- Improving landscape of the site to augment the aesthetics and to reduce visual intrusion
- Reducing transmission of unwanted noise from the site or spots of noise generating activities



- Taking any other appropriate step on the basis of feedback information onto project's construction installation and operation

It is advisable that these measures are given effect in a sequential order by beginning with avoiding the impacts and thereafter adopting the next sequential choices according to ease of their implementation and cost considerations. Adoption of the above outlined mitigation strategy is expected to ensure long-term environmental and social sustainability of the project.

3.4 Impacts and Mitigations relating to Design and Planning Phase

The discussion following hereinafter relates to construction phase impacts of the project on various important environmental parameters.

3.4.1 Design and Layout Planning

The subsections following hereinafter present a discussion on environmental impacts of the project's design and planning stage.

i) Likely Impacts

- Incompatible layout planning and engineering design of the buildings and structures can undermine overall aesthetic beauty and ambience of the area
- Incompatible layout planning and engineering design and low utilization of the available spaces and not designing the building with prospective and futuristic needs can result in structures with low social acceptability
- Incompatible planning and engineering design of the structures with little spaces between adjacent buildings can result in congested structures with poor ventilation, low air circulation and reduced sunlight, inconveniences of movements of the pedestrians, difficulty in transporting materials through narrow passages and obstruction of sunlight. Such structures will in turn have other environmental and social consequences such as restriction of free movement of persons and vehicles
- Not designing the buildings and structures according to the applicable building codes and bylaws and non-provision of escape routes and firefighting arrangements in the layout design of the building may take a heavy toll in case of outbreak of any emergency

ii) Activities Likely to Produce the Impacts

- Layout planning and engineering design of the buildings and structures
- Non-utilization of the available spaces and incompatible architectural designing ignoring the prospective and futuristic needs
- Incompatible structural designing
- All structural, layout and engineering designing of the project should be in strict accordance with the applicable bylaws, building codes and engineering parameters

iii) Mitigation Measures

- Services of some professional architect/engineer of experience and repute are obtained for preparing the layout plan and the engineering and architectural design features of the structures in consultation with the proponent. The engineering design should cater for proper ventilation, provision of sunlight, and ease of mobility commensurate to climatic conditions of the site and the broader area around. Shift from here

3.5 Impacts and Mitigations relating to Construction Phase

The discussion following hereinafter relates to impacts of the construction phase of the project on various important environmental parameters.

3.5.1 Parametric Impacts of the Construction Phase

The subsections following hereinafter present a discussion on the parametric impacts of the project's construction phase.

3.5.1.1 Soils and lands

The site, per se, is an open parcel of land earmarked for the development of the housing scheme. The heavily built-up areas and congested population of Kuchlak surrounds the site. Owing to its geological disposition, the site does not have any trees or natural vegetation grown over it. However, there are scanty self-grown grassy tufts. For the soil type, refer to Section 2.3.5.



i) Likely Impacts

- Large-scale excavations and diggings for foundations of various structures can destabilize the land surface, particularly if the excavated area is left unfilled long, which may lead to rainfall induced soil erosion
- Deep excavations can expose the inner soil layers to contamination which may later manifest as pollution of the subsoil water
- If excavations are left in-situ long, the storm water runoffs can accumulate in the dugout areas. The ponded water can then seep downward and laterally, destabilizing the adjacent lands. Lateral seepage into adjacent lands can weaken them and damage foundations of the structures, if any, on such lands. Stagnation of water inside the excavated areas would also forestall smooth progression of construction and thereby delaying the completion of the project's construction
- Direct discharge and disposal of wastewater from the worksite toilets onto adjacent soils can spoil the receiving lands
- Non-collection or non-picking of the unspent materials and debris of the left out materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils and may render them unfit for developing green areas later
- Lack of proper drainage and disposal of the constructional wastewater and its stagnation into low lying areas and depressions can degrade/contaminate the soils underneath and can spoil its
- Leakages of oils, lubricants, chemicals and other like substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants
- Non-provision of septic tanks with the temporary worksite toilets, constructed for the site labour and others, can contaminate the effluent receiving soils because of raw nature of the effluents
- Washing of the gadgets, machinery, and equipment without proper drainage of the washout water can adversely affect the soil quality
- On the land dumping and storage of construction materials such as sand, aggregate, crushed stone, cement, bricks, lubricants, fuels, and iron bars, without an intervening barrier, can degrade soil quality and may smear them with fine particulates of the dumped materials.
- Accidental leakages and spillages of the chemicals stored at the site (e.g., anti-termite solution) can affect the soils in the similar manner as oils and lubricants
- Improper onsite storage of equipment and machinery such as wheelbarrows, mixers, and compactors and disorderly parking of machinery and equipment may cause soil contamination from trickling or accidental leakages of oils and lubricants therefrom

ii) Activities Likely to Produce the Impacts

- Unplanned diggings, excavations, site clearances and other similar constructional activities
- Deep and large scale excavations and non-filling back of the excavated areas
- Non-construction of septic tanks with the worksite toilets
- Non-clearance of the site after each day's work and upon completion of the entire project
- Non-construction of drainage burrows and soaking pits for collection and disposal of the constructional wastewater
- Inadequate storage of oils, lubricants and chemicals without protective sheets underneath them
- Washing gadgetries, implements of construction, equipment and vehicles at the worksite without providing for its drainage/gravity flow
- Loose and improper storage of oils, chemicals, lubricants, machinery, and equipment at the worksite without observing due safety precautions with respect to their storage
- Disorderly onsite dumping and storage of construction materials such as bricks, sand, soil, cement, and gravel etc. without observing due precautions
- Changing oils, filters and spares of the machinery and vehicles without observing due precautions in this regard

iii) Mitigation Measures

- Deep and large scale excavations should be carried out under direct supervision of a qualified engineer
- Excavations should be kept confined to the specified foundation strips (trenches) as per the approved engineering drawings. Unnecessary excavations should be avoided. Instead of simultaneous digging of large areas, which can destabilize the soil and also generate large quantities of dugout soil, batched excavations should be preferred. That is a previously dug out area should be backfilled before moving onto the next one.
- Excavated areas should be not left unattended and unfilled for long
- As soon as construction is complete, or near completion, landscaping of the site should be taken up by generous plantation of indigenous and non-indigenous trees in consultation with a landscape expert or a floriculturist



- Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures, or storerooms, which should be safe from rainfall and away from any potential source of fire
- Only authorized persons should handle oils, lubricants, and chemicals. They should be given training in safe handling of the chemicals and avoiding their spillages or leakages
- All the machinery, equipment, and generators at the worksite should be regularly inspected according to a predefined regime for their working conditions and oil leakages etc. If an oil leakage from a machine is detected, immediate steps should be taken for plugging the leakage. The soil that might have been spoiled from oil leakages should be properly reclaimed according to standard technique in that regard
- Site camps for the resident labour should not be setup on the land earmarked for developing greenbelts and lawns
- Septic tanks of adequate capacities should be constructed for receiving and treating wastewaters from all temporary worksite toilets and at the temporary container offices, if any. The toilet wastewater should not be discharged untreated onto adjacent lands
- All machineries and materials should be stored at the designated areas and compounds.
- Washout from washing of equipment and gadgets should be drained into either a septic tank or a sand-gravel bed for removal of the grit and contaminants
- A boundary wall or a fence is constructed around the site to protect from storm water runoff. If it is not possible, then a runoff protection embankment should be raised around the excavated areas, at least, to prevent ingress of the storm water or surface runoff into dugout areas
- A well-designed solid waste management system should be instituted to prevent soil degradation from improper disposal of the solid wastes
- All the unspent and left over materials be completely removed offsite upon completion of construction and the site be restored to original or near to original condition

3.5.1.2 Surface Water Quality

The site being a settled area does not have any watercourse running through it. There is not any freshwater surface channel near the site. Therefore, the surface water channels of the district, on account of being located far off, do not interact with the site in any way, whatsoever. Therefore, no impacts on surface water quality are anticipated from construction of the scheme.

i) Likely Impacts

- There could be deterioration of the water quality of a surface channel, if wastewaters from the construction site are allowed to discharge into the nearby freshwater channel

ii) Activities Likely to Produce the Impacts

- Miscellaneous constructional activities involving usage of freshwater and thus generation of wastewater

iii) Mitigation Measures

- Direct disposal of constructional wastewater into a nearby surface watercourse, if any, be avoided
- Soaking, absorbing, and evaporation pits be constructed onsite for collection and disposal of the constructional wastewater. These pits should be levelled back after completion of construction
- Septic tanks of appropriate capacities are constructed for the treatment and management of sanitary wastewater to be generated at the project. It should be ensured that all septic tanks remain functional and are not 'stuck-up' at any point of time. It may further be ensured that the wastewaters treated by the septic tanks are discharged into a drainage channel or sewer line
- Any direct or indirect disposal of chemical, effluents or oils into any nearby waters be avoided

3.5.1.3 Groundwater Abstraction and Quality

Large amount of freshwater will be required to sustain multifarious construction activities at the site. There is not any existing water supply nor any water tube wells at the site. These existing freshwater sources of the area will be shared for constructional activities and the new water sources to be developed under the project will be used for meeting water requirements of the residents during the occupancy life of the scheme. Construction and installation of a tube well is included in project's plan and scope.

The groundwater system in the project area is in dynamic flux and balance with the surface water system through the hydrological cycle. Although reliable data is not available, but evidence suggests that the groundwater resources (confined and unconfined aquifers) in the project area are recharged from surface waters as well as overland precipitation. The water from the surface channels and from the rainfall percolates and infiltrates through the soil to recharge the groundwater system. The rate of recharge depends on various



hydrogeological factors such as infiltration capacity of the overlying soil, proportion of the concrete pavements to bare soils, average rainfall in the area, volumetric flow in the surface channels, and type of the surface channels (whether perennial or non-perennial). In case groundwater abstraction is higher than the recharge rate, the water table would start lowering down until it reaches a stage of no yield.

Generally, construction activities, per se, do not result into groundwater contamination. The groundwater quality is likely to be affected only if wastewater (from any source) somehow or the other succeeds in reaching the groundwater aquifer. The most plausible route is a groundwater borehole. However, because of natural filtration mechanism of the soil layers, the probability of groundwater contamination from percolation of stagnated wastewaters down the earth's layers is, therefore, rare.

i) Likely Impacts

- Persistent and prolonged withdrawal of groundwater higher than safe yield limits of the aquifer can initiate early depletion of aquifer. This situation can result in reduced water supplies for other users who share the same groundwater resource. The safe yield capacity of the groundwater aquifer is the maximum rate of abstraction or the quantitative limit at which groundwater can be abstracted without drying up of the aquifer. Abstraction of the groundwater over and above the safe yield limit can produce serious hydrological and environmental consequences. Over abstraction can lead to:
 - early depletion of the aquifer resources
 - persistent lowering of the water table
 - reduced availability or non-availability of the groundwater to the neighbouring communities sharing the same aquifer
 - need for replacement of the groundwater pumping machinery owing to lowering of water table and consequential operational ineffectiveness of the pumps
- Lowering of the water table can cause interference with the groundwater pumping capacity of the neighbouring communities as the rotary pumps (which are the commonest groundwater pump types owing to low cost) fail to perform if water table is lowered beyond a critical level. Such a situation can lead to potential conflicts with regard to water user rights
- There could be the possibility of contamination of the aquifer from downward trickling of wastewater along the borehole line, if construction of the borehole is faulty and is not secured from the exterior
- Accumulation of storm water into dugout foundations and excavations may pose the possibility of groundwater contamination from downward infiltration, if the water table is high
- Spills and leakages of chemicals and oils into dugout areas or onto soil can infiltrate down the earth and can affect the shallow groundwater source

ii) Activities Likely to Produce the Impacts

- Withdrawal of large volumes of groundwater for miscellaneous constructional activities, such as preparation of cement mortar, wetting of bricks, watering of land, and curing of concrete structures
- Imperfect sealing of the groundwater borehole(s) that may allow contaminated water to move down along the borehole line
- Delayed or non-filling back of the dugout areas and letting wastewater stay in these areas
- Non-observance of necessary precautions in the handling and changing of oils and chemicals and letting them fall onto ground

iii) Mitigation Measures

- Continuous withdrawal and over pumping of groundwater should be avoided. Instead, intermittent pumping be carried out to conserve the groundwater resources
- Ground water tanks of appropriate capacities should be constructed for meeting water requirements of the construction phase. Instead of using the directly pumped out groundwater, it should be stored first in these water tanks and then used as and when required
- Similarly, overhead water storage tanks designed for the operation phase may be constructed well ahead for storing water for constructional needs. Water stored in them may be used for construction needs. Once the overhead tank is filled, pumping be stopped and the stored water be used and the pumps given rest
- Simultaneous abstraction by two or more closely spaced pumps should be avoided. Such pumps should preferably be run alternately to avoid stress to the aquifer
- Conservation in water usage should be practised wherever and whenever possible. Only minimum essential quantities of water should be used according to actual water needs of different activities to avoid generation of large quantities of wastewater. For example, water curing of the masonry and concrete structures should



be carried out by wrapping around a soaked gunny cloth instead of direct water showering of the structure. Similarly, water from the soaking pits can be used for wetting the raw bricks and curing the masonry works. Water of the hand washouts may be used for filling flushing tanks of the closets

- Water usage conservation should be encouraged at the worksite by displaying suitably worded requests on careful water usage
- All boreholes should be constructed under supervision of a qualified and experienced engineer. These boreholes be sealed off the exterior with bentonite or cement mortar all round to avoid groundwater contamination from downward trickling of wastewater along the borehole line
- Groundwater boreholes should not be constructed at low-lying places and depressions, which have natural affection for storm water and surface runoffs
- Regular laboratory tests should be carried out for monitoring quality of the groundwater and early detection of its contamination and for taking appropriate measures, whenever and wherever needed

3.5.1.4 Wastewaters and Effluents

Wastewaters will be generated during both construction and operation phases of the project. Generation of wastewaters during constructions will not be of alarming proportions compared to the operation phase. Two types of wastewaters will generally originate from the project: (i) sanitation wastewater, and (ii) non-sanitation wastewater.

i) Likely Impacts

- Improper disposal of wastewaters, generated during constructional activities, can degrade soil quality and may contaminate it if not taken care of properly
- Stagnation of wastewater can act as a breeding place for disease causing organisms and vectors. Proliferation and growth of disease-vectors can produce serious health impacts amongst the afflicted persons
- Improper disposal and stagnation of wastewater, particularly from the campsite toilets, can act as an aesthetic blight and a source of foul smells and odours which could be annoying for the exposed persons and the neighbouring residents, if any

ii) Activities Likely to Produce the Impacts

- Miscellaneous constructional activities involving usage of freshwater and generation of wastewater
- Usage of freshwater for sanitation needs at the toilets and other human needs

iii) Mitigation Measures

- Soaking, absorbing, and evaporation pits should be constructed for collection and disposal of construction water of non-sanitation origin wastewater. These pits should be levelled back after completion of constructions
- Septic tanks of appropriate capacities should be constructed for the treatment and management of sanitary wastewater. Efficient working and desired level performance of the septic tanks should be ensured. Dysfunction of the septic tanks should always be avoided. Only the septic tank treated wastewater should be discharged out into drainage channel or sewer line.

3.5.1.5 Air Quality

Constructional activities can temporarily deteriorate the ambient air quality from localized blowing of dust and from suspension of fine particulates in the ambient air. Besides multifarious construction activities, increased vehicular traffic also contributes to the localized airborne dust. As a thumb rule, blowing of dust and prolonged suspension of fine particulates in the ambient environment is attributable to increased movement of vehicles, land excavations, and uncovered stacking of the loose materials. Once in the air, the larger sized particles, under influence of gravity, tend to settle down in the immediate vicinity of the source. The suspended particulate matter (SPM) of the size smaller than 10 micrometre (PM₁₀) tends to remain suspended in the environment for much longer and persistent time and is an environmental hazard. The objectionable impacts of settling of the suspended dust would be its dry deposition on vegetation, glass windows, motor vehicles, buildings, and other exposed surfaces. Exhausts from fossil fuel burning in the construction machinery will also deteriorate local air quality. Similarly, exhausts from generators can also have impacts on air quality in the vicinity.

i) Likely Impacts

- There could be deterioration of the local air quality from presence of fugitive dust and suspended particulate matter from multifarious construction activities
- There could be Impairment of local air quality from gaseous exhausts emitted from vehicles, machinery, and generators



- There could be impairment of the air quality from transportation of loose in the carriage vehicles uncovered
- Direct dry deposition of the suspended particulate matter (SPM) and the fine dust onto exposed surfaces, vegetation, and motor vehicles could be annoying for the neighbouring residents and the vehicle owners
- Presence and suspension of the fine particulates in the ambient air can produce marred visibility and could be annoying for the masses
- Air pollution is precursor of a number of health impacts particularly pulmonary afflictions

ii) Activities Likely to Produce the Impacts

- Multifarious constructional activities like excavations, diggings, and mixing of cement-concrete
- Insecure onsite stockpiling of construction materials like sand, loose soil, and cement without protective coverings
- Increased movement of vehicles, tractors, and haulage trucks in connection with construction activities
- Uncovered carriage and transport of materials having propensity to flyaway into air during movement of haulage carriers, e.g., sand and soil
- Operating the faulty machinery and equipment that emit pollutants and smoke from inefficient burning of the fossil fuels e.g., old and worn out diesel generators
- Excavations and diggings producing large amounts of loose soil which can become source of particulate dust emissions
- Insecure stacking of loose materials can give rise to windblown particulate dust into ambient air

iii) Mitigation Measures

- Blowing of dust from potential sources at the worksite should be avoided by shielding them from the exterior, for example using polythene curtains or raising a fence of corrugated sheets around areas of active constructions
- Blowing of dust and PM from stockpiled loose materials (e.g., sand, soil) should be avoided either by sheeting them with tarpaulin or plastic sheets or by sprinkling them with light shower of water
- While transporting in the carriage vehicles, the loose materials like sand/soil, should be covered with tarpaulin or plastic sheets to avoid blowing of particulates into the air from these materials
- All loose materials and excavated soil, which can give rise to windblown particulate dust into ambient air, should be covered with tarpaulin or other similar materials or lightly sprinkled
- All vehicles belonging to either the proponent or the contractor or the site staff should be regularly inspected for their emissions. All vehicles, machinery and equipment should be kept tuned up and well maintained by timely replacement of oils, filters, etc. A documented record of such maintenance may be kept at the site office
- Only environment compliant equipment and generators (at least Euro-II compliant) should be preferred for installation at the site. All the machines should be kept in good working condition through a rigorous maintenance regime of changing the oils, lubricants, and filters
- Only good quality oils, petroleum products, additives, and spares should be used in the machinery, generators, and the vehicles. Usage of used oil should be strictly prohibited
- Operating the machinery and equipment during windy and stormy conditions should be avoided to the maximum extent possible as operation during such conditions can carry away the dust particles to distant areas as well
- All unpaved roads at the site should be regularly sprinkled to reduce blowing of dust from movement of vehicles and machinery on such roads
- Vehicle drivers should be educated and sensitized of the adverse consequences of rash and speedy driving on narrow roads and on katcha tracks. They must be obliged to reduce the speed to avoid accidents and blowing of drag dust on such roads

3.5.1.6 Noise and Vibrations

Generally, noise and vibrations are of relevance to construction activities only if their levels exceed the prescribed limits. Noise levels higher than a threshold can produce psychological and social impacts of distracted attention, irritation, and short-temperedness. However, owing to non-cumulative property of sound and vibrations, the impacts are reversible and of significance only during continuation of the noisy activities.

i) Likely Impacts

- Persistently higher noise levels can produce psychological effects of distraction of attention, irritation, and short temperedness in the exposed persons
- There could be disturbed sleep in the exposed persons from night-time noisy constructional activities
- Noisy settings and higher background levels can cause difficulty of listening and the consequential habit of speaking loud, which may manifest in damage to vocal cord system in the exposed persons



- Vibrations from machinery and equipment such as hand-held compactors and concrete vibrators can produce easy fatigability and generalized aches in the persons working on these machines
- Noise produced from moving vehicles and blowing of pressure horns, at times, could be intolerable particularly during quiet hours of night

ii) Activities Likely to Produce the Impacts

- Various constructional activities like excavations, diggings, compactions, and mixing of cement-concrete
- Movement and running of machinery and equipment like generators, excavators, and tractor trolleys
- Steel fabrication, construction of steel tanks, steel cutting, grinding, and multiple other similar activities
- Loading/unloading of materials from carriage vehicles
- Noise from engines of the moving vehicles
- Blowing of (pressure) horns by the vehicle drivers

iii) Mitigation Measures

- All sorts of activities, particularly the noisy activities should preferably be avoided at night-time
- All vehicles, equipment, and machinery should be tuned-up and kept well maintained. Regular oiling of the noise producing/moving parts of a machine/vehicle should be carried out to reduce mechanical friction and noise production from frictional movement of the parts
- As far as practicable, such a work schedule should be devised, which allows reshuffling of the personnel working in areas with higher levels of noise/vibrations/fumes with those working in areas less prone to these nuisances and vice versa on weekly or fortnightly basis
- All personnel and workers exposed to noise, vibrations, sunlight, dust, and mist etc. should be provided with appropriate safety gadgets or personal protection equipment (PPE) like earplugs, aprons, masks, jackets, gloves, and glasses etc.
- As talking at loud voice in a noisy setting or higher background levels can damage the vocal cords system, persons working in such settings should be advised to refrain from talking loud

3.5.2 Non-Parametric Impacts of the Construction Phase

The subsections following hereinafter present a discussion on the non-parametric impacts of the project's construction phase.

3.5.2.1 Land use change

Generally, land use change, from a useful purpose to a less useful purpose, is considered a kind of negative environmental impact.

i) Likely Impacts

- Negative land use change and the resultant loss of productivity of the land

ii) Activities Likely to Produce the Impacts

- Acquisition and conversion of useful community land into less beneficial usage

iii) Mitigation Measures

- Unnecessary acquisition and land use change of useful land should be avoided
- Home based horticulture and kitchen gardening should be promoted as an alternative of the loss of productive land

3.5.2.2 Solid Wastes

Generation of common type of solid wastes during the construction phase will not be of any significance. The probable sources of solid wastes during this phase will be:

- Wastes comprising bits of masonry, broken bricks, bricks' powder, butts of iron bars, and wood pieces resulting from normal construction activities
- Wastes comprising packaging materials, empty cans, and cartons and etc. resulting from usages of packed goods and commodities
- Wastes comprising peelings, leftover food, shopping bags, and empty plastic bottles originating from consumption of food and other eatables from both the campsite and the site office. This type of waste will have a reasonable proportion of organic matter.



Because of the very nature of the construction activities, generation of hazardous wastes is not expected during construction phase of the project.

i) Likely Impacts

- Insecure and unhygienic disposal of the solid wastes generated at the worksite, particularly garbage and trash may cause degradation of soil and land from the littered wastes
- Insecurely disposed waste-heaps, particularly those containing kitchen garbage and food waste can serve as breeding grounds for disease spreading vectors and rodents
- Solid wastes scattered at the site will present an un-aesthetic outlook of the premises and environmental blight of the surroundings
- There could be pollution of the ambient air from emission of particulate dust from the waste piles and heaps at the site
- Putrefaction of the organic components of the insecurely disposed of solid wastes can produce foul smells and staunch odours which could be annoying for exposed persons and the inmates
- Throwing away of solid wastes into water channels and the wastewater network can result into choking of the latter

ii) Activities Likely to Produce the Impacts

- Miscellaneous constructional activities producing various constructional wastes
- Procurement of materials that come in packaging and boxes (e.g., cement bags, motor oil tins, and food boxes etc.) and improper disposal of the packaging material
- Cooking of food and eatables at the campsite and other places at the site its consumption can produce food residues and organic wastes as a by-product of such activities

iii) Mitigation Measures

- An efficient and responsive solid waste management system should be devised for the entire duration of the construction phase. Such a system should provide for separate collection of different categories of constructional wastes. The wastes which will be reusable/recyclable (iron bar butts, aluminium) should be sold to waste vendors and those which cannot be sold out (brick pieces) may be used as a filling material for levelling the depressions, subject to technical feasibility
- Reuse/recycle of the packaging materials be practised by selling the recyclable/reusable items of junk to waste recycling vendors
- The perishable (organic) part of the wastes should be collected separate from the non-perishable (inorganic) waste. Conversion of perishable/organic component into compost may be considered and practised, if technically feasible
- Construction workers and supervisory staff should be encouraged and educated to practise waste minimization, reuse, and recycling to reduce end load of the waste for disposal
- Waste collection baskets of appropriate sizes should be installed at convenient places throughout the premises, particularly around the food consumption areas for collection of waste

3.5.2.3 Access, Easement, Health, Wellbeing and Worksite Safety

The environmental and social impacts pertaining to rights of access, easement, health, community wellbeing, and worksite safety would relate not only to construction phase but also to design phase of the project. Improper and poor design can lead to construction of structures with poor ventilation, sunlight and obstruction of movement, which in turn can produce psychological, behavioural and health impacts on the occupants. A poorly designed structure can infringe upon the social privileges of enjoyment of the gifts of the nature by the neighbouring community. Haphazardly placed materials and construction debris on streets, walkways and roads can pose higher risks of personal injury and inconvenience of movement of the neighbours and the labourers at the worksite. Non-observance of the worksite safety instructions and non-use of safety gadgets during construction operations can increase vulnerability of the exposed persons to adverse health and personal safety impacts.

i) Likely Impacts

- Construction of poorly designed new structures, juxta-proximal to an existing structure can impeach natural light, ventilation, and mobility of persons and vehicles
- Disorderly placed raw materials (bricks, iron bars) are generally associated with higher vulnerability to personal injuries particularly during poor daylight
- If the materials are stored or stacked a little away from the site of their actual consumption, their manual carrying on shoulders or on the back can pose risks of injury and fatigability in carrying these materials to the site of consumption



