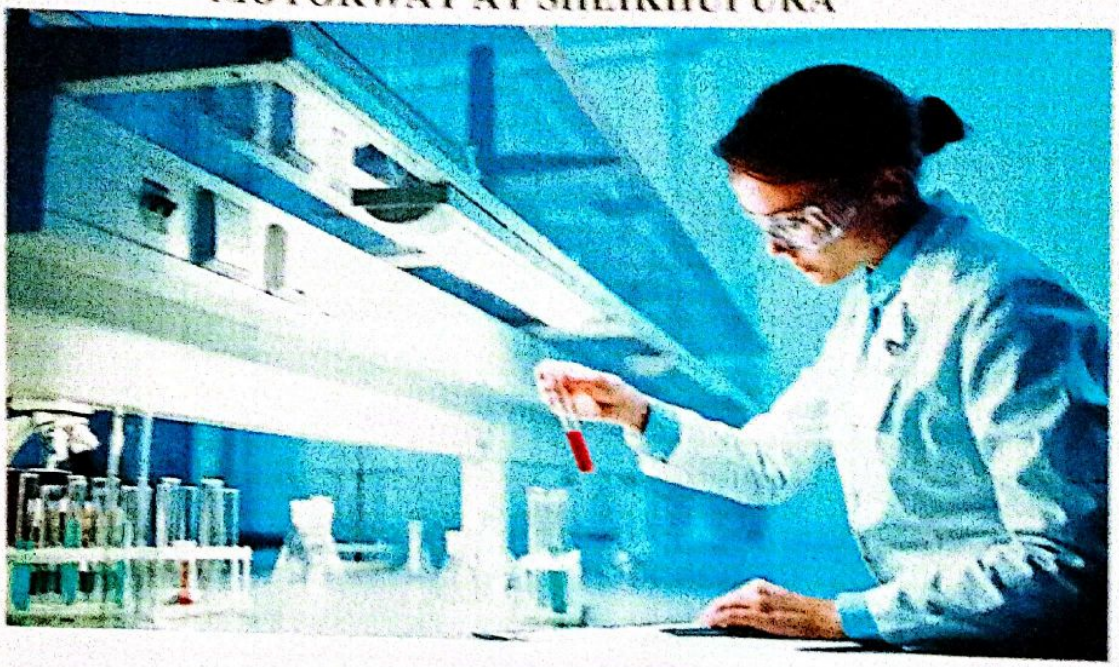
F-251(SW)-23

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT OF

CONSTRUCTION OF VETERINARY PHARMACEUTICAL UNIT BY M/S BROMED PVT. LTD. LOCATED AT 26-D QUAID-E-AZAM BUSINESS PARK ON LAHORE-ISLAMABAD MOTORWAY AT SHEIKHUPURA



PREPARED BY

ENTERTECH
Environment Division

Entertech Labs (Pvt) Ltd.
114 E Nawab Town, Raiwind Road, Lahore.
Phone: +92 423 2326882, +92 302 4707938,
Waqas.ahmed@iesolutions.pk

Scanned with CamScanner

EXECUTIVE SUMMERY

This document of Environmental Impact Assessment is formulated for the "Construction Of Veterinary Pharmaceuticals Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura.

The **Veterinary pharmaceutical industry in Pakistan** has grown during the past recent decades. Currently Pakistan has more than 800 large volume pharmaceutical formulation units, including those operated by 25 multinationals present in the country. Almost all the raw materials used in making of medicine are sourced from abroad.

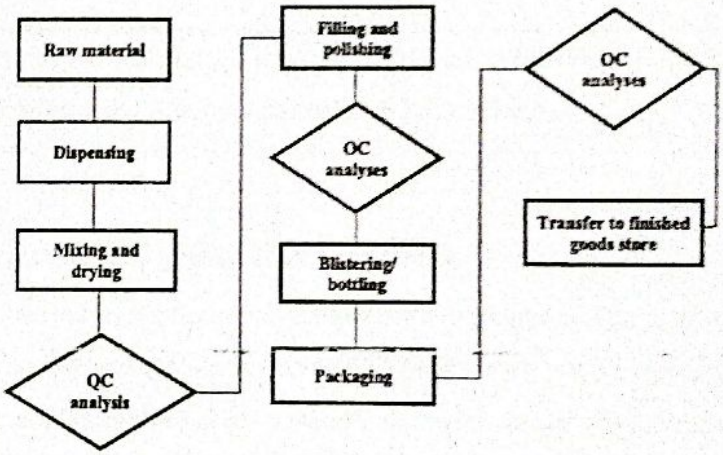
The Veterinary pharma industry is trying to upgrade itself and today the majority industry is following local Good Manufacturing Practices (GMP) laws, with a few in accordance with international guidance. Currently the industry has the capacity to manufacture a variety of traditional products ranging from simple pills to capsules, soft gelatin capsules, parenteral fat emulsions, ointments, syrups and metered-dose inhalers from locally available/produced raw materials.

Environmental Impact Assessment (EIA) report will determine that the project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act 2012 and IEE/EIA Regulations 2000.