- There could be increased vulnerability to accidents and personal injuries if the workers neglect in observing the standard operating procedures for carrying out an activity or if they do not observe the worksite safety instructions and avoid using protective gadgets
- Unsafe storage of hazardous materials, explosive substances, inflammables and ignitable materials can produce accidents of fire and explosions resulting in loss of life and property
- Unhygienic disposal of toilet wastewater from worksite camps and offices can precipitate epidemics of waterborne disease not in the workers but also in the neighbouring community
- Since this particular site is surrounded by built-up structures occupied by the Colony residents, haphazard stockpiling of raw materials and debris onto the surrounding roads can cause inconveniences for the neighbouring residents
- Production of large amounts of the excavated soil and heaps of debris can cause obstruction to free movement of persons and vehicles, if it is placed onto the roadways and thoroughfares
- Leakages of oils and lubricants from machinery, equipment and storage areas can degrade soil quality and can act as a source of accidental personal injury for the pedestrians.
- Stagnation and or ponding of wastewater into depressions and at low lying areas at the site could act as a source of environmental nuisance and can have serious environmental and health concerns because of their potential to act as breeding places for disease vectors, as a source of foul smells, and an aesthetic blight
- A poor structural design and poorly levelled pavements can lead to ponding of storm water and inconvenience for the residents

ii) Activities Likely to Produce the Impacts

- Multifarious and miscellaneous constructional activities right from planning stage until completion of constructions

iii) Mitigation Measures

- The project buildings should be planned and designed as environment friendly structures and their architectural features should be made environmentally compatible and in accordance with the prescribed/applicable building codes
- Structural and architectural designs of the project buildings should pay due attention to aspects of natural lighting, ventilation, easement, environmental ambience, and aesthetic outlook of the buildings
- Allocations of spaces for various structures and facilities should be apportioned according to the prescribed standards keeping in view the actual occupancy and other operational needs of the residents
- Haphazard and disorderly stockpiling of raw materials should be avoided to the maximum extent possible. In this regard, separate enclosures should be designated at the worksite for storing different types of materials
- The worksite hazards and accidents should be avoided, or at least, risks of their occurrence should be minimized by obliging the workers to wear protective clothing/gadgets (masks, gloves, goggles, helmets) while on work and by observing standard procedures of carrying out an activity
- Safety instructions, signage and warning boards should be displayed at appropriate locations at and near the site for information, knowledge and compliance by the workers and the staff
- The hazard zones, active worksite areas, out of bound areas, and areas of authorized/limited access should be clearly demarcated and outlined with indicative red and striped tapes and by affixing warning signboards
- Regular as well as random laboratory testing of freshwater should be carried out for ascertaining its fitness for drinking. If needed, disinfection with suitable disinfectant should be carried out in consultation with the authorized officer of the health department
- Appropriately worded safety instructions, signage and warning boards in Urdu should be displayed at various appropriate locations at the construction site for information of the worksite labour, visitors and the supervisory staff
- Efficient working of the septic tanks fitted to the worksite toilets should be ensured all during construction and corrective measures taken for removing any faults
- The worksite labour should be educated and trained in the worksite safety practices by conducting regular and surprise safety drills and hazard management exercises with the help and assistance of the accredited environmental consultant
- A small Neighbourhood Committee (NC) of three to five members from the nearby communities may be constituted for soliciting trust of the neighbouring communities into the project activities. The NC may be used for apprising the community of the project's activities and for soliciting confidence of the residents and for resolving the social issues that are likely to arise from project's implementation
- A dedicated Environmental Safety, Health and Management Unit (ESHU) should be setup for the entire operational life of the project with a qualified and experienced person as its head for both the construction and the subsequent operation phases of the project. The ESHU will be responsible for managing various environmental issues all during project construction and ensuring that the suggested mitigation measures are



- complied with adequately at all times. The ESH Unit should be manned with qualified staff and equipped with essential machinery and equipment for the performance of its functions and other chartered responsibilities
- The ESHU should prepare a risk avoiding and hazard management plan indicating the assembly point and escape routes in case of occurrence of an emergency and should carry out practice exercises on regular basis
 - Generous tree plantation and development of greenbelts should be taken up as an environmental enhancement measure towards completion of the construction phase
 - It should be ensured that all due respect and honour is given to rights and privileges of the neighbouring communities and the sanctity, dignity and privacy of the inmates is not violated. It should be ensured that no damage is caused to the surrounding buildings from any of the constructional activities. Approaches to the neighbouring residences are kept cleared and well maintained by avoiding stacking of raw materials and debris therein.
 - Fire extinguishers of appropriate types like foaming agents for localized fires should be always available at the site, particularly near the storage sites of inflammable substances
 - Haphazard placement of materials, particularly on the pathways should be avoided. All loose materials, which can give rise to windblown particulate dust into ambient air, like sand and soil should be covered with tarpaulin or other similar materials or sprinkled with water

3.6 Environmental Impacts relating to Project's Operation Phase

The discussion following hereinafter relates to operation phase impacts of the project on various important environmental parameters as well as non-parametric aspects. As a general rule, potentiality of the negative impacts of a residential housing project is likely to increase with the number of persons occupying the buildings. Higher the number of residents, higher will be the demand and consumption for resources and utilities (such as water, gas, electricity) and higher will be the amount of the wastes generated therefrom (such as sanitation water and solid wastes). Thus, volumetric increases of consumption of resources and generation of effluents and emissions will be directly proportional to the number of the occupants. If it is assumed that on the average, every second family owns a car and every household has at least one motorcycle, then there will be approximately 675 cars and about 1350 motorcycles coming to, leaving and to be parked at the colony premises. The number of the various vehicles coming to leaving the colony premises in connection with various other affairs will be in addition to the vehicles of the residents. All these vehicles, which consume fossil fuel, will contribute towards exhaust emissions from burning of fossil fuel in their engines. This may affect the local environment, if the exhaust pipe emissions exceed the prescribed environmental quality standards, as applicable to the area. Likewise, consumption of freshwater and generation of wastewater, the rate of consumption and generation of which will be around 95 to 100 litres and 90 to 95 litres per person per day respectively. The total volume of consumption of freshwater and generation of wastewater, however, will depend on the actual total occupancy of the colony and the persons consuming the freshwater.

On the social front, there could be chances of social frictions and strained neighbourhood relations from number of factors and causes. As already mentioned, some of the neighbouring residents have expressed their concerns over conversion of the greenbelts/park's land into residential usage. Of the many social issues relating to occupancy stage, noise will be of serious concern. Noise generation from playing of music at loud volume by a resident could be a source of annoyance for other residents, particularly the old, infirm, expecting mothers and the students. The above-mentioned and other various operation phase impacts alongwith their mitigation measures are discussed hereunder:

3.6.1 Parametric Impacts of the Operation (Occupancy) Phase

The subsections following hereinafter present some brief discussion on the parametric impacts of the project's operation (occupancy) phase.

3.6.1.1 Soil and Lands

As there will not be any significant interventions with the land and soils during the occupancy stage, no major impacts onto soils and lands are expected during this stage of the project. As the project is a housing scheme, the superstructure will occupy most of the land and major portion of the open land will be converted into pacca pavements. Therefore, barring the lands earmarked for developing the greenbelts, there will be hardly any land surface, which might be affected by the project activities. Therefore, the likely impacts of the operation phase of the project on soils and lands will remain confined to the soils of the greenbelts and the bare soils, which are discussed as hereunder.

i) Likely Impacts

- It is a common practice in our society that the residents usually park their vehicles onto the greenbelts and other open places. Parking of vehicles onto the grassy lands can compact the soils underneath and thereby



reducing their water-holding capacity and their capacity to support growth of vegetation and plants. Parking of vehicles on grassy areas can denude the vegetative cover causing blowing of particulate dust from the denuded soil. Furthermore, oil leakages from the parked vehicles can impeach the soil quality irreversibly and can damage the plantations.

- If the gravity-drainage for the grassy areas is not provided in the structural design of the project, then stagnation of storm water onto the greenbelts can prevent access of the residents to the greenbelts and thereby depriving them of their right to enjoy benefits of the greenery
- It is a common practice in our society that people throw their discards onto roads, open spaces and greenbelts. Throwing of the solid wastes, garbage, trash, and food residues by the residents and the neighbours onto the greenbelts can degrade and contaminate the receiving soils besides undermining aesthetics of the local environment
- Overflowing of sewerage from choking of the pipes and manholes is not infrequent in our community. If the overflowed wastewaters enter into the greenbelt areas, they can damage the greenery and can also degrade the soil quality

ii) Activities Likely to Produce the Impacts

- Parking of vehicles onto greenbelts
- Throwing of solid wastes and garbage onto greenbelts at and around the project
- Throwing of solids into the sewerage system that results in its blockage and choking
- Other undesirable activities can damage the greenery such as holding marriage functions onto the grassy plots

iii) Mitigation Measures

- Parking of all types of vehicles onto the greenbelts should be prohibited strictly. Warning and informatory signboards in this respect should be displayed all along the greenbelts and at entrances into the parks and greenbelts
- Wherever feasible, greenbelts should be fenced with protective grilling and entry and exit should be through the respective gates only
- Throwing of garbage and solid wastes onto greenbelts should be prohibited and fine should be imposed on the violators. In order to check this malpractice, an efficient and responsive system of collection, disposal, and management of the general municipal solid waste should be prepared for the housing scheme and implemented across the board. Waste bins should be provided at various convenient locations in the parks and the marketplaces for depositing the solid wastes by the passers-by. They should be emptied regularly and replaced, if found damaged and unserviceable
- Household wastes should preferably be disposed through the local municipal solid waste system in an environment friendly manner
- The Neighbourhood Committee (proposed under Section 3.4.2.2) alongwith the ESH Unit should be entrusted with the task to ensure implementation of these and various other mitigation measures for ensuring environmental compatibility of the project all during its operational life

3.6.1.2 Surface Water Quality

Project's operation is likely not to affect the surface waters. The only way that surface waters may be affected from the wastewaters originating from the housing scheme would be the direct pouring of the latter into the former, chances of which are almost zero. The surface water channel nearest to the site is an unnamed and unimportant hill torrent. Owing to intervening physical impediments such as roads, houses, and other structures as well as non-availability of gravity gradient, wastewaters from the housing scheme are unlikely to find their way into the nearby wastewater channel. Therefore, chances of pollution of the water of this canal are quite remote. However, during a storm event, wastewaters may mix up with the storm water and can enter the canal alongwith the storm water.

i) Likely Impacts

- There could be the possibility, although quite remote, of pollution of the nearby surface waters from direct discharge of the untreated effluents from the housing scheme into such waters.

ii) Activities Likely to Produce the Impacts

- Non-provision of septic tank system of domestic wastewater particularly for the sanitation water from toilets
- Dysfunction or malfunction of the wastewater treatment system (septic tanks) and thereby release of untreated wastewater into a water channel
- Poor maintenance and non-cleaning (non-removal of sludge) of the wastewater network, which may result into overflows and leakages that could find their way into nearby water channels



iii) Mitigation Measures

- Direct discharge of effluents and wastewaters from the housing scheme into a nearby surface water channel be avoided. If discharge into a surface channel is required, it should be only after due treatment and under permit from concerned authorities and in accordance with conditions of such a permit, if any.
- A practicable and effective schedule of cleaning and de-sludging be chalked out for the wastewater network of pipes and manholes, particularly before onset of the monsoon
- A well-designed network for collection, disposal, and channelization of storm water be incorporated in the design and layout plan of the project so that storm water never mixes up with the sewage
- The architectural and engineering features of the project buildings to provide septic tanks of appropriate functional capacity for the treatment of the sanitation wastewater from the toilets of each individual housing unit

3.6.1.3 Groundwater Abstraction and Quality

According to Planning Commission of Pakistan, domestic usage of freshwater is the third competitors for the groundwater usage after agriculture and industry⁵⁷. The freshwater demand in housing schemes exhibits diurnal as well as seasonal variations. The consumption of freshwater tends to be the highest in the morning followed only by a demand spike in the evening. Similarly, demand and consumption tends to be higher (30-50%) in summer compared to winter⁵⁸. According to an estimation, the per capita consumption of freshwater in Pakistani metropolises is around 100 litres per day⁵⁹. Therefore, against the expected occupancy of the housing scheme by around 9,000 persons, consumption of freshwater would be somewhat around 900,000 litres (900 m³) a day. This would be met with from the existing as well as the new boreholes to be made for groundwater abstraction at the site.

i) Likely Impacts

- Withdrawal of large volumes of groundwater without adequate recharge can lower the water table and may reduce availability of the groundwater for other users in the community
- In case of poor borehole construction or inadequate sealing of the borehole, pollutants can travel downward along the borehole line and may pollute the shallow groundwater at least
- If a wastewater outlet from a residential or commercial is discharged on open land or in the street, then downward infiltration of the pollutants present in the wastewater through earth's layers can pollute the shallow groundwater
- If the groundwater source is polluted, then consumption of the contaminated groundwater by the residents may result in morbidity and mortality due to waterborne illness, particularly gastrointestinal disorders in the affected persons

ii) Activities Likely to Produce the Impacts

- Withdrawal of large volumes of groundwater
- Poor construction and imperfect sealing of the groundwater boreholes
- General lack of social responsibility amongst the citizens, Irksome social habits, and personal practices which may lead to unnecessary wastage of freshwater and the resultant over pumping of the groundwater

iii) Mitigation Measures

- The residents and water users should be constantly made aware of the importance of freshwater as a precious natural resource and gift of the nature. They should be constantly educated for practising waste use conservation
- Water meters should be installed for each household and the residents should be charged proportionate to the volume of water consumed by them instead of a flat rate which tends to promote water wastage
- Allottees of the houses should be encouraged to install auto shutoff water taps to prevent water wastage
- All wastewater outlets from the houses should be linked to the sewerage network. No wastewater outlet should be discharging the effluents outside the sewerage network
- A comprehensive hydro-geological investigation of the groundwater parameters may be carried for the entire project area and the surrounding areas to assess future availability of freshwater by determining infiltration rate, leaching characteristics of the soil, filtration capacity of the soil, depth of water table, and safe yield limit of the aquifer beneath
- A practicable groundwater abstraction schedule, based on the aquifer parameters, should be prepared to ensure sustainable withdrawal of the groundwater

⁵⁷ Pakistan in the 21st Century, Vision 2030, Planning Commission, GoPk, Islamabad, 2005

⁵⁸ A brief on Water and Sanitation Agency (WASA), Quetta, 2019

⁵⁹ Balochistan Development Statistics, 2018



- Regular laboratory testing of the freshwater to be supplied to the inmates should be carried out for timely detection of contamination and for taking up appropriate corrective measures
- Water filters should be installed with the water supply sources, if so warranted on the basis of laboratory test reports
- Overhead water tanks, if any are installed by the occupants at their houses, should be thoroughly cleaned and disinfected by the inmates after every six months at least by using Health Department's recommended disinfectants

3.6.1.4 Wastewaters and Effluents

Large volumes of wastewaters, depending on volumetric consumption of the freshwater, are expected to be generated from the housing scheme all during its operational life. Given the number of housing units to be constructed under the project, it is expected that around 1350 families will be inhabiting in the scheme with an average family size of 6.6 persons per family, as is prevalent in our country. Thus, it is anticipated that approximately 9000 residents will occupy the housing scheme. If the averaged out usage of freshwater is taken as 100 litres per person per day, then the freshwater consumption can be assumed to be around 900,000 litres (900 m³). Based on these calculations, the wastewater generation @ 90~95% of the freshwater consumption will be around 90~95 litres per person per day. Therefore, the housing scheme will be generating about 810,000~855,000 litres (810~855 m³) of wastewater per day. The wastewater, to be generated at the colony, will be drained into a sewerage and drainage network to be constructed anew for the housing colony. The newly built system will ultimately join with the final sewerage drainage channel of Quetta. It is noticeable that wastewater will be drained out only after its treatment in the wastewater treatment plant to be installed anew at the housing scheme⁶⁰.

The domestic wastewaters often contain a number of organic and inorganic pollutants such as chemicals, oils, fats, proteins, carbohydrates, and many other substances⁶¹. The project being a housing scheme, its sewage will contain almost all the pollutants typically found in domestic wastewater. By its very design, the project allows mixing of the non-sanitation water with the sanitation water, which ideally should not be the situation.

i) Likely Impacts

- Choking and blockage of the sewerage lines from indiscriminate throwing of solids into the sewerage system by the residents can cause obstruction to smooth flow and can result into overflow of the wastewater onto greenbelts and bare soil areas can degrade the soil quality and may contaminate the soil crust
- Choking, blockage or overflow of wastewater pipelines may cause stagnation of the wastewater onto streets and pathways thus causing inconveniences to pedestrians, splashes from vehicular movement, foul smells, and ugly outlook and may act as breeding place for the disease causing organisms and vectors. It need not mention that proliferation and growth of disease vectors from stagnated wastewater can produce serious health impacts
- Stagnation of wastewater near the built up structures from frequent overflows can lead to downward seepage of the wastewater along the foundations and may damage them
- Prolonged stagnation of wastewaters into depressions and the low lying areas may favour algal growth because of intrinsic high levels of nutrients in the domestic sewage
- If wastewaters from the housing scheme are discharged untreated into the receiving drain, then dissolved solids in the wastewater can pollute and impair water quality of the receiving channel. In general, impacts of the dissolved solids include increased turbidity of surface waters, physical hindrance to functioning of aquatic plants and animals, and provision of a favourable environment for proliferation of pathogens. Increased turbidity reduces penetration of light through the water column, thereby limiting the growth of desirable aquatic plants that serve as a critical habitat for aquatic organisms. Solids also provide a medium for the accumulation, transport, and storage of other pollutants, including nutrients, pathogens, and trace elements.
- There could be the possibility of choking, blockage or overflow of the sewerage and the wastewater network from indiscriminate throwing of solids into the sewerage network
- Poor maintenance and non-cleaning (non-removal of sludge) of the wastewater network can result into overflows and leakages which may find their way into nearby channels

ii) Activities Likely to Produce the Impacts

- All and various household activities which use freshwater and generate wastewater

iii) Mitigation Measures

⁶⁰ Environment Protection Agency, GoBIn, 2019

⁶¹ A study into Characterization of Domestic Wastewater, MSc Thesis (unpublished), CEES, Punjab University, Lahore



- Choking, blockage and overflow of the sewerage system should be prevented by preventing entry of the solid wastes into the sewer lines. For this purpose, the ESH unit may publish small leaflets asking the residents not to throw or dispose of any solid articles in the wastewater system. Additionally, screens should be installed at appropriate points in the waste line for removing the solid from the wastewater stream
- If a central wastewater treatment plant is not installed, then septic tanks of appropriate capacities should be constructed for treatment and management of the sanitary wastewater from individual households and other establishments. Efficient performance and functioning of the septic tanks should be ensured and their 'stuck-up' should be avoided by timely interventions. Only treated wastewater should be discharged into a drainage channel or the municipal sewer line
- The ESH unit and the NC may chalk out a practicable and effective schedule of cleaning and de-sludging of the wastewater network of pipes and manholes, particularly before onset of the monsoon every year
- A well-designed network for collection, disposal, and channelization of storm water should be incorporated in the design and layout plan of the project so that storm water never mixes up with the sewage
- Direct discharge of untreated effluents and wastewaters from the housing scheme into wastewater drain should be avoided. All discharges should be under valid permit from the concerned authorities and in accordance with conditions of such a permit. No untreated effluents should be discharged out

3.6.1.5 Air Quality

The air quality impacts during project's occupancy stage will arise mainly from two broad categories of activities i.e., (i) burning of natural gas for cooking, water heating in the geysers, and other household usages, and (ii) exhaust air emissions from vehicles moving on the roads. Both types of emissions will be a by-product of burning of fossil fuels and will therefore contain SO_x, NO_x, CO₂, CO, other hydrocarbons, water vapours, and particulate matter. As the housing scheme is still at a nascent stage, exact volume and composition of these emissions from both stationary and mobile sources is not known. However, owing to cleaner composition of the natural gas, emissions from burning of natural gas for domestic and commercial usages at the marketplaces will also be relatively cleaner and are expected to remain within the prescribed NEQS limits, provided stoves are not faulty and allow full oxidation of the gas. In contrast to the domestic emissions, vehicular emissions will contain a considerable amount of impurities and particulate matter and will therefore possess a greater potential to affect the air quality than burning of natural gas at the households. Machinery and equipment, installed at the housing scheme if any, e.g., generators, would also contribute to air emissions.

Local air quality can also be affected from the blown-up dust and the suspended particulate matter from the denuded soil surfaces if greenbelts and plantations are not protected and not maintained in the way they ought to be. Open burning of household waste and yard trimmings can also contribute substantially to impairment of the local air quality

i) Likely Impacts

- Impacts on local air quality from burning of natural gas at the households for cooking and other miscellaneous purposes
- Deterioration of local air quality from carbon dioxide and nitrous oxide emissions produced from burning of fossil fuels in the internal combustion engines and in various other equipment and machinery running on fossil fuel
- Deterioration of the ambient air quality from blown-up dust and particulates from denuded soil surfaces
- Deterioration and impairment of air quality from smoke and the particulate matter emitted from open burning of the household wastes and the yard trimmings (dry leaves, felling)

ii) Activities Likely to Produce the Impacts

- Cooking and food preparing activities at the individual households
- Direct open burning of garden waste and the household solid wastes by the occupants
- Burning of fossil fuels in vehicles, generators and other equipment and machinery and resultant emissions
- Poor upkeep, maintenance and tuning of the vehicles and usage of poor quality oils, lubricants, and additives in the vehicles

iii) Mitigation Measures

- The ESH and the NC may launch periodic campaigns for educating the residents to keep their vehicles tuned up and in good running condition to reduce emission load
- The ESH and the NC may launch campaigns to convince the residents to promote conservative usage of the natural resource (natural gas, water). Leaflets, brochures and pamphlets in this regard may be published and distributed amongst the residents



- Open burning of all types of waste materials and the garden wastes should be strictly banned and the defaulters should be dealt with in accordance with the applicable laws and regulations
- If generators or other machinery and equipment fitted with engines running on fossil fuel are to be installed at the housing scheme, preference should be given to installation only of Euro-II compliant engines
- Informatory and awareness raising signboards may be installed at convenient locations and along roadsides to make the people aware of air pollution and the way to reduce it

3.6.2 Non-Parametric Impacts of the Operation (Occupancy) Phase

The subsections following hereinafter present a discussion on the non-parametric impacts of the project's operation (occupancy) phase.

3.6.2.1 Electricity Usage

Electricity will be required at the project for various usages, such as:

- Domestic usage at the housing and commercial units
- For streetlights and other community amenities
- Energizing internal security and cable network system, and
- Operating water lift pumps for filling the overhead water tanks

The exact electricity load for the above-mentioned usages is yet to be calculated. However, it is estimated that this will be in kilowatts, which will require installation of number of transformers of varying capacities throughout the project.

i) Likely Impacts

- All the direct and indirect impacts of unhealthy usage of electricity

ii) Activities Likely to Produce the Impacts

- Multifarious and miscellaneous constructional activities involving usage of electricity

iii) Mitigation Measures

- Education and training should be given to workers and the contractors' staff over safety precautions in the usage of electricity

3.6.2.2 Water Usage at the Project

Water, being an essentiality of life, will be required in quite large quantities during both construction and operation phases of the project. Various constructional activities such as watering the raw bricks, preparing the cement mortar, settling the laid down concrete roofs, curing the constructed masonry and concrete works, washing the construction implements, irrigating the greenbelts, and other miscellaneous activities. The overwhelming consumption of freshwater after occupation of the housing units in the scheme will relate to domestic consumption at the toilets, kitchens, floor washing, and drinking. According to an estimate, the per capita consumption of water in Pakistani metropolises ranges between 100-120 litres per day⁶². If occupancy of the individual housing units is estimated as 6.6 persons per family and it is assumed that each housing unit is occupied by a family, then the total occupancy for the 1350 housing units will be around 8910 persons, say 9000 persons. Thus, the daily water consumption will be around 40,000~48,000 litres (40 m³~48 m³). However, this is an estimation only and the actual consumption might differ from it keeping in view the diurnal variations. Furthermore, consumption will also vary according season of the year. Watering of the greenbelts would be in addition to the domestic consumption. The existing groundwater boreholes at the Colony will be used for supplying water during construction and operation of the scheme. Consumption of freshwater will result in generation of wastewater as a natural sequel. The wastewater generation will range between 90-95% of the freshwater consumption. Thus, consumption of 40,000~48,000 litres (40~48 m³) of freshwater may generate approx. 36,000~38,000 litres (36~38 m³) of wastewater. As per the scheme's master plan, wastewater from the scheme will be drained into a new sewerage network to be developed as a part of the overall construction plan of the scheme. The newly developed sewerage system will ultimately join with the existing sewerage and drainage system of WASA Quetta.

i) Likely Impacts

- All the direct and indirect impacts relating to over abstraction and spendthrift usage of freshwater

⁶² WASA, Quetta



ii) Activities Likely to Produce the Impacts

- Multifarious and miscellaneous constructional activities involving usage of freshwater

iii) Mitigation Measures

- Education and training should be given to workers and the contractors' staff to consider freshwater as a precious resource and take all necessary precautions in avoiding its wastage and ensuring its conservative usage

3.6.2.3 Solid Wastes

Solid wastes generated during the operational phase (occupancy phase) of the housing scheme will comprise mainly the miscellaneous municipal wastes of domestic, household and marketplace origin. Solid wastes from such a source typically contain paper, glass, empty cans, tin bottles, food packaging, peelings, PET bottles, plastics, toys, and rags⁶³. According to a study, the municipal wastes of household origin contain relatively higher amounts of organics compared to other sources⁶⁴. On account of higher organic content, the domestic solid wastes tend to putrefy early and therefore may give rise to foul smells particularly during hot summer days⁶⁵. In nutshell, improper collection, disposal and management of solid wastes can produce number of undesirable environment impacts.

i) Likely Impacts

- The adverse impacts mentioned below will manifest only if a well-planned solid waste management system for collection and disposal of the waste during operational life of the housing scheme is lacking. In the absence of a well-designed waste management system, generation and improper disposal of the solid waste may lead to number of environmental impacts, such as:
 - Improperly disposed of solid wastes may cause degradation of the land and soils
 - Improperly disposed of solid wastes (e.g., shopping bags) may find their way into the sewerage system and may cause choking and blockage of the sewer lines
 - Scattering of the solid wastes may cause littering of the open spaces, parks, pavements and roads
 - Emissions of particulate matter from improperly disposed of solid wastes may cause deterioration of the local air quality
 - Improperly dumped solid wastes may blow up by windstorm and may spread over and may enter into houses, shops, and other places
 - Putrefaction of the organic component of the uncollected wastes may give rise to foul smells
 - Heaps of the improperly disposed of and uncollected wastes may act as breeding grounds for the disease producing vectors
 - Food residues in the wastes heaps may attract the stray animals (dogs, cats) which may spread the wastes in a wider area
 - Solid wastes disposed of outside the collection containers may be carried away to distant places with the storm water and rainfall runoffs and may produce undesirable impacts in a wider area
- Presence of sharp edged and piercing articles in the solid wastes such as blades, razors, needles, and spikes may cause injury to the waste collecting crew and the waste pickers
- presence of infectious materials in the solid wastes may produce infection in the waste collecting crew and the waste pickers
- Non-provision of waste collection bins or container drums of appropriate capacities at convenient locations may encourage disposal and heaping of the solid wastes at the non-designated places and thereby littering of the area

ii) Activities Likely to Produce the Impacts

- Miscellaneous household activities producing domestic municipal solid wastes
- Lack of an instituted solid waste management system for the housing scheme

iii) Mitigation Measures

- The preventable adverse impacts of improper solid waste disposal can be easily mitigated by instituting a well-designed solid waste collection and disposal system. The ESH Unit may devise the requisite waste

⁶³ Management of Solid Waste, Quetta Metropolitan Corporation, Quetta, 2018

⁶⁴ Characterization of Solid Wastes in Quetta, QMC, Quetta, 2006

⁶⁵ Solid Waste Guidelines, Environmental Protection Agency, GoPb, 2008



management plan and put it in place in consultation with the residents. An effective and sound monitoring mechanism should also be instituted to ensure efficient performance of the solid waste management system

- The ESH Unit may display suitably worded instruction, appeals, requests, and warnings with regard to depositing of solid wastes inside the containers provided for the purpose at the housing scheme
- The ESH Unit and the NC may foster cordial relations and close liaison with waste generators and the local municipal authorities responsible for solid waste management for timely lifting of the solid wastes from the housing scheme

3.6.2.4 Noise, Vibrations and Odours

The most potent sources of neighbourhood noise at the operation stage of the housing scheme will be playing of music and audio video equipment at loud volumes by the residents and blowing of pressure horns by the vehicle drivers. Shrill music, high-pitched sounds and use of loudspeakers, particularly at nighttime, could be of much disturbance and annoyance to the residents. Not much can be done to mitigate this nuisance, except constant education and awareness of the residents and to remind them of the etiquettes of in a community. The indoor noise from various household equipment like vacuum cleaners, blowers, dyers, washing machines and lawn mowers, etc. will be of little significance with respect to the background noise levels. Generation of annoying vibrations is not expected from any of the routine daily activities at the project premises. There could be generation of odours from putrefaction of organics from the uncollected solid wastes, particularly during summers. Emissions of staunch smells from heaps of wastes may be disturbing for the passers-by as well as for the vicinity residents. However, in the presence of an efficient solid waste management system, probability of foul odours will be considerably reduced.

i) Likely Impacts

- Prolonged and continuous exposure to noise and vibrations, higher than threshold values, can produce psychosocial disturbances, behavioural changes, irritable attitude, short temperedness and annoyances in the exposed persons
- Higher than normal background levels are generally associated with the habit of talking at louder than normal voice in the persons living in these settings. Speaking at louder voices may damage the vocal cord system of a person (e.g., abrasions of throat and pathologic hypertrophy of the vocal cords)
- Presence of constantly high noise in the surroundings may cause disturbances of sleep in the exposed persons with consequential secondary and indirect effects
- Playing of music and videos at louder volumes may lead to social frictions and strained relations between the neighbours and may culminate even in a scuffle between the parties
- Emission of odours from putrefaction of the organics in the solid wastes could be a source of annoyance for the neighbouring community and the passers by

ii) Activities Likely to Produce the Impacts

- Playing of music, operating audio-video equipment at loud volumes and usage of heavy loudspeakers for celebrating various personal events
- Frequent and unnecessary blowing of vehicles' horns particularly pressure horns
- Bringing unfit vehicles onto roads and plying the vehicles with faulty silencers or by removing their silencers intentionally
- Usage of fireworks on the occasions of marriage, birthday, and religious events
- Poor collection or non-collection of solid wastes leading to their decay and natural biodegradation

iii) Mitigation Measures

- The ESH Unit and the NC may make efforts to foster good neighbourhood relations amongst residents of the housing scheme by promoting a culture of tolerance and respect for rights of the residents. A mutually agreed moratorium on playing of music and pressure horns may be enforced in consensus with various stakeholders
- Likewise, residents should be obliged to obtain permission of the ESH Unit and the NC for fireworks, usage of loudspeakers, and playing of the marriage-bands to mark the occasions of happiness and at special events
- Setting up of the businesses that may produce excessive noise such as automobile workshops, iron grinding shops, music shops, and other similar commercial activities should not be allowed at the project premises
- Good housekeeping practices and instituting an efficient and responsive solid waste management system can go a long way in reducing odour problems from natural decadence of the organics

3.6.2.5 Health, Safety and Community Wellbeing

Owing to large scale inhabitation of the housing scheme per unit area of land, there could be number of neighbourhood differences as well as social issues amongst the resident population. Because of their multiplicity, it may not be possible to list them all. Because of different lifestyles and social values systems, there



could be frictions and entanglements even on morsel issues amongst the residents. Although, there is plethora of laws relating to neighbourhood rights, but their enforcement may not be that easy as thought. The best that can be done is to inculcate a culture of respect for others' rights in community living amongst the inmates. This is a formidable task and may not be easy to implement. Some of the social issues have already been touched upon in the preceding chapters/ sections. One of the many problems, as are encountered in almost all housing schemes, like the instant one, is supply of utility services, their uninterrupted maintenance and collection of service charges from the residents. Residents usually try to avoid assuming any sort of responsibility towards common welfare, for example cleaning of the overhead water tanks etc. In such a scenario, the role of the ESH and the NC would assume special dimensions and will become more critical and challenging.

i) Likely Impacts

- Presence of large number of residents at a housing scheme of the confined limits can give rise to large number of social neighbourhood issues, confrontations, and challenges. There could be issues of intolerance of sharing the common resources
- Non-provision of escape routes and firefighting arrangements in the layout design of the building may take a heavy toll in case of outbreak of any emergency.

ii) Activities Likely to Produce the Impacts

- Multifarious activities by a very large number of residents at the housing scheme

iii) Mitigation Measures

- The ESH Unit and the NC should utilize all means available with them and should make all out efforts to foster good neighbourhood relations amongst the residents and to inculcate respect and tolerance for each other as good citizens
- The ESH Unit and the NC should play their role in ensuring continuity of supply of the utilities and essentialities at the housing scheme
- The ESH Unit and the NC should ensure regular and periodic cleaning and disinfection of the overhead water tanks with Health Department's recommended disinfectants
- The ESH Unit and the NC should ensure provision and functioning of street light system
- The ESH Unit and the NC should do all that would be required from such voluntary setups at similar types of residential establishments
- Buildings' layout plan and engineering design to incorporate emergency escape routes and firefighting arrangements



Table 3.2a

Modified Environmental and Social Impact assessment Matrix (Unmitigated Impacts)

Environmental Components	Physical				Biological		Social and Socioeconomic																		
	Land and Soil Degradation	Surface Water Quality	Groundwater Quality	Air Quality	Natural Vegetation	Wildlife	Access and Easement	Noise and Vibrations	Agriculture / Farming	Livestock	Odour and smells	Safety and Hazards	Aesthetic Value	Availability of food	Health and Wellbeing	Education/Skill enhancement	Gender Issues	Employment / Income	Community Empowerment	Price of Land	Community Participation	Archaeological Heritage	Social / Cultural Issues	Environmental enhancement	
Project Activities																									
Site Selection	0	N	N	0	N	N	-1	0	N	N	N	-1	-1	N	N	N	N	+2	+1	+1	0	N	0	0	
Layout Plan / Building Design	N	0	0	-1	0	N	-1	0	0	N	N	-1	-1	N	-1	-1	N	+2	N	+1	0	N	-1	0	
Construction Activities	-1	0	-1	-1	0	N	-2	-2	0	N	-1	-2	-1	N	-1	+1	-1	+2	+1	+1	+1	N	-1	-1	
Occupancy of the Scheme	-1	-1	-1	-2	+1	N	N	-1	N	N	-1	-1	+1	0	+1	+2	0	+2	+2	+2	+2	N	-2	+2	

Key: -2=High Negative Impact -1=Low Negative Impact 0=insignificant/Negligible impact
 +1=Low Positive Impact +2=High Positive Impact N=No Impact



Table 3.2b

Modified Environmental and Social Impact assessment Matrix (Mitigated and Residual Impacts)

Environmental Components	Physical				Biological		Social and Socioeconomic																		
	Land and Soil Degradation	Surface Water Quality	Groundwater Quality	Air Quality	Natural Vegetation	Wildlife	Access and Easement	Noise and Vibrations	Agriculture / Farming	Livestock	Odour and smells	Safety and Hazards	Aesthetic Value	Availability of food	Health and Wellbeing	Education/Skill enhancement	Gender Issues	Employment / Income	Community Empowerment	Price of Land	Community Participation	Archaeological Heritage	Social / Cultural Issues	Environmental enhancement	
Project Activities																									
Site Selection	0	N	N	0	N	N	-1	0	N	N	N	-1	-1	N	N	N	N	+2	+1	+1	0	N	0	0	
Layout Plan / Building Design	N	0	0	-1	0	N	-1	0	0	N	N	-1	-1	N	-1	-1	N	+2	N	+1	0	N	-1	0	
Construction Activities	-1	0	-1	-1	0	N	-2	-2	0	N	-1	-2	-1	N	-1	+1	-1	+2	+1	+1	+1	N	-1	-1	
Occupancy of the Scheme	-1	-1	-1	-2	+1	N	N	-1	N	N	-1	-1	+1	0	+1	+2	0	+2	+2	+2	+2	N	-2	+2	

Key: -2=High Negative Impact -1=Low Negative Impact 0=insignificant/Negligible impact
 +1=Low Positive Impact +2=High Positive Impact N=No Impact



4

ENVIRONMENTAL, SOCIAL & DISASTER MANAGEMENT PLAN



4. ENVIRONMENTAL, SOCIAL AND DISASTER MANAGEMENT PLAN

4.1 Environmental, Social and Disaster Management Plan (ESDMP)

This section describes the environmental, social and disaster management plan (ESDMP) for ensuring smooth environmental and social management of the project at all stages of activities and dealing with an emergency as and when it may occur. The objective of including the ESDMP into this EIA report is to ensure prevention of any situation of emergency and in case of development of such a situation, steps required to be taken to manage the situation. The section also contains a set of environmental guidelines for avoiding and or preventing the adverse environmental impacts of the project. Besides, institutional setup for implementing the ESDMP, management of hazards and emergencies, importance of the compliance monitoring programme has also been discussed.

The ESDMP is considered the core area of an environmental examination study. It focuses on environmental protection through minimization of the impending risks and the likelihood of occurrence of hazards. The ESDMP aims to ensure that adverse consequences of an emergency are properly addressed at all stages of disaster management from prevention to rehabilitation and resettlement of the affected individuals. The ESDMP also provides a mechanism to reduce likelihood of occurrence of the risks to an acceptable level by adopting the risk prevention strategies. Wherever possible and applicable, the ESDMP provides for avoiding environmental risks and, in case they are unavoidable, then identification of the most direct and the best possible measures for reducing the extent of damage to persons and property. Additionally, ESDMP designates the special risk areas and proposes stringent measures for hazard avoidance at these high risk and sensitive areas. In nutshell, the objectives of the proposed ESDMP would be as under:

- To provide an early warning system for the potential or actual risks
- To provide a systematic and implementable mechanism for risk characterization and risk mitigation
- To test effectiveness of the risk handling mechanism and hence improve upon the weaker areas
- To ensure that operational activities are carried out in sound and secure manner by avoiding the probability of risks occurrence

Safety measures, including appropriate design solutions, onsite handling of the hazardous materials during construction, and resolution of social conflicts during operational phase of the housing scheme represent major components of the ESDMP. The ESDMP also aims to ensure that the quality of the life values as well cultural and religious sensitivities are fully preserved all through various stages of the project to avoid social severances and conflicts. Lastly, the ESDMP has been framed in line with the national legislative framework, environmental standards and regulations to ensure environmental compatibility of the project.

4.2 Institutional Setup for ESDMP Implementation

The proponent shall setup an Environmental Safety and Health (ESH) Unit for timely appreciation, identification, and reporting of the environmental issues relating to the project activities and for taking necessary preventive and corrective measures for addressing the issues at various levels of responsibilities. The ESH will continue during the operation phase as well but with a little changed composition and mandate. During the operation phase, the ESH may consist of the persons appointed in consultation with the NC. Expenses of the ESHU may be met with from contributions made by the residents. If needed, compulsory maintenance charges should be imposed for every housing unit. The ESHU should be an independent functional unit headed by an ESH Officer, who will be assisted by an appropriate number of subordinate officers, technical personnel, and others. The ESHU should be equipped all essential equipment for dealing with any situation of emergency and disaster.

4.3 Roles and Responsibilities of the ESH Unit

The primary responsibility with respect to management of environmental issues at the housing scheme will rest with the ESH Unit. Some of its responsibilities may include the following:

- To generate periodic reports and fill-in the checklists on environmental and social performance of the project and the actions taken by the ESH Unit for rectifying the issues and problems
- To maintain liaison and linkages with the concerned municipal and regulatory authorities for troubleshooting and timely removal of the bottlenecks with respect to social and physical issues at the project premises



- To ensure smooth and timely implementation of the recommendations relating to hazard prevention at the housing scheme
- To ensure troubleshooting of the problems relating to health, safety, environment, and social issues all during project's construction and operation
- To take all necessary steps to protect safety, sanitation and health of the labour and workers during both construction and operation, especially of those exposed to higher levels of risks to health and safety
- To prepare and execute awareness raising, educational and training programmes on safety, health and sanitation for the staff, labourers, officers and the residents particularly for the new comers
- To make investigations of the causes of occurrence of any accidents or hazards and take necessary steps to prevent occurrences of such events in the future

4.4 Reporting and Recordkeeping

The ESH will ensure a robust reporting and recordkeeping system. Such recordkeeping should be managed through a computer system and should be handy as and when required. The record may include the following:

- Particulars of the occupants
- Number of persons in each unit and the total number of occupants at the scheme
- Particulars of the visitors coming to and leaving the project alongwith details of the residents visited
- Recording of readings of the meters of the common facilities like streetlight electricity meter
- Record of withdrawal of groundwater
- Operating hours of the tube wells, their repair and maintenance
- Cleaning and disinfection schedule of the overhead tanks
- Status of safety and emergency equipment
- Daily status report on sanitation, safety, environment, and any reportable incident
- Annual, routine, and special repairs
- Wages and salaries paid to the staff of the ESH Unit
- Location, condition, and capacities of the waste collection bins
- Registers of repair and maintenance of various equipment/machinery (repair history sheets)
- Record of laboratory investigations of freshwater and other environmental parameters
- Records of correspondence with various authorities, agencies and the head office
- Other miscellaneous records, if any

4.5 Future Expansions

Currently, no programme of expansion of the housing scheme is on the anvil. However, if any programme of expansion is envisaged, it should be well thought over and based on strong data analysis, feasibility study, and an environmental assessment study.

4.6 Responsibility of Contractor towards Environmental Protection

The construction contractor, under instructions of the proponent, should act promptly to prevent noise, vibration, water contamination, air pollution and other nuisances to the environment resulting from constructions or the activities relating to constructions. The contractor must always keep the site clean and tidy all during construction. He should remove all construction debris, surplus soil and other wastes at the close of construction and properly transport them to the disposal site.

4.7 Environmental Monitoring Plan (EMP)

Environmental monitoring is an essential tool for evaluating environmental performance of the housing scheme and ascertaining whether recommendations and the environmental mitigation guidelines are meeting with their intended goals. The prime objectives of the environmental monitoring will be to:

- Check whether mitigation and environmental enhancement measures are adequate, effective and actually implemented at the site
- Ensure compliance with legal and community obligations including safety on construction sites
- Provide as the means whereby impacts which were uncertain at the time of preparation of the IEE/EIA, or which were unforeseen, can be identified, and appropriate corrective measures have been taken up
- Improve our knowledge and approach for similar projects, i.e., to provide information on the actual nature and extent of the key impacts and effectiveness on mitigation and enhancement measures in order to improve planning and execution of similar projects in the future



The EMP, as proposed in this EIA, defines the monitoring mechanism and identifies a set of verifiable monitoring parameters to ensure that all proposed mitigation measures are implemented effectively and completely. As and where applicable, all tested parameters should be analysed in relation to the permissible standards set out in the NEQS or as prescribed by the international bodies.

4.7.1 Internal Compliance Monitoring

The ESH Unit will be responsible for internal compliance monitoring of the project all during its constructional and operational phases particularly with respect to compliance of the ESDMP and the environmental mitigation guidelines. The officer incharge of the ESH will ensure observance of the ESDMP and EMP by the concerned personnel. He/she will ask for environmental compliance status and performance of the project from his juniors and will keep record thereof for taking necessary actions as and when required.

4.7.2 External Compliance Monitoring

Environmental performance monitoring or environmental audit in general terms is the systematic collection of data through a series of repetitive measurements for evaluating environmental health status of a project activity. External monitoring is a job of specialized nature and must be conducted by a third party (an environmental firm). It is, therefore, recommended that the proponent or the project management committee (once ownership and management of the project is transferred to the buyers) hire services of a professional environmental consultancy for carrying out this essential and important task. There is a good spectrum of categories and techniques of conducting environmental monitoring and auditing. However, in this case, external monitoring may be restricted to critically reviewing the implementation process of the ESDMP and the EMP, identifying any on-ground environmental issues of concern, overall environmental performance of the housing scheme, and framing proposals and mechanisms for addressing various environmental issues. The primary purpose of the external monitoring will be to see that both construction and the operation phase activities have been carried out in line with the mitigation strategy outlined in the ESDMP. Since, operation i.e., usage of the project buildings as residential units, will be a lifelong and continuing activity, the external compliance monitoring or the environmental audit should be a regular annual feature.

As mentioned earlier, the primary purpose of the external compliance monitoring or post project auditing is to evaluate environmental compliance of the various activities and their consonance to the mitigation measures, terms, and conditions of EIA's Approval from EPA. The objectives of such compliance monitoring will be:

- To monitor compliances of the conditions set out in the project's construction permits, contract documents, and operating licenses
- To review relevance and applicability of the environmental impacts as predicted in the EIA for proper management of the risks and uncertainties
- To modify the mitigation recommendations or to develop revised mitigation measures if all environmental impacts could not be predicted earlier or not attenuated by the proposed mitigations
- To determine accuracy of the impact predictions and effectiveness of the mitigation measures in order to make use of this experience for future activities of the same type
- To review effectiveness of the environmental management and the disaster management plans of the project

4.8 Hazard Management and Emergency Response System

The ESH Unit will also act as the focal agency for dealing with risks and hazards all during construction and operation phases of the project. The ESH Unit will formulate and develop a hazard management plan (HMP) and emergency response system (ERS) to cater for any unforeseen eventualities, accidents, fires, or worksite hazards. An outline of such a plan will be somewhat as under:

4.8.1 Safe Handling of Hazardous Materials

If any hazardous, inflammable, or ignitable materials (diesel, petrol) are to be stored at the project (during both construction and operation phases), storing of these materials should be according to prescribed instructions with respect to their storage, handling, movement and control. Only the persons duly authorized in this behalf should be allowed to handle them. The storage site must have arrangements for gravity collection of overflows, spills and leakages. The storage site must have firefighting arrangements. At least pressurized foam extinguishers should always be present to combat fire.

4.8.2 Equipment for Emergency

All first-line-of-defence equipment and gadgets for handling emergencies should be made available at the project office. These may include rescue ladders, rescue chairs, ropes, first aid kits, stretchers and etc.



4.8.3 Standard Operating Procedures for Emergencies

The following standard operating procedures (SOP) may be followed in case of any emergency, fire, or accident:

(i) Preventive Measures

- Safety instructions and things-to-do-first should be displayed at prominent places at the project premises. All workers and the residents should be asked to strictly observe the prescribed safety instructions.
- All the workers present in the active construction areas and hazard zones must put on safety equipment and gadgets (helmets, goggles gloves, aprons etc.) without exception. No worker should be allowed to enter the workplace without safety gadgets
- Only the persons duly authorized in this behalf should handle chemicals and hazardous materials
- Smoking should be strictly prohibited at the worksite, storerooms, workshop area, container offices and all close places. Smoking in open spaces can be done under permission from the site engineer.
- No unidentified persons and unauthorised vehicles should be allowed access to construction sites during construction phase and the houses during occupancy phase. A “no entry/authorized entry” board should be displayed at the entry points and a guard appointed thereat.
- Fire extinguishers should be affixed at convenient and easily approachable locations.

(ii) Communication Network/Intimation of Emergency

- Any person, worker or resident who first notices or comes into knowledge of any fire, leakage, spills or other emergency, will immediately report it to the ESH Unit.
- Intimation to other workers in the hazard zone will be communicated through a warning alarm or loudspeaker announcements under instructions of the officer incharge of the ESH Unit.

(iii) Reporting and Event Logging

- A log of every incident/leakage/emergency should be kept and be made a part of the office record of the ESH Unit.
- Intimation of any such happening will also be given to the local police or the local civil administration, if needed.

(iv) Assembly Point

- The officer incharge of the ESH Unit shall mark a permanent assembly point both for the construction and for the operation phases, where all employees and inmates shall gather first in case of an emergency or disaster.
- Instructions and signage in this regard should be displayed at conspicuous locations throughout the project premises and the community areas.

(v) First Line of Action

- Firstly, the office incharge of the ESH Unit or a person deputed by him will move to the site and will make a visual assessment of the situation. He will take further appropriate actions accordingly.
- Only the persons authorised by the officer incharge of the ESH Unit, or working under his instructions should take further action. They will follow instructions of the supervisory officer.

(vi) Second Line of Action

- If it is apprehended that the first line of action will be unable to cope with the situation, the second line of defence should be activated by calling the local municipal fire brigade, rescue service, police, or civil administration depending on nature of the emergency.

(vii) Post Incident Rehabilitation/Restoration

- Once the acute emergency phase is over, efforts for restoring normalcy and rehabilitation should be initiated under instructions of the appropriate authorities or the project management committee, if any existing.

(viii) Preparedness Exercises and Practice Drills

- In order to assess efficiency of the ESDMP and the SOP and to keep the arrangements in this regard updated, the ESH Unit may arrange preparatory exercises and practice drills on random basis at the project.

(ix) Liaison with the Local Authorities

- An updated list of telephone numbers, hotline numbers or other means of communicating with district and provincial disaster management organizations, civil administration, and the police should be displayed at prominent places at the site and the admn office.
- The ESH Unit will periodically review and update this contact list.



(x) Availability of First Aid and Medical Treatment

- The ESH Unit will arrange for the first aid and the basic medical care facilities at the housing scheme to cater for a medical emergency. The medicines and disposables of the first aid box should be regularly updated and recouped.

4.9 Budgeting for the ESDMP and ESH Unit

Funds will be required for efficient performance of the ESH Unit. It is therefore, suggested that maintenance charges should be imposed on each household or apartment and the money so collected should be used for funding the ESH Unit. Apart from expenses on maintenance, payment of utilities, salaries of the staff, external compliance monitoring by an environmental firm will also require allocation of money. It is therefore recommended that the housing scheme should have suitable environmental budget.

4.10 Environmental Guidelines

Table 4.10 presents necessary environmental management and mitigation guidelines relating to design, construction, and operation stages of the project. These guidelines are in fact the preventive and corrective actions that may be taken into consideration by the proponent and other persons involved in planning, designing, and implementing the project. The primary objective of these guidelines is to avoid or reduce the risk of the likely damages to environment. These guidelines have been developed with a view to ensure that the identified adverse impacts relating to various environmental parameters are properly addressed by either adopting a preventive or a mitigation strategy. The guidelines also designate the persons and agencies for their implementation and thereby ensuring attenuation of project's adverse impacts to an acceptable level by adopting suitable administrative and or technical options.



Table 4.10

Environmental Management and Monitoring Guidelines

A) Design and Planning Stage

Environmental Guidelines	Responsibility
<p>Design Aspects</p> <p>(1) Project's Design and Layout should:</p> <ul style="list-style-type: none"> (a) have architectural features, to the extent possible, in conformity to general landscape of the vicinity/area (b) be in consonance with local climatic, environmental, and meteorological conditions (d) prefer local construction materials (e) incorporate proper ventilation and provision of sunshine, air movement, and maximum usage of the daylight (f) provide adequate space for movement of persons and vehicles at the site and in between the residential blocks (g) make provisions for collection, treatment, and disposal of wastes and effluent in an environmentally sound manner by providing a well-designed solid waste and effluent handling system of appropriate capacity (i) provide adequate structural safeguards for avoiding contact of storm water with buildings' foundations through the provision of essential structures for collection, diversion, and removal of storm water runoff away from the buildings (j) provide for internal footpaths and or pavements to ensure all weather access to the buildings and other structures (k) provide adequate arrangements for treatment and disposal of wastewater from the temporary worksite toilets and the community toilets at the community centre and the project office (l) Provide construction of septic tank system for collection, treatment, and disposal of toilet wastewater for the temporary worksite toilets during construction and with each house if central wastewater treatment is lacking (m) be in accordance with the applicable byelaws and building codes (n) provide for availability of safe drinking water for the project (o) be in consonance to the environmental zoning of the site/area (p) be energy efficient and environment friendly 	<ul style="list-style-type: none"> ▪ Proponent ▪ Design Consultant / Engineer ▪ Principal Architect

B) Construction Stage

Environmental Guidelines	Responsibility
<p>Air Quality Concerns</p> <ul style="list-style-type: none"> (1) Carryout dust and emission producing activities (e.g., operating machinery, loading/offloading of materials) preferably at evening hours to minimize inconvenience to the neighbouring residents, schoolchildren and office workers (2) Keep the construction machinery and vehicles adequately tuned up and well serviced to avoid emission of smoke and particulate from their exhausts (3) Use only new and unadulterated fuels and lubricants. Do not use spent oils (4) Avoid operating machinery and equipment in windy conditions (5) Cover loose materials (e.g., sand, soil) with canvas/plastic sheets while stacked onsite or transporting on a carriage vehicle. If sheeting is not possible, then lightly sprinkle the surface with water (6) Display instructions at appropriate places requesting the vehicle drivers to lower down speed inside the premises and at the scheme to reduce blowing of drag dust and to avoid road accidents (7) Obscure and isolate the active construction zone by vertical shields/blinds, wherever necessary 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager



Environmental Guidelines	Responsibility
<p>Water and Wastewater</p> <ol style="list-style-type: none"> (1) Do not dispose of any raw (untreated) wastewater onto soil or land or into the greenbelts (2) All effluents and wastewaters from the project should be compulsorily subjected to appropriate type of treatment (e.g., a septic tank) before their final discharge into the environment (3) Avoid throwing of liquids and solids into nearby water bodies or on bare soils (4) The washouts of the construction machinery, implements and gadgets should be disposed of through soaking pits (5) All freshwater and wastewater pipelines should be buried (or well secured if open) to avoid their accidental or mischievous damage by vehicles, animals, and miscreants (6) Provide rainfall containment structures or storm water diverting barriers/channels all around the building blocks to avoid damage to foundations from accumulation of rainfall water 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager
<p>Noise Pollution</p> <ol style="list-style-type: none"> (1) Operate the noise producing construction machinery and equipment preferably during daytime (2) Avoid operating construction machinery at night time (3) Carryout fabrication and loading/unloading activities preferably during daytime hours (4) Carryout regular maintenance of the machinery and equipment to reduce noise generation 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager
<p>Public Utilities</p> <ol style="list-style-type: none"> (1) Carryout excavations/diggings only after ascertaining that no gas, oil, or public utility lines are passing through the area to be excavated (refer to local utilities layout map) (2) Devise a standard operating procedure for dealing with accidental damage to utilities along with an immediate restoration plan (3) If relocation of any public utility or facility (e.g., electricity poles) is involved, it should be carried out well ahead of start of construction 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager
<p>Cultural and Archaeological Heritage</p> <ol style="list-style-type: none"> (1) Discovery of any remnants/relics of historical, cultural, or archaeological importance during excavations or diggings, if any, should be reported immediately to the concerned authority/archaeology department 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager
<p>Social Environment/Worksite Safety</p> <ol style="list-style-type: none"> (1) Make the site staff and the labour aware of risks of personal injuries and the ways of avoiding risks (e.g., wearing helmets, breathing masks, earmuffs, safety goggles, gloves, etc.) (2) Keep a first-aid box handy at the construction site during construction and an adequate healthcare setup during operation phases of the project (3) Heads/supervisors of various sections should be made aware of the standard operating procedures for dealing with emergencies and hazard management (4) Use indicative signage and warning boards throughout the premises during both construction and operation for information and guidance of the workers/employees (5) Waste and packaging materials should be collected, segregated, and stockpiled in covered sheds to avoid their contact with rainwater (6) The labour should be paid wages according to Government's notified minimum wage rates (7) Pay same wages to women as to men for equal hours of work 	<ul style="list-style-type: none"> ▪ Construction Contractor ▪ Project Manager



Environmental Guidelines	Responsibility
<p>(8) Avoid child labour</p> <p>(9) Keep firefighting arrangements ready at the site all during construction and a full network of fire extinguishing arrangements once the project goes into operation</p> <p>(10) Do not allow cigarette smoking and lighting of fire near work places and near inflammable materials</p> <p>(11) Store the ignitable and inflammable materials separately and at a safe place away from any source of fire</p> <p>(12) Keep the residents in loop about the project by constituting the Neighbourhood Committee</p> <p>(13) Carryout regular training sessions into the modern techniques of environmental management, risk avoidance and handling of emergencies for the project staff during construction and for the ESHU staff and interested residents during operation phase</p>	

C) Operation Stage

Environmental Guidelines	Responsibility
<p>Water, Wastewater, and Effluents</p> <p>(1) Ensure that the existing and the new boreholes, if any, are constructed according to the applicable engineering and safety standards and are sealed off from the exterior to avoid any potential contamination of the groundwater through downward trickling of the wastewaters along the borehole lines</p> <p>(2) Construct freshwater storage tanks (overhead tanks) of appropriate capacity to ensure continuous freshwater supply for process operations as well as for human consumption. The water holding capacity of the tanks be equal to 24 hours supply based on consumption rates</p> <p>(3) Carryout periodic cleaning and disinfection of the water storage tanks and the overhead reservoirs , at least after every 3 months</p> <p>(4) Use Health Department’s approved disinfectants only</p> <p>(5) Carryout regular and periodic laboratory testing of groundwater and the drinking water for its quality and fitness for human consumption and other usages</p> <p>(6) Install water filters or treatment plants, if so indicated on the basis laboratory testing</p> <p>(7) Prefer source disinfection, wherever feasible</p> <p>(8) Ensure proper working of the septic tanks and avoid their dysfunction and stuck-up</p> <p>(9) Ensure regular cleaning and removal of grit from the drainage lines</p> <p>(10) Maintain a tube well operation register to ensure intermittent running of the tube wells and to ensure their timely repair and servicing</p> <p>(11) Display appropriately worded instructions at prominent places requesting the residents not to throw solids into the wastewater drains or closets</p> <p>(12) Immediately repair any leakages from or damage to water supply lines and the wastewater pipelines</p> <p>(13) Keep an emergency plan handy for dealing with a disorder of the effluent drainage or wastewater system</p>	<ul style="list-style-type: none"> ▪ Environmental Safety and Health Unit ▪ Neighbourhood Committee
<p>Air Quality, Aesthetics, and Landscape</p> <p>(1) If a generator or any other machinery or equipment running on fossil fuel has been installed at the scheme, ensure that it is regularly serviced and emissions are monitored to ensure that they remain within the NEQS limits</p> <p>(2) Display suitably worded appeals at prominent places requesting the residents to use as little natural gas as possible for their household needs and shut down the stoves when not in use and lower the geyser thermostat to conserve usage of gas</p> <p>(3) Display suitably worded requests for the motorists for keeping their vehicles tuned up to reduce emissions and noise</p>	<ul style="list-style-type: none"> ▪ Environmental Safety and Health Unit ▪ Neighbourhood Committee



Environmental Guidelines	Responsibility
<p>(4) Liaise with the Forest Department for planting trees and vegetative cover during each plantation season. Protect the saplings by ensuring observance of the recommended watering and trimming schedule</p> <p>(5) Avoid open burning of solid wastes</p> <p>(6) All ignitable or inflammable materials, if any, should be stored in accordance with the safety rules for their storage and handling</p> <p>(7) Develop and maintain the greenbelts, grassy grounds, and shady areas around the project buildings to enhance their aesthetics and ambience and energy conservation</p>	
<p>Solid Waste Management</p> <p>(1) Institute a well-designed solid waste collection and disposal system</p> <p>(2) Designate locations and provide waste collection bins of appropriate capacities at these locations for depositing of the solid wastes by the residents</p> <p>(3) Ensure that the waste bins and the wastes deposited therein are safe from access of the foraging and other stray animals who may spread around the wastes and litter the nearby areas</p> <p>(3) Ensure that the waste collection spots are safe from rainfall and storm water and that solid wastes will not be carried away by the storm water</p> <p>(4) Ensure that the organic and inorganic solids are collected and disposed of separately</p> <p>(5) Encourage reuse and recycling of solid wastes by displaying suitable instructions and appeals</p> <p>(6) display instructions prohibiting the residents from throwing solids into the wastewater system</p> <p>(7) Avoid and prevent open burning of solid wastes</p> <p>(8) Maintain cordial relations and close liaison with the local municipal authorities responsible for solid waste management for timely lifting of the solid wastes from the scheme, particularly during the summer season</p>	<ul style="list-style-type: none"> ▪ Environmental Safety and Health Unit ▪ Neighbourhood Committee
<p>Noise, Vibrations and Odours</p> <p>(1) Endeavour to develop a good neighbourhood community having harmonious relations with each other by utilizing good offices of the Neighbourhood Committee</p> <p>(2) Prevent unauthorized display of fireworks and music by the residents</p> <p>(3) Prevent usage of the grassy lawns and the greenbelts for holding marriage ceremonies and get together events</p> <p>(4) Prevent establishing of workshops and commercial setups inside the scheme, particularly outside the designated marketplaces</p> <p>(5) Ensure that the waste collection spots are safe from rainfall and storm water and that solid wastes will not be carried away by storm water</p>	<ul style="list-style-type: none"> ▪ Environmental Safety and Health Unit ▪ Neighbourhood Committee
<p>Health, Safety, and Wellbeing</p> <p>(1) Endeavour to develop a good neighbourhood community having harmonious relations with each other by utilizing good offices of the Neighbourhood Committee</p> <p>(2) Ensure that provision of utilities and essentialities such as freshwater supply are adequate and upto the mark</p> <p>(3) Ensure periodic cleaning of the overhead tanks</p> <p>(4) Ensure maintenance and functioning of the streetlights</p> <p>(5) Ensure that the emergency escape routes are always clear of encroachments and that firefighting system is functional</p> <p>(6) ensure that the medical care setup is functioning to expectations of the residents and that emergency as well as routine medicines and disposables are present</p>	<ul style="list-style-type: none"> ▪ Environmental Safety and Health Unit ▪ Neighbourhood Committee



5

STAKEHOLDERS' CONSULTATIONS



5. STAKEHOLDERS' CONSULTATIONS

This section describes the process and outcome of the consultations held with the relevant stakeholders and the neighbouring community over environmental aspects of the project.

5.1 Objectives and Rationale of Consultations

The primary objective of the stakeholders' consultations was to learn and know the apprehensions, concerns, and opinions of the key stakeholders over environmental implications of the project. The consultation sessions also served as a source of first-hand information about expectations of the community and beneficiaries of the project. Dialogue with the stakeholders and recording their concerns at appropriate stages of the project can help to tailor the project in line with stakeholders' aspirations and therefore likely to promote public acceptance of the project and its sub-components.

5.2 Identification of the Relevant Stakeholders

The consultation process began with identification of the most pertinent stakeholders. Efforts were made to identify the relevant stakeholders through a systematic process based on the nature and degree of their actual and perceived stakes in the project. **Tables 5.2a and 5.2b** are the various categories of the stakeholders and the nature of their stakes into the project pertaining both to construction and operation stages of the project:

Table 5.2a: Stakeholders into the Project and Nature of their Stakes (Construction Phase)

Category	Stakeholders	Nature of Stakes
Design and Construction Stage		
Project Funding Agency	<ul style="list-style-type: none"> ▪ Proponent 	<ul style="list-style-type: none"> ▪ All those stakes which a funding agency would have i.e., achieving the desired objectives and reaping benefits of investment into the project
Project Sponsoring Agency	<ul style="list-style-type: none"> ▪ Proponent 	<ul style="list-style-type: none"> ▪ That the project is carried on smoothly in accordance with scheduled timeline
Project Implementing Agency	<ul style="list-style-type: none"> ▪ Proponent ▪ Project's Design Consultant ▪ Construction Contractor ▪ Sub-contractors and Labour ▪ Vendors of machinery, equipment and various goods and services for the Project 	<ul style="list-style-type: none"> ▪ That the project is implemented as per schedule and delays on whatsoever account are avoided ▪ That all bottlenecks and impediments are removed in a timely and effective manner ▪ That the bills are cleared in timely manner and payments are made as per contract agreement
Regulatory Authorities	<ul style="list-style-type: none"> ▪ Environmental Protection Agencies ▪ Local District and the Municipal Administration ▪ Local Building Control Authority 	<ul style="list-style-type: none"> ▪ That constructions under the project conform to applicable building codes, rules, regulations, bylaws, and environmental standards
Project Users/Beneficiaries	<ul style="list-style-type: none"> ▪ Applicants ▪ Construction contractors ▪ Persons employed at the project 	<ul style="list-style-type: none"> ▪ That the project is completed as per schedule and that they get due benefits from the project ▪ That possession of the houses is given the earliest possible
Public and Community	<ul style="list-style-type: none"> ▪ Neighbourhood community, Residents, Vendors, Agriculturists, and Land owners 	<ul style="list-style-type: none"> ▪ That the project activities do not affect their living, business, and civic rights in an adverse manner ▪ That the project activities are not harmful for their health, hygiene and aesthetic ambience

Table 5.2b: Stakeholders into the Project and Nature of Their Stakes (Operation Phase)

Operation Stage		
Project Funding Agency	<ul style="list-style-type: none"> ▪ Proponent 	<ul style="list-style-type: none"> ▪ That the fruits of investment are fully realized to the desired extent and the objectives are achieved to satisfactory level



Project Sponsoring Agency	<ul style="list-style-type: none"> ▪ Proponent 	<ul style="list-style-type: none"> ▪ That the project operates as a successful venture and serves as a role model for replicating similar projects by others
Project Operating Authorities	<ul style="list-style-type: none"> ▪ Proponent 	<ul style="list-style-type: none"> ▪ That operational bottlenecks are removed in a timely manner and the project's operations carries on smoothly
Regulatory Authorities	<ul style="list-style-type: none"> ▪ Environmental Protection Agencies ▪ Local District and the Municipal Administration ▪ Local Building Control Authority 	<ul style="list-style-type: none"> ▪ That the project remains conformant to the applicable rules, laws and the environmental standards
Project Beneficiaries	<ul style="list-style-type: none"> ▪ Allottees of houses in the housing scheme ▪ Allottees of commercial areas/shops and the persons doing business at the housing scheme ▪ Persons providing services for the housing scheme ▪ Employees of the project 	<ul style="list-style-type: none"> ▪ That the project is safe and secure from any outside intrusion ▪ That they are given finished product is of good quality meets the standard specs. ▪ That the project is able to produce the finished product in requisite quantities at the requisite time ▪ That the project activities do not pollute the environment ▪ That appropriate training and capacity building is provided to the project staff ▪ That operation of the project is free from corrupt practices and malades and is geared to serve its underlying objectives ▪ That bills are cleared and payments are made in a timely manner without any hassle and problems
Public and Community	<ul style="list-style-type: none"> ▪ Neighbourhood community, Residents, Shopkeepers, Vendors, Villagers, Farmers, Land owners and Passers-by 	<ul style="list-style-type: none"> ▪ That the project activities do not affect their living, business, and civic rights in an adverse manner ▪ That the project activities are not harmful for their health, hygiene and aesthetic ambience

5.3 Consultation Methodology

Onsite consultations were held with the representatives of the various categories of the stakeholders as were available during field visits of the site. **Annex-5** is a list of the various persons consulted and interviewed. Additionally, wherever found feasible, general public in the vicinity were also consulted to know their views and concerns over the project activities. The majority of these consultations were either one to one meetings or small and focused group discussions.

5.4 Issues Discussed

The points listed below are some of the issues discussed during the consultations:

- Are the constructions being taken up in accordance with applicable codes, rules, and regulations?
- Are the constructions commensurate to their usage after completion?
- Are the contractors complying with the environmental requirements?
- Are there any concerns apprehensions, and views of the community and the stakeholders over the project activities relating to design, construction and operational aspects? What are these?
- What are the likely adverse impacts of the project on the various components of the environment i.e., physical, biological, and social components?
- What could be the possible remedies for the concerns and apprehensions? How they concerns can be effectively addressed?
- Any particular and specific personal or site related concerns.
- What steps would be needed to ensure long-term sustainability of the project and the activities under the project?
- How the project operations can come up to expectations of the users and or the beneficiaries?



5.5 Outcome of the Consultations

The neighbourhood communities did not express any specific or significant concerns. Interestingly, different stakeholders had different perceptions and different concerns about the project. Some of the concerns and apprehensions relating to various aspects of the project are reproduced below:

5.5.1 Design Aspects

- The design aspects must take into account the relevant building codes, byelaws, and the applicable governmental policies.

5.5.2 Construction Aspects

- Delays in construction and completion of the project are likely to result into escalation of construction costs.
- Delays in payments to the contractors, sub-contractors, suppliers and the labour can cause delays in the project implementation.
- Delays in handing over the sites and later changes in the drawings and scope of work result into slow progress of the constructions under the project.
- Interferences by the local regulatory agencies and the municipal authorities are also likely to cause delays in completion.
- Disorderly and haphazard placement of construction materials with its attended consequences could be a nuisance for the labour and other persons working on the project.
- Construction related noise could be troublesome for the neighbourhood community.
- Generation of dust and its deposition on exposed surfaces would require frequent dusting.

5.5.3 Operation Aspects

- There could be disruptions and discontinuations in the supply of the machinery and equipment and other materials for timely completion of the project
- There could be non-payment or delayed payment of wages to the work charge and the temporary employees.
- There could be unsatisfactory cleanliness of the premises due to administrative and supervisory lapses.

5.6 Measures to Address the Concerns

Table 5.6 presents a summary of the concerns and apprehensions of the various stakeholders to the project and the plausible measures to address them:

Table 5.6: Summary of Stakeholders' Concerns alongwith Remedial Measures

Persons Consulted	Concerns/Apprehensions	Remedial Measures
Environment Protection Agency	<ul style="list-style-type: none"> ▪ Environmental and functional compatibility of the project ▪ An institutional setup for addressing the issues and concerns ▪ No or minimal delays at various milestones 	<ul style="list-style-type: none"> ▪ EIA, EMP and the Environmental Guidelines as given in this documents will ensure environmental and functional compatibility of the project ▪ An Environmental Safety, Health and Social Management Unit (ESHU) will be setup to manage all environmental and social issues of the project during both construction and subsequent operation
District Authorities	<ul style="list-style-type: none"> ▪ The project carries on smoothly without creation of any serious impediments 	<ul style="list-style-type: none"> ▪ The core administration of the project as well as ESHU will ensure smooth functioning of the project without eruption of any unpleasant situation
Project Staff	<ul style="list-style-type: none"> ▪ Wages are paid in time and no deductions are made therefrom on any count ▪ Good quality and hygienic food is served ▪ Social security cover is provided for the project staff and the labour 	<ul style="list-style-type: none"> ▪ The core administration and the ESHU will ensure that all apprehensions are allayed in a timely manner
Contractors	<ul style="list-style-type: none"> ▪ Delays in construction and completion of the project and resultant escalation in construction costs 	<ul style="list-style-type: none"> ▪ The majority of the contractors' concerns relate to procedural and management issues. The institutional setup proposed for



Persons Consulted	Concerns/Apprehensions	Remedial Measures
	<ul style="list-style-type: none"> ▪ Delays in clearing of the running bills/ payments ▪ Poor coordination between various departments and functionaries ▪ Changes in the drawings and scope of work ▪ Lengthy and tedious procedural requirements ▪ Interferences by the local regulatory agencies and the municipal authorities 	<p>environmental and social management of the project will help solve the problems</p>
<p>Office staff and other employees</p>	<ul style="list-style-type: none"> ▪ Non-fulfilment of promises by the project authorities ▪ Disruptions in the supply of essentialities like office stationery, diesel for generators, and ink for printers ▪ Non-payment or delayed payment of wages to the work charge and the temporary employees ▪ Unsatisfactory cleanliness of the premises ▪ Lack of appropriate working space for the employees ▪ Lack of space for placing the important record and files ▪ Lack of safe drinking water facility 	<ul style="list-style-type: none"> ▪ The majority of the concerns relate to procedural and management issues. The proposed institutional setup will help solve the problems
<p>Neighbourhood community and shopkeepers</p>	<ul style="list-style-type: none"> ▪ Noise pollution ▪ Dust and air pollution ▪ Disorderly placement of construction materials ▪ Environmental compatibility of the project ▪ Neighbours are not displaced or their business are not affected ▪ Timely completion of the project 	<ul style="list-style-type: none"> ▪ The ESHU will keep constant liaison with the neighbouring community and will resolve all disputes and differences in an amicable manner through negotiations and consultations ▪ Timely completion of the project will be ensured ▪ No person will be dispossessed or displaced from his land without paying for due compensation



6

CONSIDERATION OF ALTERNATIVES



6. CONSIDERATION OF ALTERNATIVES

6.1 Significance and Identification of Alternatives

The consideration of alternatives to any project is one of the key aspects of an environmental study. Consideration of alternatives provides for the examination of different options to achieve a stated objective and assist the decision-makers in the choice of the best option, which has the least adverse and the greatest beneficial environmental, social, and economic consequences.

The most pertinent question to assess feasibility and propriety of any developmental project from the environmental impact perspective is to determine whether an alternative option would be objectively a better choice than the current proposal. The comparative analysis of the environmental and economic impacts of all the possible alternative options can provide an answer to this important determinant. This very question has been objectively and analytically examined here in the light of comparison of the likely impacts on the physical, biological, ecological, health, and economic environment as well as views and reservations of the stakeholders (proponent and the likely beneficiaries / affectees).

6.2 Possible Alternatives to the Project

In the light of the objective evidence and views of the stakeholders, the below listed possible alternatives to the project are reviewed as hereunder:

- Abandonment of the project on financial and technical grounds i.e., no project option
- Modifying scope (Reducing and downsizing; or enhancing and upsizing) of the project
- Shifting the project to some other location

The above alternatives are briefly discussed below:

6.2.1 Abandonment of the Project (No Project Alternative)

The “no project” option is the ubiquitous option that can be exercised for any and every project. Exercising this option means abandonment of the project altogether and continuing with the existing position i.e., status quo. This option could save the entire project cost of millions of rupees to the exchequer. However, the objective evidence and the pertinent data do not favour this option. As has been mentioned in chapter 1, there is serious shortfall of housing unit in the country compared with its availability and demand. The demand for housing units is increasing with every minute passing. The “no project” option would mean further increasing this availability-demand deficit in the housing sector, which situation cannot be afforded. The available statistics indicate that there is lot of potential in this sector of the economy that can be tapped in both the private and the public sector. Construction of the project is an attempt by the proponent to reduce the growing gap between availability and demand of housing units in the country. Non-construction of the project would therefore mean worsening the situation. In order to solicit opinion of the stakeholders on this point, a number of persons, urban developers, real estate agents, public functionaries, and officers of the PHA-F were interviewed after explaining them the underlying objectives of the project’s construction. The majority of the interviewees favoured construction of the project as they hoped availability of quality housing for those who do not own a house in Quetta. None of the interviewees voted against construction of the project. As such, this alternative of “no-action” was found devoid of any rationale, justification, or merit.

6.2.2 Changing the Scope (Reducing/Downsizing or Enhancing/Upsizing) of the Project

The second alternative could be to change the project’s scope in terms of number of the housing units, number of apartments, area of the individual units and provision of the allied and support facilities and infrastructure. The scope changing option may also entail changing the architectural features and layout design of the facilities to be provided under the scheme. As per the existing scope, the scheme comprises 714 houses and 636 apartments along with host of support facilities and infrastructure.

The public response manifested from a very large number of applications for allotment of the apartments is itself a proof of good architectural features of the project and optimal features of the project.

6.2.3 Shifting the Project to some other Location

The third alternative option could be relocating and shifting the project to some other site. However, the objective rationale for this option was found lacking on two counts. Firstly, it may be very difficult if not impossible to find a large and compact piece of land of suitable dimensions for constructing a housing project,



as is the present one, near the city of Quetta. Secondly, despite relocating the project, the pertinent environmental impacts on the air, water, soil, and socioeconomic environment would remain almost similar in nature as would be at the present site. Contrarily, the site owing to a number of advantages appears to be a good choice for constructing the project because not only the land belongs Government but is also available and located amidst a good environment in the suburbs of Quetta. As the land is not under any other productive usage, its usage for developing the housing scheme will not involve adverse land use change. All the civic amenities and the infrastructure required for a housing scheme such as water supply, sewerage system, electricity, telephone, and natural gas is already available at the site. Furthermore, construction of the project at this site does not involve dislocation or resettlement of any population. On the other hand, relocating or shifting the project to some other site might involve land use change and or displacement and resettlement of the occupants. Besides, availability of such a large piece of land in Quetta may be difficult. Additionally, if the proponent buys land at a new site, the cost of the project may shoot up exorbitantly, thus rendering it economically non-viable and non-affording for the target population. The objective analysis indicates that exercising the option of shifting the project to some other location will render the project socially and financially non-viable. Non-availability of a piece of land with requisite characteristics and features will be a major restraining and impeding factor in shifting or relocating the project. Therefore, in view of the position explained above, this alternative option of shifting the project from the current site to some other location was found not feasible.

6.3 Summary of the Alternative Consideration

Based on the objective analysis, and views and opinions of the stakeholders, as detailed above, none of the alternative options, as discussed above, are feasible. Furthermore, the net socio-environmental impacts of the project, as thrashed out in this EIA study are positive in nature, which favour construction of the project at the proposed site. Therefore, consideration of the above-discussed alternative options was found not relevant to the instant project.



7 METHODOLOGY & APPROACH

7. METHODOLOGY AND APPROACH

7.1 Rationale and Objectives of the Study

The primary objective of the instant EIA study is to address the significant ones of the various environmental and social impacts likely to be encountered from both implementation and operation of the project. The project envisages development of a modern housing scheme on an available and vacant parcel of land situated at Kuchlak road, Quetta approx. 10 km from Quetta city. The development, construction and occupation of the housing units, marketplaces and other amenity buildings under the scheme is considered to cause some environmental and social implications, examination of which is required to address them.

Some of the project activities proceeding or succeeding construction and operation of the housing scheme could be of some concern from both the environmental and the social standpoint. Some of them, particularly those emanating from implementation of the civil works, deployment of machinery and equipment (particularly those running on fossil fuel) for various activities and usage of the noisy machinery can produce some limited scale impacts on the immediate environment. Therefore, they need to be assessed objectively in order to attenuate their adverse potential, if any.

It is in the above context that the proponent awarded this Environmental Impact Assessment (EIA) study to Green Revolution, Lahore for examining the magnitude and extent of the likely impacts of the project's construction and operation before implementing the same. It need no reiteration that identification and characterization of the actual as well as the potential adverse impacts and addressing them through appropriate preventive and corrective measures is an essential prerequisite under environmental laws of the country/province, currently in vogue⁶⁶.

7.2 Study's Component

The instant EIA study comprises the following components:

- Description of the existing environmental settings or the baseline profile of the project's zone of social and environmental influence (the zone of influence has been taken only with respect to the extent of the spatial and temporal impacts of the project)
- Assessment and examination of the social and environmental implications of an adverse land use change emanating from implementation of the project
- Assessment of the most likely disturbances to various environmental parameters emanating from constructions and other related activities to be taken up by the proponent, if any, following allotment of the land
- Preparing the ESDMP containing guidelines for the proponent for avoiding and mitigating the predicted adverse impacts on the physical, biological, and socio-cultural environment

The study covers various aspects and stages of the project, particularly those relating to constructions, if any, and the post-construction operation stages. The study, of course, is limited in its extent and scope to the prescribed terms of reference⁶⁷. **Plates 2.4.2a~2.4.2f** present location and extent of the project with reference to other key points and the approximate zone of environmental influence of the project as downloaded from the Google Earth⁶⁸.

7.3 Study Methodology

Apart from other pertinent aspects, the EIA provides an insight into the likely environmental and social impacts of the project's construction and operation by adjudging them against the standard environmental and social impact assessment guidelines, rules, and regulations of the Government of Pakistan as well as other international organizations (like the World Bank, WHO etc). Format of the report, to the extent possible, is in consonance with the prevailing international practices in the field of environmental examination and assessment.

The study has relied primarily on the data and information already available with the proponent and other agencies and department of Government of the Balochistan. However, wherever so required, additional data

⁶⁶ Section 12 of the Pakistan Environmental Protection Act, 1997 and Section 15 of Balochistan Env Protection Act 2012

⁶⁷ The ToR are given in the work order issued to the study consultant by the proponent

⁶⁸ Google Earth Map



and information has been gathered through various reliable sources, which included visits of the site by the consultant's team of professionals for evaluating the impacts with relation to geographical and social contexts of the project.

The visiting team obtained requisite information from the key persons of the proponent, like the Project Engineer and the Regional Incharge. Additionally, the team consulted the neighbouring residents around the site, some local public representatives, concerned officers of the BEPA and the District Government, members of some non-governmental organizations (NGOs) and other relevant stakeholders into the project.

Direct interviewing in the form of short questions and the individual as well as public consultations with the local community and the stakeholders have been used as one of the modes for soliciting their viewpoints and to learn about their concerns, if any, over the project. A modified impact assessment matrix and the photographs taken during visit survey have been used for characterizing the adverse environmental and social impacts of the proposed modifications on the physical, biological, and the social environment. Wherever relevant, National Environmental Quality Standards (NEQS)⁶⁹ have been used as the standard benchmark for comparing the extent and magnitude of the project's environmental and social impacts.

Some relevant information was also obtained from secondary sources of data and information. The secondary sources, which have been made use of during the study, included office records of the proponent, information on the project as is available with the BEPA, and some websites and a few other similar sources.

7.4 Extent and Scope of the Study (Terms of Reference)

As per provisions of the Balochistan Environmental Protection Act 2012, the proponent is obliged to carry out examination of the environmental impacts of the proposed project "Development of a Housing Scheme at Kuchlak Road, Quetta under Prime Minister's Housing Programme". Green Revolution, being the leading professional environmental consultants, have carried out EIA of the project for and on behalf of the proponent.

Several activities are carried out in an environmental assessment study, including impact identification, preparation of a description of the affected environment, impact prediction and assessment, selection of the proposed action from the alternatives evaluated to meet the identified needs, and summarization and communication of information to the regulatory authority. The objectives of the various activities differ, as do the pertinent methodologies for accomplishing the activities. The term "methodology" as used herein refers to structured approaches for accomplishing one or more of the basic activities. The structured approaches encompass various substantive areas within the biophysical and socioeconomic environments, thus distinguishing them from impact prediction methods or models for specific substantive areas.

Being an Environmental Impact Assessment, the study is limited in its extent and scope. However, the study has been conducted in accordance with international practices and the guidelines, rules, and regulations issued by Government of Pakistan. The format and mode of environmental impact examination/assessment has been kept, as far as practicable, in conformity to the national and international practices in the field of IEE/EIA. The study therefore contains examination of the essential baseline conditions, likely or foreseeable disturbances or impacts to those conditions, and the mitigation measures/recommendations in respect of the environmental impacts of the project both during construction and during subsequent functioning. This, of course, included evaluation of the potential and actual positive or negative impacts on the physical (tangible) and abstract (non-tangible) environments. The study covers all aspects of the proposed developmental activity including architectural, civil, mechanical, electrical works and the spectrum of services concerning its usage as housing project. The terms of reference (ToR) and scope of the study include, though are not limited to the following:

- Carrying out an Environmental Impact Assessment (EIA) of the project and preparing the Environmental Impact Assessment Report (EIAR) for and on behalf of the proponent
- Formal submission of the report to the concerned agency for its review in compliance with the mandatory provisions of the rules on the subject
- Reviewing the project activities in context to all pertinent environmental perspectives and examining whether the project is environment friendly or otherwise
- Preparing the EIA Report in the light of the guiding principles, international practices, and the rules set forth in the Pakistan Environmental Protection Agency's Regulations on the subject of IEE/EIA

⁶⁹ Revised NEQS are available on the website of the Pakistan Environmental Protection Agency



- Using the best-suited environmental examination and impact assessment methodologies, i.e., those that are most appropriate for the identification and assessment of the possible negative or positive environmental impacts in line with special nature of the project
- To identify, investigate, examine, and prepare a comprehensive profile of the likely impacts on the physical, biological, hydrological, economical, and socio-cultural environments likely to emanate from implementation of the project on the project area and beyond
- Provision of any other advice and or technical expertise before, during, and after completion of the study and even thereafter, if so required by the proponent.

7.5 Planning Strategy

The flow diagram given below shows the planning strategy for the preparation of the instant EIA Report.

7.6 Data Sourcing Methodology

The basic objective of the EIA of the project is ascertaining the baseline environmental settings and examining the likely environmental disturbances that might emanate from implementation of the project or its subsequent activities. Yet another objective of the EIA is ensuring a sustainable development of the resources in sharing with other stakeholders. Findings of the EIA have been prepared in the form of the instant Environmental Impact Assessment Report (EIAR).

Both primary and secondary data sources have been relied upon in soliciting the pertinent information necessary for carrying out EIA of the project establishment. Reliance has also been placed on the authenticated information from various sources including the governmental departments, international sources, websites, authentic publications, reference documents, and private organizations through consultations, interviews, and surveys. Wherever so warranted, samples were taken for analysis and for assessment of the possible impacts. Special attention has been focussed on the sources of possible environmental contamination in the wake of implementation of the project and in preparing recommendations on curtailment/reduction of pollution there from. Best-suited impact examination and assessment methodology was followed for the identification, scoping, and futuristic predictions of the environmental interactions and the likely impacts of the project activities and long-term operations of the project.

Analytical and inquisitive approach is the distinguishing feature of the study methodology. National Environmental Quality Standards (NEQS), wherever available, have been used as the benchmark for analysis and comparison of the project impacts. For the sectors and the parameters in respect of which the NEQS were not available, international standards and guidelines of the international bodies were used as the reference source. Site study surveys and the laboratory analyses were used as the primary data sources for assessing the environmental, ecological, and other physical impacts of the project. Governmental policy on the subject was also kept in view while conducting the study and making assessments.

The study encompasses all stages of the project activities, viz., conceptualization and planning, mobilization, execution, operation, maintenance, monitoring, and post execution operational activities in terms of their short-, medium-, and long-term as well reversible and irreversible environmental impacts and impressions.

7.7 Summary of the EIA Process

Based on the findings of the EIA study and nature of the project, the construction phase of the project has been found not to cause any serious negative environmental impacts. However, there would some low-grade negative impacts on some environmental parameters such as air quality, noise, and some social impacts within the project area. However, most of the potentially negative impacts of the construction phase will be outweighed by the potentially more positive impacts of provision of housing to large number of families and provision of jobs to number of skilled and unskilled persons.

As far as operation phase is concerned, lifelong operational activities of the housing scheme will have some potential negative environmental impacts, which will be of significance only if the mitigation measures as proposed in this study are not acted upon. These potential impacts would emanate from improper solid waste management, non-treatment of wastewater/effluents, and sociological interactions amongst the residents. However, if the ESH Unit and the NC, as have been proposed in this document, are constituted and made functional, then most of these potentially negative impacts will be controlled or avoided. To summarize, positive impacts of the project outweigh the potentially negative impacts (which further are mitigable), thus making the project an environmentally benign and environment friendly project/activity.

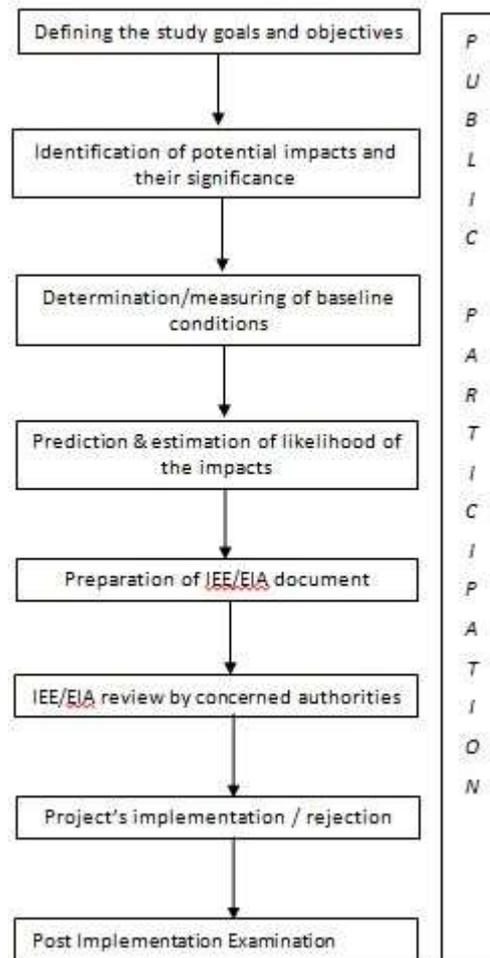


Fig 7.4: Process Flow Diagram of the IEE/EIA Planning Methodology

7.8 Applicable Laws, Rules and Regulations

A list of some of the applicable laws, rules, regulations and bylaws to the project is reproduced hereunder:

- Balochistan Environmental Protection Act, 2012 (GoBIn) [Annex-1](#)
- Pakistan Environmental Protection Agency (Review of IEE/EIA Regulations), 2000 (GoPk) [Annex-2](#)
- Pakistan National Environmental Quality Standards, 2000 (GoPk) [Annex-3](#)
- QDA Housing Regulations, 1995 (GoBIn) [Annex-4](#)
- Applicable Building Bylaws, Building Codes



8

ENVIRONMENTAL LEGAL FRAMEWORK



8. ENVIRONMENTAL LEGAL FRAMEWORK

8.1 Defining the Environment

There has been a viewpoint difference over a single consensus definition of the word environment amongst academics, scholars, and environmentalists. Notwithstanding this difference of viewpoint over definition of the word environment, the environment is generally considered to comprise / include the following ingredients:

- All aspects of the surroundings of human beings, whether affecting human beings as individuals or in social groupings.
- Natural resources including air, land, and water.
- Ecosystems and biological diversity.
- Fauna and flora.
- Social, economic, and cultural circumstances.
- Infrastructures and associated structures.
- Any solid, liquid, gas, odour, heat, noise, vibration, radiation resulting directly or indirectly from the activities of human beings.
- Identified natural assets such as natural beauty, outlooks, and scenic routes.
- Identified historical and heritage assets.
- Identified cultural and religious assets.
- Aesthetic assets.
- Public health characteristics.
- Identifiable environmental planning, environmental protection, environmental management, pollution control, nature conservation, and other mitigation measures.

Aside the textbook definition, the Pakistan Environmental Protection Act gives the following definition of the word environment.

“Environment means –

- (a) Air, water, and land;*
- (b) All layers of the atmosphere;*
- (c) All organic and inorganic matter and living organisms;*
- (d) The ecosystem and ecological relationships;*
- (e) Buildings, structures, roads, facilities and works;*
- (f) All social and economic conditions affecting community life; and*
- (g) The inter-relationships between any of the factors specified in sub-clauses (a) to (f).*

8.2 Defining IEE/EIA

Initial Environmental Examination and Environmental Impact Assessment (IEE/EIA) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory, and compensatory measures, formulation of environmental management training plans and monitoring arrangements, and framing of recommendations. Environmental Impact Assessment may be described as an environmental management tool whose objective is to identify, predict, and evaluate the potential biological, physical, social and health effects of a proposed development action and to communicate the findings in a way, which encourages environmental concerns to be adequately addressed by stakeholders, including decision-makers and communities prior to development decision being made. It plays a crucial role in environmental protection and meeting the challenges of sustainable development.

An environmental impact assessment study therefore comprises collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of the alternative options, and framing of recommendations, if so required. The environmental assessment is therefore considered as an environmental management tool. The objective of this management tool is to identify, predict, and evaluate the significant biological, physical, social and health effects of a project and to communicate the findings in a way, which would encourage the environmental concerns to be adequately addressed by the stakeholders (including decision-makers), and the concerned communities prior to development decision being made. The prior environmental assessment of the project before its actual implementation will play a crucial role in environmental protection of the wider project area and meeting challenges of sustainable development.

8.3 Purpose of IEE/EIA

The United Nation Economic Commission on Europe (UNECE) (1987) has stated that:

“The purpose of environmental examination (EE) and or environmental impact assessment (EIA) is to give the environment its due place in the decision making process by clearly evaluating the essential consequences of a proposed activity before action is taken. The concept has ramifications in the long run for almost all development activities because sustainable development depends on protecting the natural resources which is the foundation for further development.”

Any EIA in order to be good or accurate should be flexible, fairly simple, objective, include all the key environmental issues, and be able to identify project-generated impacts and detect sensitive areas. A large number of EIA methods and techniques have been developed and used in the EIA process.

The EIA process is essentially an impact identification and investigation system, which has four distinct stages, as shown in the flow diagram (Fig 8.3) below:

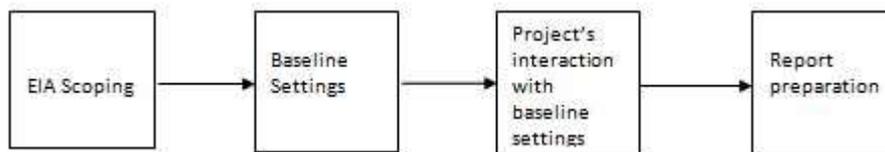


Fig 8.3: Steps of the IEE/EIA Process

8.4 Main Objectives of IEE/EIA

Though the instant EIA has been conducted as a legal obligation as required under Section 15 of the Balochistan Environmental Protection Act; yet the secondary objectives of the EIA can be summarized under:

- To identify beneficial and adverse environmental impacts
- To identify and describe the residual adverse impacts which cannot be mitigated
- To incorporate environmental information into the decision making process relating to developmental projects
- To identify appropriate monitoring strategies to track impacts and provide an early warning system
- To incorporate environmental information into the decision making process relating to developmental projects
- To aid selection of the optimum alternatives, where feasible owing to project design / site

8.5 Effectiveness of the IEE/EIA Process

To be effective, the environmental impact assessment procedure needs to be applied to all those actions, which are considered to cause significant environmental consequences. It is therefore important to establish a mechanism for the selection of project related actions and activities requiring impact assessment. Such a selection process is usually termed screening. The next stage in the process is determining which issues need to be examined in the EIA. This activity is termed scoping. The scoping process aims to identify the main impacts to be investigated in detail, the aim being to focus the study only to the impacts of significance rather than taking an all-embracing approach for all the possible impacts irrespective of their impact significance.

8.6 Differentiating the Primary and Secondary Impacts

Initial impacts on one component in an environmental system (e.g., land use change) can have repercussions for other, which may be nearby or distant from the component immediately affected. Depending upon the structure and functioning of the particular environmental system being stressed by a development, an initial impact can result in further impacts. The impacts can therefore exhibit a range of characteristics, such as:

8.6.1 Spatial Dimension

Impacts can occur in the immediate vicinity of a project. Alternatively, they can occur at considerable distance from an installation, e.g., fuel burning and CO₂ emissions.

8.6.2 Time Dimension

Some impacts can occur immediately (e.g., noise impacts). Others are not apparent until a considerable period has elapsed (i.e., threshold level).



8.6.3 Reversibility

Some impacts are irreversible. Others can be reversed either naturally or artificially.

8.6.4 Probability

As impact predictions refer to future effects, there is a level of uncertainty associated with them. Each impact has a likelihood of occurrence.

8.6.5 Beneficial/Adverse Effects

Some impacts are beneficial whereas others are adverse or harmful.

8.7 Environmental Legal Framework in Pakistan

Section 12 of the Pakistan Environmental Protection Act 1997 and Section 15 of the Balochistan Environmental Protection Act 2012 makes it mandatory for every proponent of a project to file with the concerned Environmental Protection Agency (Federal or Provincial) either an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA), as the case may be, in respect of his project. The instant Environmental Impact Assessment Report (EIAR), therefore, has been prepared in compliance to this binding provision of the Balochistan Environmental Protection Act. The Initial Environmental Examination and Environmental Impact Assessment Regulations 2000, which have been prepared under the PEPA, detail the procedure for conducting environmental impact assessment of a project. Special care has been taken to carry out this Environmental Impact Assessment of the project in conformity with the "Policy and Procedures for the Filing, Review, and Approval of Environmental Assessments"; and the Pakistan Environmental Protection Agency, Review of the Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000; issued by the Pakistan Environmental Protection Agency, Islamabad.

As per definition given in the Pakistan Environmental Protection Act 1997 and the Balochistan Environmental Protection Act 2012, "Environmental Impact Assessment (EIA) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory, 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".

Category I, Item 1 of Schedule-I of the Regulations *ibid*, under the title "Urban Development and Tourism" subjects the housing development project to an initial environmental examination unless specified to the contrary by the regulatory agency. The instant housing project therefore falls under the above-mentioned category of the projects as listed in the IEE/EIA Regulations. Nevertheless, in view of the project size, the proponent, in compliance to the binding provisions of environmental legislation and as a manifestation of his commitment towards environmental protection and preservation, got the environmental impact of the instant project examined/assessed in an objective and scientific manner in accordance with the Rules.

Environmental Impact Assessment may be described as an environmental management tool whose objective is to identify, predict, and evaluate the potential biological, physical, social and health effects of a proposed development action and to communicate the findings in a way, which encourages environmental concerns to be adequately addressed by stakeholders, including decision-makers and communities prior to development decision being made. It plays a crucial role in environmental protection and meeting the challenges of sustainable development; a view which was recognized within the provisions of the Declaration of the United Nations Conference on Environment and Development (UNCED) popularly known as "Earth Summit" held in Rio de Janeiro, Brazil in 1992 and Conference's recommendations resulting in the Global Programme of Action (Agenda 21). Article 17 of the UNCED Declaration states that "Environmental Impact Assessment, as a national instrument, shall be undertaken for the proposed activities that are likely to have significant adverse impacts on the environment and are subject to the decision of a competent national authority. Pakistan being a member of the UNCED and a signatory to the Agenda 21 is obliged to give effect to the Declaration and the principles enunciated there-under. Incorporation of Section 12 in the Pakistan Environmental Protection Act, 1997 and Section 15 of the Balochistan Environmental Protection Act 2012, is in fact a reflection of country's commitment towards this international obligation.

The terms Environmental Assessment (EA) or Environmental Impact Assessment (EIA) and Environmental Statement (ES) or Environmental Impact Statement (EIAS) are used respectively to describe the overall process and the written report arising from the studies. Regrettably, there is no real consensus on the use of these terms and often they are used either interchangeably or for denoting a different context by different professionals. Whereas, many countries have the EIA systems, the World Bank has procedures for EA. An EIAS is a formal



document resulting from the EIA process which systematically considers all the likely impacts arising from a project, identifies which impacts need further consideration and for those impacts provides mitigation measures which reduce the impacts to an acceptable level. An EIAS also contains a critical examination of the alternatives to the project and an environmental management plan to help facilitate the proponent to monitor impacts at various junctures / stages and take appropriate remedial measures as advised in the document. The applicable legislative tools and enactments, as are relevant in the context of environmental protection in the country and the province, are described briefly hereunder:

8.7.1 Pakistan Environmental Protection Act (PEPA) 1997

The Pakistan Environmental Protection Act (PEPA) 1997 is the basic legislative tool empowering the Government of Pakistan to frame and enforce regulations for the protection of environment. The PEPA 1997 is broadly applicable to air, water, soil, marine and noise pollution, and handling of hazardous wastes. Penalties have been prescribed for those contravening provisions of the Act. Under section 12 of the PEPA 1997, no project involving construction activities or any change in the physical environment can be undertaken unless an IEE or EIA is conducted and a report submitted to the federal or provincial EPA. However, as a result of the 18th Amendment this subject is now in the exclusive domain of the provincial government. The main consequences of this change are as follows:

- The Ministry of Environment at the federal level has been abolished. Its functions related to the national environmental management have been transferred to the province. The international obligations in the context of environment will be managed by a ministry, the Ministry of Climate Change.
- The Pakistan Environmental Protection Act 1997 (PEPA) is technically no longer applicable in the provinces. The provinces are required to enact their own legislation for environmental protection.

8.7.2 Balochistan Environmental Protection Act, 2012

After adoption of the 18th Constitutional Amendment in 2010, the subject of environment has been devolved and the provinces have been empowered with respect to environmental protection and conservation. Subsequently, the Balochistan Government amended the PEPA 1997 as the Balochistan Environmental Protection Act 2012. The Act is now the principal provincial legislation in Balochistan for the:

- Protection, conservation, rehabilitation and improvement of the environment
- Prevention and control of pollution
- Sustainable Development

The Act is broadly applicable to air, water, soil, marine and noise pollution, as well as handling of the hazardous waste. Penalties have been prescribed for those who contravene the provisions of this Act. Powers of the Balochistan Environmental Protection Agency (BEPA) have been considerably enhanced under this legislation. Under Section 15 of this Act, "No proponent of a project of the public and or the private sector shall commence construction or operation unless he has filed an Initial Environmental Examination with the Government Agency designated by Balochistan Environmental Protection Agency, as the case may be or where the project is likely to cause an adverse environmental effects, an environmental impact assessment and has been obtained from the Government Agency approval in respect thereof. This initial environmental examination and the environmental and social management plan has been made in consonance with Section 15 of the Balochistan Environmental Protection Act.

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

These Regulations classify various projects on the basis of the expected degree of adverse environmental impacts and lists them in two separate schedules-I and II. Schedule-I lists the projects that may not have significant environmental impacts and therefore require an IEE. Schedule-II lists the projects of potentially significant environmental impacts requiring preparation of an EIA.

The Regulations also require that all projects located in environmentally sensitive areas require preparation of an EIA. Although the Regulations do not list the projects that require neither an IEE nor and EIA. Nevertheless, it can be assumed that the projects not listed in either Schedule will be exempt from IEE or EIA, as the case may be, under the exclusion interpretation. The Regulations authorize the government to issue specific guidelines for the projects not listed in Schedule-I or II, but located in environmentally sensitive areas to file an EIA for any type of project. Housing schemes are listed under Schedule-I of the IEE/EIA Regulation 2000 and therefore subject to IEE.



8.7.4 National Environmental Quality Standards (1993, 2000 and 2013)

The National Environmental Quality Standards (NEQS) specify the standards for industrial and municipal effluents, gaseous emissions, ambient air requirements and emission levels for sulphur dioxide and nitrogen oxide, vehicular emissions and noise levels. The PEPA specifies the imposition of a pollution charge in case of noncompliance with the NEQS. During the construction and operation phases of the instant housing scheme, NEQS will apply to all effluents and emissions. All activities under the project will comply with the applicable NEQS and the proponent will ensure that the emissions generated from any of the activities under the project are well within the NEQS.

8.7.5 Pak EPA Environmental Guidelines

The Pak-EPA has published a set of Environmental Assessment Guidelines for conducting environmental assessments and the environmental management of different types of development projects. The guidelines that may be relevant to the instant housing scheme will include the following:

- Guidelines for the Preparation and Review of Environmental Reports, Pakistan Environmental Protection Agency, 1997
- Guidelines for Sensitive and Critical Areas, Pakistan Environmental Protection Agency, 1997
- Environmental Assessment and Checklists for Construction of Housing Schemes, Pakistan Environmental Protection Agency, 2005

8.7.6 Land Acquisition Act 1894 and Land Acquisition (Balochistan Amendment) Act 1985

The Land Acquisition Act (LAA) of 1984 and its Balochistan amended version is the de-facto policy governing land acquisition, resettlement and compensation in the country in general and in the province in particular. This Act empowers the Government of Balochistan to acquire any land for public use including the establishment and construction of housing facilities and provide compensation to the landowner according to the procedure prescribed in the Act. The development of the instant housing scheme does not involve acquisition of any privately owned land, as the entire land for the scheme has been provided by the provincial Government of Baluchistan. Hence, this Act is hardly applicable to in the context of the instant housing scheme.

8.7.7 The Forest Act 1927

The Forest Act empowers the Provincial Forest Department to declare any forest area as reserved or protected. It empowers the Provincial Forest Department to prohibit the clearing of forest for cultivation, grazing, hunting, removing forest produce, quarrying and felling, lopping and topping of trees, branches in reserved and protected forests. No protected forest is situated in the area/site. Hence, this Act may not be applicable.

8.7.8 The Federal Antiquities Act, 1975

The Antiquities Act of 1975 ensures the protection of cultural resources in Pakistan. The Act provide legal basis to protect 'antiquities' from destruction, theft, negligence, unlawful excavation, trade and export. Antiquities have been defined in the Act as ancient products of human activity, historical sites, or sites of anthropological or cultural interest or national monuments. The law prohibits new construction of buildings in the proximity of a protected antiquity and empowers the Government of Pakistan to prohibit excavation in any area that may contain articles of archaeological significance. Under this Act, the proponents of project are obliged to ensure that no activity is undertaken in the proximity of a protected antiquity, and if during the course of the project an archaeological discovery is made, it should be protected and reported to the Department of Archaeology, Government of Pakistan, for further action. This Act is not relevant to any activities under the scheme, as the site is far away from any notified antiquities in Quetta.

There are total 389 officially notified sites of cultural and archaeological importance in Pakistan protected under the Federal Antiquities Act, 1975. Out of these 389 sites, 27 sites are located in Balochistan province. Out of the 27 sites of Balochistan, only 10 are located in Quetta. However, none is situated within the assumed zone of environmental and social influence.

8.7.9 Balochistan Wildlife (Protection, Preservation, Conservation & Management) Act 2014

The Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act, 2014 caters for the protection of wildlife resources in the province. Besides ensuring an environment conducive for their rearing and livelihood, the Act regulates hunting, poaching, possession, and trade in birds and animals. The Act



prescribes penalties for its contraventions. Government can notify and amend lists of protected ecosystems, national parks, wildlife sanctuaries, safari parks and game reserves. This Act is not applicable to the housing scheme, as all activities under the scheme shall be carried out on a site not covered under the Act. It is noticeable that there is neither any wildlife sanctuary, game reserve nor ecologically sensitive area within the assumed zone of environmental influence of the housing scheme.

8.7.10 Balochistan Cultural Heritage Preservation Act 2010

The Act makes provision for preservation and protection of ancient places and objects of architectural, historical, archaeological, artistic, anthological, anthropological and national interest in the Province of Balochistan. The Act acknowledges the right of the province to acquire any type of heritage that is vulnerable to numerous threats. The Act also prescribes punishments for intentional destruction of any of the archaeological sites. The Act is not applicable in the instant case, as the activities under the project are limited primarily to town planning, infrastructure development and civil work constructions at a designated site, which is devoid of any heritage value. Nevertheless, to be on the safer side, if any cultural heritage or antiquity is found, it will be handled as per provisions of the Act and the procedure described therein.

8.7.11 Balochistan Drinking Water Policy/Strategy 2017

The Balochistan Drinking Water Policy/Strategy provides a strategic direction and a development framework to the stakeholders and addresses the issues and challenges faced by both to its urban and rural populations. It is envisaged that the efforts of all tiers of government and the local authorities shall be planned, executed and coordinated accordingly. The new policy/strategy proposes establishment of new drinking water supply systems, rehabilitation and upgradation of existing systems in urban as well as rural areas to ensure sustainable access of drinking water to the entire population of Balochistan.

8.7.12 Quetta Master Plan (QDA)

Keeping in view the rapid and unplanned growth of Quetta City, the Quetta Development Authority (QDA) undertook preparation of the Quetta Master Plan with the help of NESPAK in 1985. The step was taken on the direction of Government of Balochistan for Quetta City to manage its present as well as future growth in scientific and planned manner. The Project is divided into the following three components:

- Urban Planning
- Project Preparation
- Action Studies

In the urban planning context, future growth, form and direction of the City has been visualized up to the year 2008. Major zoning and land uses have been identified and recommendations made for housing, education, medical care and public utilities etc. In the action studies, recommendations have been made for beautification of Chaman Road, Zarghoon Road and Sariab Road and detailed plans have been prepared. Outdated building bylaws and zoning regulations have also been revised. Quetta being within the seismic zone, a study was conducted to identify high risk and very high risk zones so that different types of buildings could be planned and designed accordingly. Included in the study are recommendations to enforce seismic code through legislation to minimize the loss of human life and property. Recommendations have also been made for strengthening the functions of QDA through necessary amendments in the current Ordinance. It is the fervent desire of the Government of Balochistan to implement the recommended projects so that Quetta could be restored to its original character and transform into a physically more comfortable, functional and aesthetically appealing City.

8.7.13 QDA Private Housing Schemes Regulations 1995 (Amended 2007)

These regulations provide a framework for the planning, approval, development and land subdivision for the private and the public sector housing schemes within the controlled area of the Quetta Development Authority. The regulations provide a mechanism for scrutiny of the documents regarding approval of housing schemes, areas to be reserved for various components and other applicable bylaws. As the instant housing schemes falls within the jurisdiction of the QDA, the said Regulations shall apply to the scheme.

8.8 Environmental Institutional Framework

Pakistan Environmental Protection Agency

Pak-EPA is the Federal environmental institution responsible for administering the provisions of the Pakistan Environmental Protection Act, 1997. The Pak-EPA is required to ensure compliance with the NEQS, establish monitoring and evaluation systems, and both identify the need to, as well as initiate legislation whenever necessary. It is thus the primary implementing agency in the hierarchy of environmental management. The



provincial EPAs are the provincial arms of the federal EPA. Federal EPA has delegated powers to its provincial agencies to administer and implement the provision of the Act in its jurisdiction. One of the functions delegated by the Pak-EPA to the provincial EPAs is the review and approval of environmental assessment reports.

8.8.1 Environmental Protection Agency, Balochistan

After promulgation of the 18th Constitutional Amendment, environment has become a provincial subject. Therefore, EPA Balochistan is the relevant Agency to review and grant environmental approval to the IEE/EIA studies regarding the projects within the territorial jurisdiction of the province of Balochistan. The instant EIA shall also be cleared by the BEPA. The BEPA is responsible and legally authorized Agency to monitor and implement the IEE/EIA recommendations, as contained therein, in line with the provisions of the Balochistan Environmental Protection Act and conduct public hearing on the EIA reports, wherever required.

8.8.2 Forest and Wildlife Department, Balochistan

Wildlife conservation and forest management is also a provincial subject. In Balochistan, the implementation of Balochistan Wildlife (Protection, Preservation, Conservation and Management) Act, 2014 and formulation of policy decisions are the responsibility of the Balochistan Wildlife Management Board. The instant EIA shall therefore be subservient to the provisions of the Forest Act *ibid*.

8.8.3 Directorate of Archaeology, Balochistan

Archaeology Department Balochistan is a provincial department responsible for protection and conservation of archaeological sites, monuments, and other sites protected under the Federal Antiquities Act, 1975. The instant EIA shall therefore be subservient to the provisions of the Antiquities Act *ibid*.



FINDINGS AND CONCLUSION



FINDINGS AND CONCLUSION

Results of the instant EIA study show that negative or adverse environmental impacts of the construction phase of the project (Development of a Housing Scheme at Kuchlak Road, Quetta, Balochistan) on the physical environment, although significant, will be of no eventual consequence because of their mitigable character. The majority of the identified negative impacts of both construction and occupancy phases are also reversible in nature and can be made good in case the suggested mitigation measures are implemented in true spirit and effective monitoring mechanism is put in place. It is noteworthy that the socio-environmental impacts of the project are of positive nature, and beneficial for the community and the environment as whole. The EIA study also shows that there will be no end-exploitation and consequential depletion of the local natural resources. In view of the known and limited scope and magnitude of the project, the local resources will remain conserved and available for sustainable development. The project would therefore bring in positive and healthy improvements in the socio-economic environment of the area and availability of housing to citizens.



DISCLAIMER



DISCLAIMER

The instant Environmental Impact Assessment Report (EIAR) of the project titled “Development of a Housing Scheme at Kuchlak Road, Quetta, Balochistan” has been prepared in compliance to the relevant provisions of the Balochistan Environmental Protection Act 2012 and the IEE/EIA Regulations framed thereunder. The report is project specific and of limited liability and extent to the titled project only. All rights are reserved with the proponent and project’s environmental consultant. No part of this report can be reproduced, copied, published, transcribed in any manner, or cited in a context different from the purpose for which it has been prepared, except with the prior permission of the Proponent and the Consultant.



REFERENCES



REFERENCES

1. National Environmental Conservation Strategy, Government of Pakistan
2. Pakistan Environmental Protection Act, 1997
3. Balochistan Environmental Protection Act, 2012
4. Pakistan Environmental Protection Agency, Review of IEE/EIA Regulations 2000
5. Policy and Procedure for the Filing, Review, and Approval of Environmental Assessment Guidelines 1997
6. World Bank Environmental Guidelines, Environment Department, World Bank 1988
7. Environmental Impact Assessment Guidelines, Government of Pakistan, Ministry of Housing and Works (Environment and Urban Affairs Division 1986
8. Introduction to Environmental Impact Assessment - Principles and Procedures, Process, Practice and Prospects, John Glasson
9. Environmental Assessment in Practice, D. Owen Harrop, and J. Ashley Nixon
10. Balochistan Development Statistics, Government of Balochistan, 2018
11. Management of Air Pollution in Punjab, EPD Laboratories, Government of Punjab
12. Pakistan Standards: Drinking Water (2nd Revision), Pakistan Standards and Quality Control Authority
13. Guidance for Implementing the Environmental Impact Assessment (EIA) Process, Central Environmental Authority, Ministry of Forestry and Environment, Government of Sri Lanka
14. Subsoil Water Quality Monitoring in 14 Districts of the Punjab, Provincial Task Force on Subsoil Water, Environment Protection Department, Government of Punjab
15. Environmental Encyclopaedia (2nd Edition), William P Cunningham, and Terence H Cooper
16. Pakistan Environmental Laws and their compliance, Dr. Shoab Qadir and Athar Rafiq Dogar, Lahore Law Times Publications 2018
17. Water Quality Status in Pakistan, Pakistan Council of Research in Water Resources, Ministry of Science and Technology, Government of Pakistan, Islamabad 2018
18. Project Documents "Development of a Housing Scheme at Kuchlak Road Quetta Balochistan, Pakistan Housing Authority Foundation , Islamabad, 2019
19. Various papers provided by the PHA-F Islamabad including layout plan and architectural drawings, 2019
20. Environmental Assessment Guidelines of the Asian Development Bank, Environment Division, Office of Environment and Social Development, 2003
21. Environmental Guidelines for Selected Infrastructure Projects, Office of the Environment, Asian Development Bank, 1993
22. Pakistan Environmental Assessment Procedures, Pakistan Environmental Protection Agency, Islamabad, 1997
23. Biodiversity Action Plan for Pakistan, Government of Pakistan, IUCN I and WWF, 2000



ANNEXES

**BALUCHISTAN PROVINCIAL ASSEMBLY SECRETARIAT****NOTIFICATION****Dated Quetta, the 15th January 2013**

No. PAB/Legis:V(9)/2013. The Balochistan Environment Protection Bill 2012, Bill No. 9 of 2012 having been passed by the Provincial Assembly of Balochistan on 24th December 2012 and assented to by the Governor Balochistan on 9th January 2013 is hereby published as an act of the Provincial Assembly of Balochistan.

THE BALUCHISTAN ENVIRONMENT PROTECTION ACT 2012**ACT NO. VIII OF 2012**

(First published after having received assent of the Governor of Balochistan in the Balochistan Gazette (Extra Ordinary) dated the 9th January 2013.

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.

Preamble

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, it is enacted as follows:

1. Short title, extent and commencement

- (1) This Act shall be called the Balochistan Environmental Protection Act, 2012.
- (2) It extends to the whole Province of Balochistan except Tribal Areas.
- (3) It shall come into force at once.

2. Definitions

In this Act, unless there is anything repugnant in the subject or context:

- (a) "Adverse environmental effect" means impairment of or damage to the environment and includes:
 - (i) Human health and property or biodiversity, coast, beaches and ecosystem;
 - (ii) Pollution; and
 - (iii) Any adverse environmental effect on Land, Air and Water;
- (b) "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;
- (c) "Air pollutant" means any substance that causes pollution of air and includes soot, smoke, dust particles, odour, light, electromagnetic radiation, heat, fumes, combustion exhaust, exhaust gases, noxious gases, hazardous substances and radioactive substances;
- (d) "Alien species" means a species that does not occur naturally in Balochistan.
- (e) "Balochistan coastline or coastal zone" means the territorial jurisdiction of the coastline of the Province of Balochistan.
- (f) "Best practicable environmental option" means the best method for preventing or minimizing adverse effects on the environment, having regard to, among other things:
 - (i) The nature of the discharge and the sensitivity of the receiving environment to adverse effects;
 - (ii) The financial implications, and the effect on the environment, of that option when compared with other options; and the current state of technical knowledge and the likelihood that the option can be successfully applied.



- (g) "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, including diversity within species, between species and of ecosystems;
- (h) "Clinical waste" means any waste produced by hospitals, clinics, nursing homes, doctor's offices, medical laboratories, medical research facilities and veterinarians, which is infectious or potentially infectious.
- (i) "Council" means the Balochistan Environmental Protection Council established under section 3;
- (j) "Discharge" includes spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping;
- (k) "Ecosystem" means a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit;
- (l) "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;
- (m) "Electronic waste" means discarded computers, office electronic equipment, entertainment device electronics, mobile phones, television sets, cathode ray tubes (CRT) and refrigerator, VCRs, stereos, copiers, and fax machines. It also includes used electronics, which are destined for reuse, resale, salvage, recycling or disposal and electronic products nearing the end of their "useful life".
- (n) "Emission standards" means the permissible standards established by the Provincial Agency for emission of air pollutants and noise and for discharge of effluent and waste;
- (o) "Endemic and indigenous species" means species, which occurs naturally in the wild only in Balochistan, or a species, which only breeds in the wild in Balochistan.
- (p) "Environment" means:
- (i) Air, water and land;
 - (ii) All layers of the atmosphere;
 - (iii) All organic and inorganic matter and living organisms;
 - (iv) The ecosystem and ecological relationships;
 - (v) Buildings, structures, roads, facilities and works;
 - (vi) All social and economic conditions affecting community life; and
 - (vii) The inter-relationships between any of the factors specified in sub-clauses (i) to (vi);
- (q) "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 training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed; training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed;
- (r) "Environmental Magistrate" means the Magistrate of the First Class appointed under Section 32;
- (s) "Environmental Tribunal" means the Balochistan Environmental Protection Tribunal constituted under section 28;
- (t) "Exclusive Economic Zone" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);
- (u) "Factory" means any premises in which industrial activity is being undertaken;
- (v) "Genetic Resource" means any material of plant, animal, microbial or other origin containing functional units of heredity of actual or potential value.
- (w) "Government" means the Government of Balochistan.
- (x) "Government Agency" includes:
- (i) A department, attached department, bureau, section, commission, board, office or unit of the Provincial Government;



(ii) A developmental or a local authority, company or corporation established or controlled by the Provincial Government; (iii) the Balochistan Environmental Protection Agency; and
(iv) Any other body defined and listed in the Rules of Business of the Provincial Government.

(y) "Handling", in relation to any substance, means the manufacture, processing, treatment, package, storage, transportation, collection, destruction, conversion, offering for sale, transfer or the like of such substance;

(z) "Hazardous substance" means:

(i) 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

(ii) Any substance, which may be prescribed as a hazardous substance;

(aa) "Hazardous waste" means waste which is or which contains a hazardous substance or which may be prescribed as hazardous waste and includes hospital waste and nuclear waste;

(bb) "Historic waters" means such limits of the waters adjacent to the land territory of Pakistan as may be specified by notification under section 7 of the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(cc) "Hospital waste" includes 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 and laboratories;

(dd) "Industrial activity" means any operation or process for manufacturing, making, formulating, synthesizing, 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 purpose;

(ee) "Industrial waste" means waste resulting from an industrial activity;

(ff) "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;

(gg) "Integrated pollution control" means the holistic system aimed at pollution prevention and minimization at source, managing the impact of pollution and waste on the receiving environment and remediation of damaged and polluted environments.

(hh) "Living modified organism" means any living organism that possesses a novel combination of genetic material obtained through the use of modern technology.

(ii) "local authority" means regional or district set up of EPA or any Agency designated by the Provincial Government, by notification in the official Gazette, to be a local authority for the purposes of this Act;

(jj) "Local council" means a local council constituted or established under a law relating to local Government;

(kk) "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;

(ll) "Municipal waste" includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like;

(mm) "Environmental Quality Standards" means standards established by the Federal/Provincial Agencies 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;

(nn) "Noise" means the intensity, duration and character of sounds from all sources, and includes vibration;



(oo) "Nuclear waste" means waste from any nuclear reactor or nuclear plant or other nuclear energy system, whether or not such waste is radioactive;

(pp) "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;

(qq) "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 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;

(rr) "Prescribed" means prescribed by rules made under this Act;

(ss) "Project" means any activity, plan, scheme, proposal or undertaking involving any change in the environment and includes:

(i) Construction or use of buildings or other works;

(ii) Construction or use of roads or other transport systems;

(iii) Construction or operation of factories or other installations;

(iv) Mineral prospecting, mining, quarrying, stone crushing, drilling and the like;

(v) Any change of land use or water use; and

(vi) alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems, factories or other installations;

(tt) "Protection of environment" means the qualitative and quantitative improvement of the different components of the environment and prevention of the deterioration of qualitative and quantitative standards;

(uu) "Proponent" means the person who proposes or intends to undertake a project;

(vv) "Provincial Agency" means the Balochistan Environmental Protection Agency established under section 5, or any Government Agency, local council or local authority exercising the powers and functions of the Provincial Agency;

(ww) "Rules & Regulations" means rules and regulation made under this Act;

(xx) "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;

(yy) "Shipbreaking" means breaking up of various types of ship for recycling.

(zz) "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 Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations;

(aaa) "Strategic Environmental Assessment" Strategic environmental assessment (SEA) is a system of incorporating environmental considerations into policies, plans, programmes and strategies. It is sometimes referred to as strategic environmental impact assessment.

(bbb) "Sustainable Development" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs;

(ccc) "Sustainable Management" means management of the use of natural resources to provide for the health, safety and social, cultural and economic wellbeing of people and communities taking into account the following:

(i) Safeguarding the life-supporting capacity of natural resources and ecosystems;

(ii) Ensuring the maintenance of the life-supporting capacity and quality of natural resources and ecosystems to meet the reasonably foreseeable needs of future generations;

(iii) Avoiding the creation of adverse effects and, where adverse effects cannot be avoided, mitigates and remedies adverse effects.



(ddd) "Territorial waters" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(eee) "Vessel" includes anything made for the conveyance by water of human beings or of goods; and

(fff) "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.

(ggg) "Water resource" includes surface water, an aquifer or groundwater, a river or spring, a natural channel in which water flows regularly or intermittently, and a wetland, lake or dam into which, or from which, water flows.

3. Establishment of the Balochistan Environmental Protection Council

(1) The Provincial Government shall, by notification in the official Gazette, establish a Council to be known as the Balochistan Environmental Protection Council consisting of:

(a) Chief Minister or such other person as the Chief Minister may nominate in this behalf	Chairperson
(b) Minister for Environment	Vice Chairperson
(c) Chief Secretary Balochistan	Member
(d) Secretary Environment	Member/Secretary
(e) Secretary Finance	Member
(f) Secretary Industries	Member
(g) Secretary Agriculture	Member
(h) Secretary Forest	Member
(i) Secretary P&D	Member
(j) Secretary S&GAD	Member
(k) Director General EPA	Member

(l) Such other persons not exceeding six (6) as the Provincial Government may appoint, with the following representation: One from the Balochistan Chamber of Commerce & Industries and one from the Balochistan Chamber of Agriculture, Two Environment experts/Scientist, One Educationist and One from Non-Governmental Organization.

(2) The Members of the Council, other than ex-officio members, shall be appointed in accordance with the prescribed procedure and shall hold office for a term of two years.

(3) The Council may constitute committees of its members and entrust them with such functions as it may deem fit, and there commendations of the committee may seek assistance from any Government Department or expert in the relevant environmental field in performance of its functions, committee may seek assistance from any Government Department or expert in the relevant environmental field in performance of its functions.

4. Functions and powers of the Council

(1) The Council shall:

- (a) Coordinate and supervise enforcement of the provisions of this Act; and
- (b) Approve comprehensive environmental policies and ensure their implementation within the framework of a National/ Balochistan conservation strategy as may be approved by the Federal/Provincial Government from time to time;
- (c) Approve the 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 development plans and policies;
- (f) The Council shall frame its own rules of procedure.
- (g) The Council shall hold meetings, as and when necessary, but not less than two meetings shall be held in a year.

(2) The Council may direct the Provincial Agency or any Government Agency to prepare, submit or implement projects for the protection, conservation, rehabilitation and improvement of the environment and the sustainable development of resources or to undertake research in any aspect of environment.

5. Establishment of the Balochistan Environmental Protection Agency



(1) The Government of Balochistan shall by a notification in the official Gazette established Balochistan Environmental Protection Agency to exercise the powers and perform the functions assigned to it under this Act and the rules and regulations made thereunder.

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

(3) The Balochistan Environmental Protection Agency shall have such administrative, technical and legal staff, as the Government of Balochistan may specify to be appointed in accordance with Balochistan Civil Servant Act 1974.

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

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

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

6. Functions of the Balochistan Environmental Protection Agency

(1) The Balochistan Environmental Protection Agency shall:

(a) Administer and implement this Act and the rules and regulations made thereunder;

(b) Prepare, in co-ordination with the relevant Government Agency and in consultation with the concerned sectors Advisory Committees, environmental policies for approval by the Council;

(c) Take all necessary measures for the implementation of the national environmental policies approved by the Council;

(d) Prepare and publish an Annual Environment Report on the state of the environment;

(e) Establish standards for the quality of the ambient air, water and land, by notification in the official Gazette in consultation with the other relevant Government Departments/Agencies.

(f) Revise the Environmental Quality Standards with approval of the Council,

Provided that:

(i) before seeking approval of the Council, the Balochistan Environmental Protection Agency shall publish the proposed Environmental Quality Standards for public opinion in accordance with the prescribed procedure; and

(ii) different standards for discharge or emission from different sources and for different areas and conditions may be specified; where standards are less stringent than the Environmental Quality Standards prior approval of the Council shall be obtained;

(iii) Certain areas, with the approval of the Council, may exclude from carrying out specific activities, projects from the application of such standards;

(g) Coordinate environmental policies and programmes;

(h) Establish systems and procedures for surveys, 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 protection of the environment, and sustainable development;

(j) Certify one or more 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.

(k) Initiate legislation in various sectors of the environment;

(l) 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 disclosure of such information shall be subject to the restrictions contained in the proviso to sub-section (3) of section 15.

(m) Assist the local councils, local authorities, Government Agencies and other persons to implement schemes for the proper disposal of wastes so as to ensure compliance with the standards established by it;

(n) Provide information and guidance to the public on environmental matters;

(o) Recommend environmental courses, topics, literature and books for incorporation in the curricula and syllabi of educational institutions;

(p) Promote public education and awareness of environmental issues through mass media and other means including seminars and workshops;



- (q) Specify safeguards for the prevention of accidents and disasters which may cause pollution, collaborate with the concerned person in the preparation of contingency plans for control of such accidents and disasters, and co-ordinate implementation of such plans;
- (r) Encourage the formation and working of non-governmental organizations, community organizations and village organizations to prevent and control pollution and promote sustainable development;
- (s) Perform any function, which the Council may assign to it.

(2) The Balochistan Environmental Protection 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;
- (c) initiate with the approval of the Provincial/Federal 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 the Government of Balochistan the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and the purposes of this Act, including:
 - (i) Incentives, prizes awards, subsidies, tax exemptions, rebates and depreciation allowances; and
 - (ii) Taxes, duties and other levies;
- (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 establishment of similar laboratories in the private sector;
- (f) Provide or arrange, in accordance with such procedure, as may be prescribed, financial assistance for projects designed to facilitate the discharge of its functions.

7. Powers of the Balochistan Environmental Protection Agency

Subject to the provisions of this Act, the Balochistan Environmental Protection Agency may:

- (a) Lease, purchase, acquire property both moveable and immovable;
- (b) Fix and realize fees, rates and charges for rendering any service or providing any facility, information or data under this Act or the rules and regulations;
- (c) Enter into contracts, execute instruments subject to approval of the Provincial Government, necessary for proper management and conduct of its business made thereunder;
- (d) Subject to approval of the Provincial Government appoint in accordance with prescribed procedures such experts and consultants as it considers necessary for the efficient performance of its functions on appropriate terms and conditions;
- (e) 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;
- (f) The Director General Balochistan EPA or any other Regional officer specifically authorized in this behalf by the Director General shall have the power to impose fine/administrative penalty upto rupees one hundred thousand from case to case basis.
 - (i) The fine/administrative penalty shall be recovered as per land revenue act.
 - (ii) The fine/administrative penalty initially or for an interim period shall be placed with the Balochistan EPA till the decision of the Environmental Tribunal or Magistrate; and
 - (iii) The fine/administrative penalty after the final decision shall be deposited in the public exchequer.
- (g) Enter and inspect and under the authority of a search warrant issued by the Environmental Court or Environmental Magistrate, search at any reasonable 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, committed;
- (i) Subject to the provisions of this Act, any person generally or specifically authorized in this behalf by the Director General shall be entitled to enter, at all reasonable times, with such assistance as he considers necessary, any building or place for the following purposes, namely:
 - a) To perform duties conferred on him under this Act or rules;
 - b) To inspect any activity in such building or place in accordance with this Act, the rules or any notice, order or direction issued thereunder;
 - c) To examine or test any equipment, industrial plant, record, register or any other important matter relating thereto;
 - d) To conduct a search of any building or place which the said person has reason to believe to have been the place of occurrence of any offence in contravention of any notice, order or direction issued under this Act or the rules;
 - e) To seize/close any equipment, industrial plant, record, register, document or other matter which may serve as evidence of the commission of any offence punishable under this Act or the rules.



(ii) The provisions of the Code of Criminal Procedure shall be applicable in respect of any search or seizure under this Act.

(a) 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;

(b) Arrange for test and analysis of the samples at a certified laboratory;

(i) Every person authorized in this behalf by the Director General may, in such manner as may be prescribed by rules, collect from any factory, premises or place samples of air, water, soil or of any other substance for the purpose of analysis.

(ii) The results of the analysis of samples collected under clause (i) shall not be admissible in evidence in any legal proceeding unless the provisions of the clauses (iii) and (iv) have been complied with.

(iii) Subject to the provisions of sub-section (4), the officer collecting a sample under clause (i) shall:

(a) Serve notice on the owner or proponent or agent of the said place, in such manner as may be prescribed by rules, of his intention to collect such sample;

(b) Collect the sample in the presence of the said occupier or agent;

(c) Put the sample into a container and affix on it a seal bearing the signatures of himself and of the occupier or agent;

(d) Prepare a report of the sample collected and sign it himself and take the signature of the occupier or agent;

(e) Send without any delay, the said container to the laboratory specified by the Director General EPA.

(iv) Whereas, sample is collected under clause (i) and a notice is served by the collecting officer under sub clause a) of clause (iii), the collecting officer shall, if the occupier or agent wilfully absents himself at the time of the collection of the sample or, though being present, refuses to sign the sample or report, in the presence of two witnesses, give his signature and attest and seal it and shall send it without any delay to the laboratory specified by the Director General, mentioning that the occupier or agent had not been present or, as the case may be, refused to give his signature.

(i) 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 power under clauses (f), (h), (l) and (j) shall be exercised in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898) or the rules made under this Act and under the direction of the Environmental Tribunal or Environmental Magistrate; and

(j) Establish an Environmental Coordination Committee comprising the Director General as its chairman and the heads of relevant Government Agencies and such other persons as the Government of Balochistan may appoint as its members to exercise such powers and perform such functions as maybe delegated or assigned to it by the Government of Balochistan for carrying out the purposes of this Act and for ensuring inter-departmental coordination in environmental policies.

8. Establishment, powers and functions of the Regional or District Environmental Protection Agencies

(1) Government of Balochistan shall, by notification in the official Gazette, establish the Regional or District Environmental Protection Agency, to exercise such powers and perform such functions as may be delegated to it by the Government of Balochistan under sub-section (2) of section 34.

(2) The Regional or District Environmental Protection Agency shall be headed by an officer at least of the rank of regional Director or Deputy Director who shall be appointed by the Provincial Government on such terms and conditions as prescribed in the Balochistan Civil Servant Act 1974.

(3) The Regional or District Environmental Protection Agency shall have such administrative, technical and legal staff as the Government of Balochistan may specify, to be appointed in accordance with the Balochistan Civil Servants (Appointment, Promotion and Transfers Rules 2009) such procedure as may be prescribed.

(4) The powers and functions of the Regional or District Environmental Protection Agency shall be exercised and performed by an Officer of the rank of regional Director or Deputy Director appointed as head.

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

9. Establishment of the Balochistan Sustainable Development Funds

(1) There shall be established in the Province a Balochistan Sustainable Development Fund.

(2) The Balochistan Sustainable Development Fund shall be derived from the following sources, namely:

(a) Grants made or loans advanced by the Federal Government or the Provincial 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



(c) Contributions from private organizations and other persons.

(3) The Balochistan Sustainable Development Fund shall be utilized in accordance with such procedure as may be prescribed for:

(a) providing financial assistance to the projects in the public/private sector 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 aspect of environment; and

(b) Any other purpose, which in the opinion of the Board shall help to achieve environmental objectives, and the purposes of this Act.

10. Management of the Balochistan Sustainable Development Funds

(1) The Balochistan Sustainable Development Fund shall be managed by a Board known as the Sustainable Development Fund Board consisting of:

(i) Secretary Environment Department	Chairperson
(ii) Secretary Industries Department	Member
(iii) Secretary Social Welfare Department	Member
(iv) Secretary Finance Department	Member
(v) Secretary Forest Department	Member
(vi) Secretary Agriculture Department	Member
(vii) such non-official persons not exceeding six(6)as the Members Government of Balochistan may appoint including two (2) representatives of the Balochistan Chamber of Commerce and Industry, two (2) representatives of the Balochistan Chamber of Agriculture and two (2) representative of leading non-governmental organizations/donors.	
(viii) Director General, Balochistan Environmental Protection Agency	Member/Secretary

(2) The Board shall have the power to:

(a) Sanction financial assistance for eligible projects as specified in section 9 (3) of this Act

(b) invest moneys held in the Balochistan Sustainable Development Fund in such profit bearing Government bonds, savings schemes and securities as it may deem suitable; and

(3) The Board shall constitute committees of its members to undertake regular monitoring of projects financed from the Balochistan 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.

(4) Audit of the fund shall be conducted on annual basis.

11. Inter-Provincial Environmental issues

(1) The project falling within the geographical jurisdiction of two or more Provinces, the IEE or EIA may be submitted by the proponent to each Provincial Environmental Agencies for review and approval.

(2) In case of any dispute or concerns the matter shall be settled through mutual consultation of the Provinces to avoid any inconveniences or future litigation.

(3) The concerned Provinces may constitute a joint technical or review committee including a representative of the concerned Federal Ministry dealing with Environment and coordination.

12. Multilateral Environmental Agreements

(1) The obligation of the International Conventions, Treaties and Protocols shall be observed as before devolution of the subject of Environment to the Province on Environment or climate change. In case of any international/bilateral cooperation, the matter shall be proceeded with consultation with the concerned Federal Ministries.

(2) The Government of Balochistan/Environmental Protection Agency shall extend support to those obligation of the International Conventions, Treaties and Protocols where adequate assistance provided by the Federal Government.

13. Strategic Environment Assessment (SEA)



(1) This section regulates the conditions, methods and procedure according to which the assessment of impact of certain plans and programmes on the environment (hereinafter referred to as strategic assessment) shall be carried out in order to provide for the environmental protection and improvement of sustainable development through integration of basic principles of environmental protection into the procedure of preparation and adoption of plans and programmes.

(2) The Government at all levels of administration and in every sector shall incorporate environmental considerations into policies, plans, programmes and strategies.

14. Prohibition of certain discharges or emissions and potential harmful items or materials

(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 or waste or air pollutant or noise in an amount, concentration or level or is likely to cause a significant adverse effect on the environment or human health which is in excess of the Environmental Quality Standards or, where applicable, the standards established under sub-clause (ii) of clause (f) of section 6.

(2) The Government of Balochistan shall not allow any imported or locally made commodities or items or materials or equipment or instruments or automobile or pesticides etc. into its provincial jurisdiction, which may have any potential of causing Environmental problems.

(3) No person or company related to public and private sector shall introduce any of the imported or locally made items or materials or equipment or instruments or automobile or pesticides etc. as per subsection (2) for any purpose unless it has filed an application to the Balochistan Environmental Protection Agency, as the case may be, and has obtained approval from the Government Agency in respect thereof.

(4) The Government of Balochistan may levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1), to be calculated at such rate, and collected in accordance with such procedure as may be prescribed.

(5) Any person who pays the pollution charge levied under sub-section (2) shall not be charged with an offence with respect to that contravention or failure.

(6) The approved license in terms of section 15 of this Act does not affect the applicant's duty to obtain any other authorization required in order to undertake the activity or implement the project concerned, whether in terms of this Act or any other legislation.

(7) A person/firm causing discharge of pollutants shall take all reasonable measures to ensure that the best practicable environmental option is adopted in relation to the discharge of emission and conservation of the environment.

15. Initial Environmental Examination and Environmental Impact Assessment

(1) No proponent of a project of public and private sector shall commence construction or operation unless he has filed an Initial Environmental Examination with the Government Agency designated by Balochistan Environmental Protection Agency, as the case may be, or, where the project is likely to cause an adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof.

(2) The Government Agency shall subject to standards fixed by the Balochistan Environmental Protection Agency:

(a) Review the initial environmental examination and accord its approval, 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 conditions as it may deem fit to impose, require that the environmental impact assessment be resubmitted after such modifications as may be stipulated or reject the project as being contrary to environmental objectives.

(3) Every review of an environmental impact assessment shall be carried out with public participation and no information will be disclosed during the course of such public participation, which relates to:

(i) trade, manufacturing or business activities, processes or techniques of a proprietary nature, or financial, commercial, scientific or technical matters which the proponent has requested should remain confidential, unless for reasons to be recorded in writing, the Director General of the Balochistan Environmental Protection



Agency is of the opinion that the request for confidentiality is not well-founded or the public interest in the disclosure outweighs the possible prejudice to the competitive position of the project or its proponent; or

(ii) International relations, national security or maintenance of law and order, except with the consent of the Government of Balochistan; or

(iii) Matters covered by legal professional privilege.

(4) The Government Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination or environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, 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) Subject to sub-section (4) the appropriate Government may in a particular case extend the aforementioned period of four months if the nature of the project so warrants.

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

(7) The Government 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 to inspection by the public at all reasonable hours and the disclosure of information in such registers shall be subject to the restrictions specified in sub-section (3).

(8) No concession areas for any developmental activities shall be awarded to any International/National groups or firms without consultation and concurrence of the Government of Balochistan/Environmental Protection Agency.

(9) The prospect licenses for mining, quarrying, crushing etc. shall only be awarded/granted in compliance with the sub section (1), (2), (3), (4) and (5) .

(10) The cellular companies shall obtain environmental approval from the Balochistan EPA before installing Base Transceivers Station (BTS).

(11) BTS Stations should be required to undergo routine evaluation for Compliance. Whenever an application is submitted to the Balochistan EPA for construction or modification of a transmitting facility, EPA shall have the authority to take action if a cellular base station antenna does not comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines and recommendations of the report titled 'Environmental and Health Related Effects of the Cellular Base Station Antennas' carried out by IT and Telecom Division, Ministry of Information Technology.

(12) No person or company related to public and private sector shall commence construction or operation unless the concerned building authority accord approval under the provisions of the in vogue Building Code.

(13) After fulfilling the sub section (12) an action plan shall be submitted to the concerned municipal/town/union council to carry out the activities for a specific time period as to provide the general public or road users an alternative corridor.

(14) the waste generated during the construction or maintenance or repair of any building shall be appropriately disposed of or transported or collected to a designated place allocated for the purpose like any land fill site to avoid public nuisance.

(15) The construction or repair activities especially in the main city area shall be carried out in a manner to minimize the road congestion or blockage.

(16) The proponent of the project shall remit fifty thousand rupees as review fee of an Initial Environmental Examination (IEE) and one hundred thousand as review fee for Environmental Impact Assessment (EIA).

(17) the person or company in public or private sector intend to commence any scheme or project do not falling under schedule I and II of this Act shall remit twenty five thousand rupees as an Environmental approval fee to the Balochistan



Environmental Protection Agency.

16. Prohibition of import of hazardous waste

No person shall import hazardous waste into Balochistan and its jurisdiction limits.

17. Handling of hazardous substances and licence

(1) Subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous substance except:

- (a) Under a license issued by the Government of Balochistan and in such manner as may be prescribed; or
- (b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party.

(2) Every owner or proponent of any land or premises on which hazardous waste is kept, treated or disposed of shall make a written application to the Balochistan Environmental Protection Agency for a hazardous waste management license, which shall at least include details of:

- a) The chemical composition, nature and volume of the waste, which is being, or will be, produced;
- b) The industrial process, trade or activity giving rise to the waste;
- c) The way in which the applicant proposes to keep, treat or dispose of the hazardous waste, including storage and handling procedures;
- d) The precautions, which will be taken to avoid any adverse effects on the environment being caused by the hazardous waste.

(3) The Balochistan Environmental Protection Agency shall evaluate each application for a license under this Article in the following manner:

- a) grant a hazardous waste management license, with or without conditions, if satisfied that the proposed method of keeping, treating and disposing of the hazardous waste will not cause any adverse effects; or
- b) Refuse to grant a license giving reasons for the refusal in writing to the applicant.

(4) The Balochistan Environmental Protection Agency would take a decision in regard to subsection 2 within thirty (30) days of the date of lodging of the application for a license.

(5) The license shall be granted for a reasonable period not exceeding five years. On expiry of the license for renewal same procedure shall be followed.

18. Electronic waste

(1) Every producer, distributor, collection centre, refurbisher, dismantler or recyclers shall store the electronic waste for a period not exceeding six months and shall maintain a record of collection, sale, transfer, storage and segregation of wastes and make these records available for inspection.

Provided that the Balochistan Environmental Protection Agency may extend the said period in following cases, namely:

- (a) Dismantlers and Recyclers upto six months of their annual storage capacity of the owner; or
- (b) Collection centres who do not have access to any registered dismantling or recycling facility; or
- (c) The waste, which needs to be specifically stored for development of a process for its recycling, reuse.

(2) Every producer, distributor, collection centre, refurbisher, dismantler or recyclers shall make arrangements for the environmentally sound management and disposal of electronic waste.

(3) the 'environmentally sound management of electronic waste' as "taking all steps required to ensure that electronic waste are managed in a manner which shall protect health and environment against any adverse effects, which may result from hazardous substance contained in such wastes."

(4) The provisions of this section shall apply to every producer, consumer and bulk consumer involved in manufacture, sale, purchase and processing of electronic equipment or components.

(5) Information dissemination on electronic waste and the environmentally sound management of electronic waste is also mandated from producers.

(6) to regulate the provisions of this section all the relevant international conventions, protocols and treaties collectively called as multilateral environmental agreements (MEAs) shall be applicable where Pakistan is signatory or ratified the MEAs.



(7) Any person or company or unit who contravenes or fails to comply with the provisions of the above subsections shall be imposed penalty under section 25 of this act.

19. General Prohibition in relation to Solid and Hospital Waste Management and Waste Management License

(1) No person may collect, transport, sort, recover, store, dispose of or otherwise manage waste in a manner that results in a significant adverse effect.

(2) Every person who imports, produces, collects, recovers, transports, keeps, treats or disposes of waste shall take all reasonable measures to prevent a significant adverse effect on the environment from occurring.

(3) The owner or proponent of every premises upon which solid and hazardous hospital waste is produced shall ensure that all hazardous waste whether solid or hospital waste is separated from other waste and is stored in separate containers pending disposal, in accordance with the requirements of the Balochistan Environmental Protection Agency as set out in regulations, published guidelines or license conditions.

(4) A Person shall not dispose of solid and hazardous hospital waste in such a manner that it becomes litter or is likely to become litter.

(5) Unless in possession of a valid waste management license issued by the Balochistan Environmental Protection Agency, no person may construct, own or operate a landfill site, incinerator or other facility at which waste is permanently disposed of or is stored indefinitely.

(6) The Balochistan Environmental Protection Agency shall evaluate each application for a license and shall do the following:

- a) grant a license if the Balochistan Environmental Protection Agency is satisfied that the applicant has sufficient expertise to undertake the activity in question in accordance with the law and in a manner that will not have significant adverse effects; or
- b) Refuse to grant a license giving reasons for the refusal in writing to the applicant.

(7) The Balochistan Environmental Protection Agency shall reach a decision in regard to subsection 2 within thirty (30) days of the date of lodging of the application for a license with the Balochistan Environmental Protection Agency.

(8) If there are reasonable grounds to grant license, and those grounds are communicated to the license holder in writing, the Balochistan Environmental Protection Agency may amend, revoke or impose new conditions in an existing waste management license.

(9) The license granted under subsection (6) shall be subject to review if condition of license granted are not fulfilled.

20. Management of Water Resources

(1) All persons, for the purpose of protection, conservation, development, use, control and management of water resources would take into account the following measures:

- a) Protecting aquatic and associated ecosystems and their biological diversity;
- b) Reducing and preventing pollution and degradation of water resources.

(2) When preparing water resource management plans, Departments and other relevant institutions shall at least take the following into account:

- a) Provisions for integrated water shed management;
- b) Regulation of sustainable abstraction of groundwater;
- c) Regulation of the use of ground or surface water for agricultural, industrial, mining, and urban purposes;
- d) Measures to protect human health and ecosystems;
- e) Measures to protect wetlands and their associated ecosystems;
- f) Any other provision necessary for the sustainable use and management of water resources.

(3) An owner of land or a person who uses the land on which any activity or process is performed or undertaken which causes or is likely to cause significant pollution of a water resource must take measures to prevent any such pollution.



21. Regulation of Motor Vehicles

(1) Subject to the provisions of this Act, and the rules and regulations, no person shall operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the Environmental Quality Standards, or where applicable the standards established under clause (e) of section 6 (1).

(2) For ensuring compliance with the standards mentioned in sub-section (1), the Balochistan Environmental Protection 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 may be prescribed.

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

(4) To regulate the provision of this Act a green squad comprising of representative of Traffic Police, Motor Vehicle Examiner, Excise & Taxation and EPA Balochistan shall be in place to monitor and inspect the automobiles running on the road as per the Environment Quality Standard.

(5) The inspection or monitoring shall be carried out at least once in a month wherein a mechanism be chalked out for issuance of warning tickets (red: Highly polluted, Blue: less polluted) on a prominent on the vehicle, as the case may be for specific period of time not exceeding 30 days to maintain the vehicle in order .

(6) Whoever contravenes or fails to comply with the provision of subsection (5) such vehicle should be made off road or punishable with fine at least twenty thousand rupees which may be extended to one hundred thousand rupees. In the case of continuing contravention or failure the vehicle shall be impounded.

22. Alien Species and Living Modified Organisms

(1) The import into Balochistan of alien species and of living modified organisms is prohibited without a permit issued by the relevant authority under any law enforce in Balochistan. The Balochistan Environmental Protection Agency in consultation with the Departments of Agriculture, Livestock and Animal Husbandry and Food shall monitor the matter.

(2) No permit for the introduction of an alien species or of a living modified organism shall be issued unless the environmental impact indicates that there is a reasonable certainty that no harm to indigenous natural resources or human health will result from the proposed introduction.

(3) Subsection 1 and 2 of this Section shall apply equally to introductions of alien species and living modified organisms into the Province of Balochistan and to introductions from one ecosystem to another within the province.

(4) The introduction of alien species and living modified organisms into protected areas shall not be allowed.

23. Coastal Zone

(1) Subject to the provisions of this Act the activities or concentration or level of discharges of the following units established on onshore and offshore shall be monitored strictly to prevent the pollution and environmental degradation caused by the following multi-magnitude and multidisciplinary units.

- a) Ports and shipping
- b) Fisheries
- c) Ship dismantling
- d) Shipping Traffic (Oil Tankers & Vessels) & dredging.
- e) Oil and gas mineral exploration.
- f) Coastal power plants and Energy sector.
- g) Oil refineries and Industries

(2) The shipbreaking at Gaddani or anywhere else in the coastal belt/zone of this province shall be subject to fulfilling all the relevant obligations under the Basel Convention “on the Control of Trans-boundary Movements of Hazardous Waste and their Disposal”, Rotterdam Convention “on the prior Informed Consent (PIC) Procedure for certain Hazardous Chemicals and Pesticides in International Trade” and other relevant Treaties/Protocols and provisions of this Act.



(3) During the process of ship breaking/dismantling the waste, hazardous waste or sludge or Polychlorinated biphenyls or asbestos etc. shall be disposed of in a manner to ensure Protection of Terrestrial and Marine environment.

(4) The activities of shipbreaking/dismantling activities on shore or offshore within territorial limit of Balochistan shall be monitored at least biannually to ensure environmental protection and prevent degradation and pollution.

24. Environmental protection order

(1) Where the Balochistan Environmental Protection 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, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Balochistan Environmental Protection Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Balochistan Environmental Protection 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; and

(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 Balochistan Environmental Protection Agency.

(3) Where the person, to whom directions under sub-section (1) are given, does not comply therewith, the Balochistan Environmental Protection Agency may, in addition to the proceedings initiated against him under this Act, the rules and regulations, itself take or cause to be taken such measures specified in the order as it may deem necessary and may recover the reasonable costs of taking such measures from such person as arrears of land revenue.

25. Penalties

(1) Whoever contravenes or fails to comply with the provisions of sections 14, 15, 16, 18 or section 24 or any order issued there-under shall be punishable with fine which may extend to one million rupees, 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 contravention of the provisions of section 14 also constitutes contravention of the provisions of section 21, such contravention shall be punishable under sub-section (2) only.

(2) Whoever contravenes or fails to comply with the provisions of section 17, 19, 21, 22 or 23 or any rule or regulation or conditions of any license, any order or direction, issued by the Council or the Balochistan Environmental Protection Agency, shall be punishable with fine which may extend to one hundred thousand rupees, and in case of continuing contravention or failure during which such contravention continues.

(3) Where an accused has been convicted of an offence under subsections (1) and (2), the Environmental Court and Environmental Magistrate, as the case may be, shall, 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-section (1) and the Environmental Court is satisfied that as a result of the commission of the offence monetary benefits have accrued to the offender, the Environmental Court may order the offender to pay, in addition to the fines under sub-section (1), further additional fine commensurate with the amount of the monetary benefits.

(5) Where a person convicted under sub-sections (1) or sub-section (2) had been previously convicted for any contravention under this Act, the Environmental Court or, as the case may be, Environmental Magistrate may, in addition to the punishment awarded thereunder:



(a) 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;

(b) Sentence him to imprisonment for a term, which may extend to two years;

(c) Order the closure of the factory;

(d) order confiscation of the factory, machinery, and equipment, vehicle, material or substance, record or document or other object used or involved in contravention of the provisions of the Act.

Provided that for a period of three years from the date of commencement of this Act the sentence of imprisonment shall be passed only in respect of persons who have been previously convicted for more than once for any contravention of sections 14, 16, 17, 18,19 or 24 involving hazardous waste;

(e) Order such person to restore the environment at his own cost, to the conditions existing prior to such contravention or as close to such conditions as may be reasonable in the circumstances to the satisfaction of the Balochistan Environmental Protection Agency; and

(f) Order that such sum be paid to any person as compensation for any loss, bodily injury, damage to his health or property suffered by such contravention.

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

(7) Where the Director General of the Balochistan Environmental Protection Agency is of the opinion that a person has contravened any provision of Act he may, subject to the rules, by notice in writing to that person require him to pay to the Balochistan Environmental Protection Agency an administrative penalty in the amount set out in the notice for each day the contravention continues; and a person who pays an administrative penalty for a contravention shall not be charged under this Act with an offence in respect of such contravention.

(8) The provisions of sub-sections (6) and (7) shall not apply to a person who has been previously convicted of offence or who has compounded an offence under this Act who has paid an administrative penalty for a contravention of any provision of this Act.

26. Offences by bodies corporate

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.

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).

27. Offences by Government agencies, local authorities or local councils

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 the Government Agency, local authority or local council, such Head or other officer shall also be deemed guilty of such contravention alongwith the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

28. Balochistan Environmental Tribunals

(1) The Government of Balochistan may, by notification in the official gazette establish Balochistan Environmental Protection Tribunals which shall exercise jurisdiction under this Act.

(2) The Balochistan 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 the Government of Balochistan which at least one shall be a technical member with suitable professional qualifications and experience; in the environmental field as



may be prescribed. For every sitting of the Balochistan Environmental Protection Tribunal the presence of the Chairperson and not less than one Member shall be necessary.

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

(4) Balochistan 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 or produced before it.

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

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

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

29. Jurisdiction and powers of Balochistan Environmental Tribunals

(1) Balochistan 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 made thereunder.

(2) All contravention punishable under sub-section (1) of section 25 shall exclusively be triable by Balochistan Environmental Protection Tribunal.

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

(a) The Government Agency or local council; and

(b) Any aggrieved person, who has given notice of not less than thirty days to the Provincial Agency concerned, of the alleged contravention and of his intention to make a complaint to the Environment Tribunal.

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

(5) In exercise of the appellate jurisdiction under section 22 the Balochistan 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 Balochistan Environmental Protection Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908 (Act V of 1908).

(7) Balochistan Environmental Protection Tribunal may, on application filed by any officer duly authorized in this behalf by the Director-General of the Balochistan Environmental Protection Agency, issue bail able warrant for the arrest of any person against whom reasonable suspicion exist, of his having been involved in contravention punishable under sub-section (1) of Section 25.

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 police station.

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



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

(10) Where the Balochistan 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 five hundred thousand rupees.

30. Appeals to the Environmental Tribunal

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

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

31. Appeals from orders of the Environmental Tribunal

(1) Any person aggrieved by any final order or by any sentence of the Balochistan 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.

(2) An appeal under sub-section (1) shall be heard by a Bench of not less than two Judges.

32. Jurisdiction of Environmental Magistrates

(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 contravention punishable under sub-section (2) of section 25 shall exclusively be trial-able by Environmental Magistrate especially empowered in this behalf under section 14 of the Code of Criminal Procedure, 185 (Act No. V of 1898).

(2) An Environmental Magistrate shall be competent to impose any punishment specified in sub-sections (2) and (4) of section 25.

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

- (a) The Balochistan Environmental Protection Agency or Government Agency or a local council; and
- (b) Any aggrieved person.

33. Appeals from orders of Environmental Magistrates

Any person convicted of any contravention of this Act or the rules or regulations by an Environmental Magistrate may, within thirty days from the date of his conviction, appeal to the court of sessions whose decision thereon shall be final.

34. Power to delegate

(1) The Government of Balochistan may, by notification in the official Gazette, delegate any of its or of the Balochistan Environmental Protection Agency powers and functions under this Act and the rules and regulations to any Government Agency, local council or local authority.

(2) The Balochistan Environmental Protection Agency may also by notification in the official Gazette, delegate any of its powers or functions under this Act and the rules and regulations to EPA Regional or sub-offices. In case of nonexistence of its Regional/Sub-offices may delegate its powers or functions to any local council or local authority in the Province.

35. Power to give directions

In the performance of its functions the Provincial Agency shall be bound by the direction given to it in writing by the Government.

36. Indemnity



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

37. Dues recoverable as arrears of land revenue

Any dues recoverable by the Balochistan Environmental Protection Agency under this Act, or the rules or regulations shall be recoverable as arrears of land revenue.

38. Act to override other laws

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

39. Power to make rules

The Government of Balochistan may, by notification in the official Gazette, make rules for carrying out the purposes of this Act including rules for implementing the provisions of the international environmental Agreements, specified in the Schedule to this Act.

40. Power to amend the Schedule

The Government of Balochistan may, by notification in the official Gazette, amend the Schedule so as to add any entry thereat or modify or omit any entry therein.

41. Power to make regulations

(1) For carrying out the purposes of this Act, the Balochistan Environmental Protection Agency may, by notification in the official Gazette and with the approval of the Government of Balochistan, make regulations not inconsistent with the provisions of this Act or the rules made thereunder.

(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, advisers, 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 section 15 applies;
- (g) Laying down of guidelines for preparation of initial environmental examination and environmental impact assessment and Development of procedures for their filing, review and approval;
- (h) Providing procedures for handling hazardous substances; and
- (i) Installation of devices in, use of fuels by, and maintenance and testing of motor vehicles for control of air and noise pollution.

42. Repeal, savings and succession

(1) The provision of Pakistan Environmental Protection Act 1997 (Act No. XXXIV of 1997) applicable to the Province of Balochistan are hereby repealed.

(2) Notwithstanding the repeal of the Pakistan Environmental Protection Act 1997 hereinafter called the repealed Act, any rules or regulations or appointments made, orders passed, notifications issued, powers delegated, contracts entered into, proceedings commenced, rights acquired liabilities incurred, penalties, rates, fees or charges levied, things done or action taken under any provisions of the repealed Act shall, so far as they are not inconsistent with the provisions of this Act be deemed to have been made, passed, issued, delegated, entered into, commenced, acquired, incurred, levied, done or taken under this Act, until they are repealed, rescind, withdrawn, cancelled, replaced or modified in accordance with the provisions of this Act.

(3) On the establishment of the Balochistan Environmental Protection Agency under this Act, all properties, assets and liabilities pertaining to the Balochistan Environmental Protection Agency established under repealed Act shall vest in and be the properties, assets and liabilities, as the case may be, of the Balochistan Environmental Protection Agency established under this Act.



(4) The Balochistan Environmental Protection Agency constituted under the repealed Act and existing immediately before the commencement of this Act shall be deemed to have been constituted under section 5 and the Director General and other officers and employees appointed in the said Agency shall be deemed to be Director General, officers and employees appointed under the Balochistan Civil Servants Act 1974.

(5) Notwithstanding the repeal of the Pakistan Environmental Protection Act 1997 (Act No. XXXIV of 1997), all proceeding pending immediately before commencement of this Act, against any person under the repealed Act and rules, regulation or order made thereunder, or any other Law or rules shall continue under that Law and rules, in the manner proceeded thereunder.

Schedule **(See Section 39)**

1. International Plant Protection Convention, Rome, 1951.
2. Plant Protection Agreement for the Southeast Asia and Pacific Region (as amended), Rome, 1956.
3. Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of its Distribution Area in Southwest Asia (as amended), Rome, 1963.
4. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971 and its amending Protocol, Paris, 1982.
5. London Convention on Ocean Dumping 1972.
6. Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), 1972.
7. MARPOL Convention on Prevention of Pollution from Ship, 1973/78
8. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Washington, 1973.
9. Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.
10. Convention on the Law of the Sea, Montego Bay, 1982.
11. Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985.
12. Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987 and amendments thereto.
13. Agreement on the Network of Agriculture Centres in Asia and the Pacific, Bangkok, 1988.
14. Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, Basel, 1989.
15. Convention on Biological Diversity, Rio de Janeiro, 1992.
16. United Nations Framework Convention on Climate Change, Rio de Janeiro, 1992.
17. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 March 1992.
18. The Rio Declaration on Environment and Development, 13 June 1992.
19. London Amendment to Montreal Protocol on Substances that deplete the ozone layer, 10 Aug 1992.
20. United Nations Convention on the Law of the Sea, 16 Nov 1994.
21. Washington Declaration on Land Based Marine Pollution 1995.
22. UN Convention on Non-Navigational Uses of International Watercourses, 1995.
23. Ban Amendment to the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, 22 Sept 1995.
24. The Kyoto Protocol, 11 Dec 1997.
25. The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 11 Sept 1998.
26. The Beijing Amendment to the Montreal Protocol on Substances that deplete the ozone layer, 1 Jan 2000.
27. The Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 Jan 2000.
28. Stockholm Convention on Persistent Organic Pollutants (POPs), 23 May 2001.
29. International Treaty on Plant Genetic Resources for Food and Agriculture, 3 Nov 2001.
30. Hong Kong International Convention For The Safe And Environmentally Sound Recycling Of Ships, 2009.

Secretary
Balochistan Provincial Assembly



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

S.R.O. 339 (1)/2001. In exercise of the powers referred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the approval of the Federal Government is pleased to make the Following Rules, namely:

1. Short title and commencement

- (1) These regulations may be called the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.
- (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 Pakistan Environmental Protection Act, 1997 (XXXIV of 1997)
 - b. "Director General" means the Director General of the Federal Agency
 - c. "EIA" means an environmental impact assessment as defined in section 2(XI)
 - d. "IEE" means an initial environmental examination as defined in section 2(XXIV); and
 - e. "Section" means a section of the Act
- (2) All other words and expressions used in these regulations but not defined shall have the same meanings as are assigned to them in the Act.

3. Projects requiring an IEE

A proponent of a project falling in any category listed in Schedule-I shall file an IEE with the Federal Agency, and the provisions of section 12 shall apply to such project.

4. Projects requiring an EIA

A proponent of a project falling in any category listed in Schedule-II shall file an EIA with the Federal Agency, and the provisions of section 12 shall apply to such project.

5. Projects not requiring an IEE or EIA

- (1) A proponent of a project not falling in any category listed in Schedules I and II shall not be required to file an IEE or EIA

Provided that the proponent shall file:

- (a) An EIA, if the project is likely to cause an adverse environmental effect;
 - (b) For projects not listed in Schedules I and II in respect of which the Federal Agency has issued Guidelines for Construction and Operation, an application for approval accompanied by an undertaking and an affidavit that the aforesaid Guidelines shall be fully complied with.
- (2) Notwithstanding anything contained in sub-regulation (1), the Federal Agency may direct the proponent of a project, whether or not listed in Schedule I or II, to file an IEE or EIA, for reasons to be recorded in such direction.

Provided that no such direction shall be issued without the recommendation in writing of the Environmental Assessment Advisory Committee constituted under Regulation 23



- (3) The provisions of Section 12 shall apply to a project in respect of which an IEE or EIA is filed under sub-regulation (1) or (2).

6. Preparation of IEE and EIA

- (1) The Federal Agency may issue guidelines for preparation of an IEE or an EIA, including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.
- (2) Where guidelines have been issued under sub-regulation (1), an IEE or EIA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify in the IEE or EIA any departure therefrom.

7. Review Fees

The proponent shall pay, at the time of submission of an IEE or EIA, a non-refundable Review Fee to the Federal Agency, as per rates shown in Schedule III.

8. Filing of IEE and EIA

- (1) Ten paper copies and two electronic copies of an IEE or EIA shall be filed with the Federal Agency.
- (2) Every IEE and EIA shall be accompanied by:
 - (a) An application, in the form prescribed in Schedule IV; and
 - (b) Copy of receipt showing payment of the Review Fee

9. Preliminary Scrutiny

- (1) Within 10 working days of filing of the IEE or EIA, the Federal Agency shall:
 - (a) Confirm that the IEE or EIA is complete for purposes of initiation of the review process; or
 - (b) Require the proponent to submit such additional information as may be specified; or
 - (c) Return the IEE or EIA to the proponent for revision, clearly listing the points requiring further study and discussion.
- (2) Nothing in sub-regulation (1) shall prohibit the Federal Agency from requiring the proponent to submit additional information at any stage during the review process.

10. Public Participation

- (1) In the case of EIA, the Federal Agency shall, simultaneously with issue of confirmation of completeness under clause (a) of sub-regulation (1) of regulation 9; cause to be published in any English or Urdu national newspaper and in a local newspaper of general circulation in the area affected by the project, a public notice mentioning the type of project, its exact location, the name and address of the proponent and the places at which the EIA of the project can, subject to the restrictions in sub-selection (3) of section 12, be accessed.
- (2) The notice issued under sub-regulation (1) shall fix a date, time and place for public hearing of any comments on the project or its EIA.
- (3) The date fixed under sub-regulation (2) shall not be earlier than 30 days from the date of publication of the notice.
- (4) The Federal Agency shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.
- (5) All comments received by the Federal Agency from the public or any Government Agency shall be collected, tabulated and duly considered by it before decision on the EIA.
- (6) The Federal Agency may issue guidelines including the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment:



11. Review

- (1) The Federal Agency shall make every effort to carry out its review of the IEE within 45 days and of the EIA within 90 days, of issue of confirmation of completeness under regulation 9.
- (2) In reviewing the IEE or EIA, the Federal Agency shall consult such Committee of Experts as may be constituted for the purpose by the Director-General, and may also solicit views of the Sectoral Advisory Committee, if any, constituted by the Federal Government under sub-regulation (6) of section 5
- (3) The Director-General may, where he 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) The review of the IEE or EIA by the Federal 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 10, and views of the committees mentioned in sub-regulations (2) and (3) above.

12. Decision

On completion of the review, the decision of the Federal Agency shall be communicated to the proponent in the form prescribed in Schedule V in the case of an IEE and in the form prescribed in schedule VI in the case of an EIA.

13. Condition of Approval

- (1) Every approval of an IEE or EIA shall, in addition to such conditions as may be imposed by the Federal Agency be subject to the condition that the project shall be designed and constructed, and mitigatory and other measures adopted, strictly in accordance with the IEE/EIA, unless any variation there to have been specified in the approval by the Federal Agency.
- (2) Where the Federal Agency accords its approval subject to certain conditions the proponent shall:
 - (a) Before commencing construction of the project, acknowledge acceptance of the stipulated conditions by executing an undertaking in the form prescribed in schedule VII;
 - (b) Before commencing operation of the project, obtain from the Federal Agency written confirmation that the conditions of approval, and the requirements in the IEE/EIA relating to design and construction, adoption of mitigatory and other measures and other relevant matters, have been duly complied with.

14. Confirmation of Compliance

- (1) The request for confirmation of compliance under clause (b) of sub-regulation (2) of regulation 13 shall be accompanied by Environmental Management Plan including the measure and procedures proposed to be taken to manage or mitigate the environmental impacts for the life of the project, including provisions for monitoring reporting and auditing.
- (2) Where a request for confirmation of compliance is received from a proponent, the Federal Agency may carry out such inspection of the site and plant and machinery and seek such additional information from the proponent as it may deem fit.
Provided that every effort shall be made by the Federal Agency to provide the requisite confirmation or otherwise within 15 days of receipt of the request, with complete information, from the proponent.
- (3) The Federal Agency may, while issuing the requisite confirmation of compliance, impose such other conditions as the Environmental Management Plan and the operation, maintenance and monitoring of the project as it may deem fit, and such conditions shall be deemed to be include in the conditions to which approval of the project is subject.

15. Deemed Approval

The four-month period for communication of decision stipulated in sub-section (4) of section 12 shall commence from the date of filing of an IEE/EIA in respect of which confirmation of completeness is issued by the Federal Agency under clause (a) of sub-regulation 9.

16. Extension in Review Period



Where the Federal Government in a particular case extends the four-month period for communication of approval prescribed in sub-section (5) of section 12, it shall, in consultation with the Federal Agency, indicate the various steps of the review process to be taken during the extended period, and the estimated time required for each step.

17. Validity Period of Approval

- (1) The approval accorded by the Federal Agency under section 12 read with Regulation 12 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 validity of the approval shall extend for a further period of three years from the date of issue.
- (3) After issue of confirmation of compliance, the approval shall be valid for a period of three years from the date thereof.
- (4) The proponent may apply to the Federal Agency for extension in the validity periods mentioned in sub-regulations(1),(2) and (3), which may be granted by the Federal Agency in its discretion of such period not exceeding three years at a time if the conditions of the approval do not require significant change

Provided that the Federal 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.

18. Entry and Inspection

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

19. Monitoring

- (1) After issue of approval, the proponent shall submit a report to the Federal Agency on completion of construction of the project.
- (2) After issue of confirmation of compliance, the proponent shall submit an annual report summarizing operational performance of the project, with reference to the conditions of the approval and maintenance and mitigatory measures adopted by the project.
- (3) To enable the Federal Agency to effectively monitor compliance with the conditions of approval, the proponent shall furnish such additional information as the Federal Agency may require.

20. 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 Federal 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 IEE or EIA is incorrect, it shall issue notice to the proponent to show cause, within two weeks of receipt thereof, why the approval should not be cancelled
- (2) If no reply is received or if the reply is considered unsatisfactory, the Federal Agency may, after giving the proponent an opportunity of being heard
 - (a) Require the proponent to make such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or
 - (b) Cancel the approval.
- (3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.



- (4) Action taken under his 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.

21. Registers of IEE and EIA Projects

Separate Registers to be maintained by the Federal Agency for IEE and EIA projects under sub-condition (7) of section 12 shall be in the form prescribed in Schedule VIII.

22. Environmentally Sensitive Areas

- (1) The Federal Agency may, by notification in the Official Gazette, designate any area to be an environmentally sensitive area.
- (2) Notwithstanding anything contained in Regulations 3, 4 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Federal Agency.
- (3) The Federal Agency may from time to time issue guidelines to assist proponents and other persons involved in the environmental assessment process to plan and prepare projects located in environmentally sensitive area.
- (4) Where guidelines have been issued under sub-regulation (3), the projects shall be planned and projected, to the extent practicable, in accordance therewith and any departure therefrom justified in the EIA pertaining to the project.

23. Environmental Assessment Advisory Committee

For purpose of rendering advice on all aspects of environmental assessment, including guidelines, procedures and categorization of projects, the Director General shall constitute an Environmental Assessment Advisory Committee comprising:

- (a) Director EIA, Federal Agency (*Chairman*)
- (b) One representative each of the Provincial Agencies (*Member*)
- (c) One representative each of the Federal Planning Commission and the Provincial Planning and Development Departments (*Members*)
- (d) Representatives of industry and non-Governmental organization and legal and other experts (*Members*)

24. Other Approval

Issue of an approval under section 12 read with regulation 12 shall not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law for the time being in force.



Pakistan National Environmental Quality Standards (NEQS)

Motor Vehicle Exhaust and Noise

#	Parameters	Standards (max: permissible limit)	Measuring Method
1	Smoke	40% or 2 on the Ringleman Scale during engine acceleration.	
2	Carbon Monoxide	Emission Standards	
		New Vehicle	Used Vehicle
		4.5 %	6 %
			Under idling conditions, non-dispersive infrared detection through gas analyser.
3	Noise	85 db (A)	Sound meter at 7.5 m from the source.

Selected Gaseous Pollutants from Emitting Sources

Parameter	Source of Emission	Standard
Smoke	Any	40% or 2 Ringlemann scale or equivalent smoke number
Particulate matter	Boilers and furnaces:	
	Oil fired	300
	Coal fired	500
	Cement kilns	300
	Grinding, crushing, clinker coolers and related processes, metallurgical processes, converter blast furnaces and cupolas	500
Hydrogen chloride	Any	400
Chloride	Any	150
Hydrogen fluoride	Any	150
Hydrogen sulphide	Any	10
Sulphur oxides	Sulphuric acid/Sulfonic acid plants	5,000
	Other plants except power plants operating on oil and coal	1,700
Carbon monoxide	Any	800
Lead	Any	50
Mercury	Any	10
Cadmium	Any	20
Arsenic	Any	20
Copper	Any	50
Antimony	Any	20
Zinc	Any	200
Oxides of nitrogen	Nitric acid manufacturing unit	3,000
	Other plants except power plants operating on oil or coal:	
	Oil fired	400
	Coal fired	600
	Cement kilns	1,200

Municipal and Industrial Effluents

Parameters	Into Sewage	Into Inland Treatment
Temperature or temperature increase	30°C	30°C
PH	6-9	6-9
Biochemical Oxygen Demand (BOD ₅) ^{at 20°C}	80	250
Chemical Oxygen Demand (COD) ^d	150	400
Total Suspended Solids (TSS)	200	400
Total Dissolved Solids (TDS)	3,500	3,500
Grease and oil	10	10
Phenol compounds (as phenol)	0.1	0.3



Chloride (as Cl)	1,000	1,000
Fluoride (as F)	10	10
Total Cyanide (as CN)	1.0	1.0
An-ionic detergents (as MBAS) ^e	20	20
Sulphate (^S O ₄)	600	600
Sulphide (S)	1.0	1.0
Ammonia (NH ³)	40	40
Pesticides	0.15	0.15
Cadmium	0.1	0.1
Chromium (trivalent and hexavalent)	1.0	1.0
Copper	1.0	1.0
Lead	0.5	0.5
Mercury	0.01	0.01
Selenium	0.5	0.5
Nickel	1.0	1.0
Silver	1.0	1.0
Total Toxic metals	2.0	2.0
Zinc	5.0	5.0
Arsenic	1.0	1.0
Barium	1.5	1.5



QDA Private Housing Schemes Regulations 1995 (Amended 2007)

Planning Permission and Procedure

1. Framing of a housing scheme: means a housing scheme can be framed by cooperative societies, an individual, a group of individuals, sponsor/developer or any of his/their attorney on his/their behalf for an area not less than 32 kanals falling within the controlled area for submission to and approval of the Authority, as per residential zones specified in the Master Plan.

2. Submission of a housing scheme: means obtaining planning permission, no objection certificate (the word no objection certificate has been deleted). Every application (Appendix-A) for a housing scheme for which planning permission is required shall be submitted by the sponsor to the Town Planning Directorate of the Authority, alongwith six (6) copies each of the following documents:

- a). Site plan of the proposed scheme on scale 1:10,000 dully prepared and signed by a Town Planner Registered with Pakistan Council of Architects and Town Planners.
- b). Certified copies of ownership record including Fard-e-Malkiat, Aks Shajra and Tatima of the proposed site dully signed by the Tehsildar of the area indicating the location (i.e., mauza, mahal and tehsil etc.) of the proposed housing scheme including list of khasra Nos. alongwith the land area of each khasra.
- c). Attested copies of the computerized National Identity Card of the sponsor.
- d). No objection certificate obtained from the District Water Committee established under the Executive District Officer (Revenue), Quetta.
- e). No objection certificate from the other planning agencies i.e. Cantonment Board, Chiltan Town/Zarghoon Town in case the area is contiguous with their limits.
- f). Certificate from WAPDA as regards availability of electricity for the proposed housing scheme.
- g). No objection certificate from Executive District Officer (Revenue), Quetta allowing the use of land for a housing scheme.
- h). Certificate from Sui Southern Gas Company as regards availability of gas for the proposed housing scheme.
- i). Certificate from PTCL as regards availability of telephone lines for the proposed housing scheme.

In case the documents are incomplete and deficient in any manner, the same shall not be accepted by the Authority and will be returned to the sponsor.

3. Scrutiny Fee for Granting Planning Permission:

A scrutiny fee at the rate of Rs. 5,000/- for an area upto 10 acres and Rs. 10,000/- for an area more than 10 acres shall be payable to the Authority by the sponsor for each scheme, for which the Planning Permission has been requested. The payment shall be made through a challan to be prepared by the Town Planning Directorate, QDA on the request of the sponsor of a scheme. The scrutiny fee is, however, subject to revision by the Authority from time to time.

4. Procedure for scrutiny of application for the grant of planning permission:

a). On submission of requisite documents and the deposit of the scrutiny fee as mentioned in clauses 4 and 5 above, the Director Town Planning will forward a set of these documents to the Chairman of the Committee constituted for considering the grant of planning permission for housing schemes. The Committee shall comprise of the following:

- | | |
|----------------------------|----------|
| i. Chief Engineer | Chairman |
| ii. Director Town Planning | Member |
| iii. Director Works | Member |

b). The meeting of the Committee shall be held within 30 days of the submission of the application to consider the grant of planning permission.

5. Aspects to be considered by the Members of the Committee for Granting Planning Permission:

a). Chief Engineer QDA: (i) He will examine the proposals so as to ensure that the road network proposed in the housing scheme is strictly adhered to the Master Plan of the Authority so as to ensure proper access to the proposed scheme in future. He will evaluate the proposal keeping in view the development potentials of the proposed site, the physical conditions existing in the proposed site and their compatibility with the development programme of the Authority. (ii) He will approve the infrastructure design (the designing of infrastructure



facilities/services shall be prepared by a reputed consultant registered with Pakistan Engineering Council) to be submitted by the sponsor at later stage and the possibility of linking the scheme with the main water supply and sewerage networks of Quetta City in case the scheme does not provide for an independent networks of water supply and sewerage disposal.

b). Director Town Planning QDA: He will scrutinize the details/documents submitted alongwith the proposal in order to ensure their correctness and identify/locate it in the controlled area/master plan area to ascertain its proposed use. He will assess the proposal so as to ensure that it does not come in conflict with any proposed/notified scheme of the Authority or any other scheme of the Government or Semi Government agency processed and approved by the Authority. He will also ensure that proper Town Planning Standards are being adopted as per scheme regulations.

6. Time Limit for Scrutiny of Applications for Planning Permission:

The planning permission shall be granted or refused by the Committee in a period not exceeding 60 days from the date of acceptance of the application for planning permission in the office of the Director Town Planning (as given in Appendix-B).

7. Communication of the decision of the Committee with regards to Planning Permission:

(a). Director Town Planning shall communicate the decision of the Committee on the application for planning permission to the sponsor within a period of 30 days after the Committee's meeting. The approval for the grant of planning permission shall be subject to the terms and conditions approved by the Competent Authority.

(b). In case objections are raised by the Committee on the application for the grant of planning permission, the case shall be reconsidered by the Committee as soon as the objections are removed by the sponsor. This reconsideration of the application by the Committee shall be treated as a fresh application for planning permission. The Committee shall approve or reject it, as the case may be, within a period of 60 days after the acceptance of the application for planning permission by the office of the Director Town Planning.

(c). The Director Town Planning may allow, with the approval of the competent authority, the inclusion of an additional area to the extent of 20% of the total approved area for which the initial proposal for planning permission had been made by the sponsor, if the area proposed for inclusion is contiguous and fulfils all the requirements for the grant of planning permission.

(d). The planning permission granted by the Authority shall remain for a period of three (3) months from the date of issue by the Director Town Planning.

(e). The Competent Authority may consider to extend the validity of the planning permission for an additional period of three months and on the payment of additional fee of Rs. 5,000/- or 10,000/-, as the case may be.

(f). The sponsor will not advertise the scheme for the sale of plots on the basis of planning permission. In case of any default, the planning permission shall be cancelled forthwith without giving any notice and same will be published in daily leading newspapers (at least two newspapers).

Submission and Processing of the detailed Layout Plan

8. Submission of the detailed Scheme for the area:

The sponsor shall submit to the Director Town Planning a detailed scheme for approval consisting of the following documents, before the expiry of the validity of the Planning Permission:

a). Four (4) copies of the Site Plan showing location of the scheme with reference to its surrounding areas on the scale 1:10,000 or any convenient scale.

b). Four (4) copies of the Survey Plan of the site drawn to a scale of not more than 1:2400 showing the spot levels, physical features such as existing trees, borrow pits, high tension lines, water channels, existing graveyards, mosque etc. the contours with one meter interval shall be indicated on the plan.

c). Four (4) copies of Layout Plan drawn to a scale of not more than 1:2400 showing the sub-division of land into plots and allocation of land for circulation network and sub-division of land for various uses in accordance with the Planning Standards acceptable to the Authority.



- d). Layout Plan should be prepared and signed by a qualified Town Planner registered with the Pakistan Council of Architects and Town planners.
- e). Certified copies of Mutation Deed in respect of transactions entered into after the preparation of Current Register of Rights.
- f). One copy of the irrevocable General Power of Attorney duly registered, if the scheme is submitted by any person other than the owner(s).

9. Planning Standards

The Planning Standards may vary in each scheme depending upon the residential density desired to be achieved by the sponsor of the scheme. But, the land use percentage distribution must remain within the following limits:

- a). Residential: Not more than 60%
- b). Commercial: Not more than 2%
- c). Open/green spaces: Not less than 7%
- d). Roads/streets: Not less than 28%
- e). Public Buildings: Not less than 3%
- f). The width of the streets proposed in the layout plan will not be less than 30 feet or (9 meters)
- g). The minimum size of a residential plot will not be more than 1000 sq. yds (836 sq. meters)

10. Scrutiny Fee for the detailed Scheme

A scrutiny fee at the rate of Rs. 1,000/- per acre for a scheme having an area of upto 10 acres and Rs. 1,500/- per acre for a scheme having an area of more than 10 acres (which includes the scrutiny of layout plans and infrastructure design for the proposed scheme) shall be payable to the Authority and shall be deposited through a challan form issued by the Directorate of Town Planning, QDA after the submission of the detailed scheme. The scrutiny fee is, however, subject to revision by the Authority from time to time.

11. Processing of Detailed Scheme

- a). The processing of land ownership documents submitted with the detailed scheme shall be examined in the office of the Director Town Planning, after the scrutiny fee has been deposited with the Authority. The sponsor will be informed about the objections in the land ownership and other documents, if any.
- b) The Authority shall have the discretion to reject the request for approval of the detailed scheme in case no response is received from the sponsor within a period of two months from the date of communication of the objections to him about the land ownership and other documents.
- c). In case ownership documents are found in order, a public notice shall be given in the local leading newspapers for inviting public objections, if any.
- d). The public notice shall be given in the press at the expense of the sponsor.

12. Communication of Objections received on the Scheme:

- a). The Director Town Planning shall inform the sponsor about the objections, if any, received from the public in response to the public notice for clarification. The scheme will not be processed further until and unless objections are removed/settled by the sponsor.
- b). After the confirmation of ownership documents in favour of the sponsor through the public notice, layout plan for the housing scheme shall be examined by the Town Planning Directorate of QDA to ensure that the layout plan of the scheme is in conformity with the Master Plan recommendations.
- c). In case of any objection irregularity in the layout plan, the same will be communicated to the sponsor within 30 days of the confirmation of ownership documents for rectification, if any.

13. Approval of Layout Plan (Technical Approval):

- a). After the incorporation of all the observations raised on the layout plan, the sponsor will be required to submit the layout plan on a tracing cloth with khasra numbers super-imposed on it and showing 30% saleable area in terms of plots to be mortgaged with the Authority as a security towards the provision of infrastructure services.



b). After the completion of all the above formalities, the layout plan will be signed by the Director Town Planning and the Competent Authority.

c). A copy of approved layout plan should be supplied to Chief Engineer QDA. He shall visit the site before and after the consultant planner complete the ground demarcation of the scheme.

14. Mortgage of Plots:

After the approval of the layout plan by the Authority: (a). The sponsor shall be required to mortgage 30% of the saleable area in favour of the Authority (as per specimen enclosed at Appendix-D).

(b). In case the sponsor does not desire to mortgage 30% of the saleable area he shall be required to deposit entire development cost of infrastructure with authority (QDA) or shall furnish a bank guarantee from a scheduled bank of equivalent amount in favour of the amount of development cost shall be assessed by the Authority on the basis of prevailing cost of development (deleted).

(c). The sponsor shall also be required to transfer to the Authority free of charge land reserved for roads, parks /open spaces/play grounds, public buildings and graveyard (38% of the total area) in the scheme along with the mortgage of 30% of saleable area as per specimen given in Appendix-C.

15. Public Notice for Plots to be Mortgaged:

16. Registration of Mortgage Deed with the Authority:

a). After the publication of the public notice in the press regarding the plots mortgaged in favour of the Authority, the sponsor shall submit a copy of the plan of the scheme superimposed by khasra numbers, on tracing cloth indicating thereon the schedule of plots mortgaged in favour of the Authority along with the seals of the Director Town Planning and the competent Authority.

b). The sponsor shall then be required to submit seven (7) copies of the layout plan of the scheme for the purpose of registration after it has been signed by the Director Town Planning and the Competent Authority.

c). The Deed shall be registered by Director Town Planning within a period of two weeks after the submission of the requisite number of copies of layout plan and in a manner set out in the mortgage deed at Appendix-D and on judicial paper of the assessed value.

d). The Judicial paper for registration shall be purchased by the sponsor who will also incur all other incidental expenses, including registration fee etc.

17. Communication of Final Approval of Detailed Scheme Plan.

The final approval of the detailed scheme plan shall be conveyed to the sponsor after the registration of the mortgage deed of 30% of saleable area and transfer of 38% of total area i.e., amenity area.

18. Validity of Approval of Detailed Scheme Plan:

The approval of the detailed scheme plan shall be valid for a period of one year within which the sponsor will be required to submit the detailed design of infrastructural facilities including roads, water supply, sewerage, drainage refuse collection, electricity etc. to the Director Town Planning who shall forward the same to the Chief Engineer for scrutiny within 15 days.

19. Approval of Infrastructural Design:

(a). The Chief Engineer/Competent Authority within a period of 60 days after receipt of the detailed infrastructural design, shall approve the same or propose amendments or require further details of the plans for incorporation in the scheme.

b). In case of any observations raised by the Chief Engineer on the infrastructural design the same should be rectified by the sponsor and re-submitted to the Authority for approval before the expiry of the period of validity mentioned in clause 20 above.

20. Release of Mortgaged Plots:

The plots mortgaged in favour of the Authority will be released with the consent of the sponsor subject to the condition that the Committee consisting of the Chief Engineer, Director Town Planning and Director Works have certified that the proportionate development works have been completed as per specifications and designs



approved by the Chief Engineer and which has also accorded necessary approval to the release of mortgage plots as per provision contained in the Mortgage Deed.

21. Penalty for Non-Execution of Development Works:

In case the sponsor is unable to undertake the development works in the proposed scheme within the time as specified by the Authority, the Authority shall proceed to sell the plots mortgaged in its favour in the scheme either through private negotiation or public auction in order to accumulate funds for the completion of the whole or remaining development works in the scheme.

22. Linking the Services of the Scheme with the Main Network:

The sponsor shall obtain permission from the Authority to link the proposed services network within the scheme with the overall network of the services provided by the agencies concerned within the City after the sponsor has deposited the fee as may be prescribed by the Authority for this purpose.

Miscellaneous

The Governing Body has the discretion to change, modify, alter or relax any of the provisions contained in the regulations as and when so required without any prior notice or intimation to the sponsor of a scheme.

Sub-Division Schemes

All the above procedures will be adopted for approval of Sub Division Schemes having total area ranging between 1.0 acre to 4.0 acres, except the land use standards for which Director Town Planning will specify these standards according to the size of the scheme and the existing facilities available, near the proposed scheme with the approval of the Competent Authority.

**Stakeholders/Persons Consulted**

Sr.	Name and Designation
1.	Mr. Tariq Rasheed Managing Director Pakistan Housing Authority Foundation, Islamabad
2.	Mr. Irfan Khan Director (M&C) Pakistan Housing Authority Foundation, Islamabad
3.	Ms. Najaf Haider Deputy Director (M&C) Pakistan Housing Authority Foundation, Islamabad
4.	Mr. Javed Malik Deputy Director (Engg) Pakistan Housing Authority Foundation, Islamabad
5.	Mr. Shahzaib Ahmed Assistant Director (Engg) Pakistan Housing Authority Foundation, Islamabad
6.	Mr. Muhammad Saleem Lehri Project Director PHA-F Housing Scheme, Kuchlak Road, Quetta
7.	Mr. Muhammad Awais Project Consultant PHA-F Housing Scheme, Kuchlak Road, Quetta
8.	Col. Rtd Mumtaz Hussain Environmentalist Environment House, Defence, Lahore
9.	Mr. Nasir Khan Kashani Director General Environment Protection Agency, Government of Balochistan, Quetta
10.	Mr. M. Rizwan Ali Deputy Director (Admn) Environment Protection Agency, Government of Balochistan, Quetta
11.	Syed Ain-ud-Din Agha Assistant Director (Admn) Environment Protection Agency, Government of Balochistan, Quetta
12.	Neighbouring residents
13.	Local NGOs
14.	Local public representatives
15.	Others

SUMMARY OF FINDINGS

Results of the instant EIA study show that negative or adverse environmental impacts of the construction phase of the project (Development of a Housing Scheme at Kuchlak Road, Quetta, Balochistan) on the physical environment, although significant, will be of no eventual consequence because of their mitigable character. The majority of the identified negative impacts of both construction and occupancy phases are also reversible in nature and can be made good provided the suggested mitigation measures are implemented in true spirit and an effective monitoring mechanism is put in place.

Conversely, the socio-environmental impacts of the project are of positive nature, and beneficial for the community and the environment as whole. The EIA study also shows that there will be no end-exploitation and consequential depletion of the local natural resources. In view of the known and limited scope and magnitude of the project, the local resources will remain conserved and available for sustainable future development. The project would therefore bring in positive and healthy improvements in the socio-economic environment of the area and availability of housing to Pakistani citizens.



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