➢ Salient features of project:

Sr. No.	CONSTITUENT	DESCRIPTION
1)	**Title of Project**	Construction of Veterinary pharmaceutical unit by M/S BROMED Pvt. Ltd., Located at 26-D, Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura.
2)	**Project Location:**	Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura.
3)	**Project Overview:**	The proposed project is a Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. The subject project falls in the category II B (2) of Schedule II, any other project for which

Scanned with CamScanner

		filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation, 2000 requiring EIA. Further required to full fill the legal requirements of section 12 of the PEPA Act 1997 (Amended 2012).
4)	**Project Proponent & Contact Person**	Muhammad Yahya Khan S/O Saif Ur Rehman Khan R/O Raiwind Road, Flat No 243-A, Government Offices Housing Society, Lahore
5)	**Total Area:**	4 Kanal (0.5Acers)
6)	**Total Project Cost**	PKR 150 million Approximately
8)	**Production Process** **Product** **Dry powder** **Syrup** **(Veterinary Pharmaceutical Unit.)**	Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd, Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura. 
Environmental Precise		
1)	**Project Environmental Consultant**	Entertech Labs Pvt Ltd (Environment Division) 114 E Nawab Town, Raiwind Road, Lahore. Phone: +92 423 2326882, +92 334-9776233, Email: Waqas.ahmed@iesolutions.pk

Scanned with CamScanner

2)	**Water Requirement**	Water Requirement of proposed project is about 08 gallons per capita per day of water will be required for the workers. Domestic Water will be used for the proposed project.
3)	**Electricity Requirement**	The design criterion for the electrical works will be in compliance with the requirements of WAPDA. Maintenance will be carried out by the management of the Industry, Tehsil Sheikhupura.
4)	**Solid Waste Management**	Solid waste will primarily consist of the domestic solid waste from the project. About 150 kg/day of domestic solid waste will be generated from the project. The garbage will be collected at a designated area within the area as an intermediate garbage disposal. From this place, garbage will be collected and transported to a suitable location for final disposal. The location for this final disposal will be decided in consultation with the city Sheikhupura.
5)	**Tree Plantation**	Trees will be planted in all open spaces and boundary of the Project Area. Green belts will also be developed.

➢ Major impacts and recommendations for mitigation measures

The construction of the project can create some adverse impacts on the existing environment. The acoustic impacts, dust emission, traffic congestion, safety and sanitation during the construction period would be limited to construction of building and site preparation. During construction, the contractor will adopt all necessary measures to reduce the probable environmental impacts from different aspects. There are minimal impacts during operation period and industry will be responsible to take necessary steps during operation. The significant impacts in different phases i.e. (i) due to project location and preparation (ii) construction phase and (ii) operation phase have been identified using the checklist process. From this process, the main potential environmental impacts, which may arise due to construction, can be grouped as follows: (i) Atmospheric emissions and Air quality, (ii) Noise generation, (iii) Water pollution and waste water disposal, and (iv) Health and safety. However, the magnitude of these impact shall be very low and insignificant.

Scanned with CamScanner

➢ **Environmental Impact and Mitigation Measure during Construction Phase**

Activity	Environmental Impact	Mitigation Measure
Construction Phase Construction of building including Site Preparation	• Change in existing profile and drainage pattern of the land • Loss of agricultural land due to land acquisition for industrial development • Generation of solid waste in the form of construction • Impact on the local water source due to the use of construction water • Water poilution due to sediment load in construction water and wastewater from construction camps • Dust, noise and gaseous pollution from construction equipment and traffic • Dust pollution due to excavation, backfilling and concreting, hauling and dumping of earth materials and construction spoils	• Proper drainage facilities will be provided along the roads • Appropriate measures like green areas plantation would be undertaken • Control of quality of construction wastewater within the construction site through suitable drainage system with traps for arresting the sediment load for its proposed disposal into the main natural drainage system around the site • Proper and prior planning and appropriate sequencing and scheduling of all major construction activities

Scanned with CamScanner

Operational Phase During operational phase solid waste management, wastewater mitigations	• Disposal of domestic solid wastes Disposal of sewage • Demand of water for domestic consumption • Air pollution due to vehicular emission • Noise pollution due to traffic noise • Demand for additional resources like water and electricity	• The development shall be mitigated by appropriate measures such that all emissions are in compliance with the air emission standards promulgated under the Environment Protection Act. • The solid waste must be managed on regular basis. • Limit water withdrawal to the amount that will not adversely affect the groundwater balance • And the demand of the local community, by developing and conserving own source of water.

To oversee the environmental performance of the project through its lifecycle enforcing the PEQS an Environmental Monitoring Program should be formulated which ensures effective surveillance of the environmental parameters at various stages of the project development and compliances with PEQS and legal obligations.

➢ Brief Outline of Proposal

The Prosed Project named as Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura. Quality control, blistering and bottling, packaging, transfer to goods store.

The subject project falls in the category II B (2) of Schedule II, any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation, 2000 requiring EIA. Further required to full fill the legal requirements of section 12 of the PEPA Act 1997 (Amended 2012).

Scanned with CamScanner

➢ Proposed Monitoring

Monitoring at the proposed site has been conducted for:

- Air Environment (Meteorology, Ambient Air Quality, Noise Levels, Traffic Pattern, etc.)
- Water Environment (Quality, and Quantity of all potential water sources: Surface and Groundwater)
- Ecological Environment (Terrestrial and Aquatic Flora & Fauna)
- Socio-Economic Environment (Demographic profile, Occupational structure, educational status, literacy status, etc.)

➢ Environmental Management Plan & Proposed Monitoring

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

➢ Conclusion and Recommendation

The Environmental Impact Assessment contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study. While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits. It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context.

Scanned with CamScanner

TABLE OF CONTENTS

EXECUTIVE SUMMERY 1
Chapter # 01 15
Introduction 15
1.1 Purpose of the report 15
1.2 Identification of project and proponent 16
1.4 Objective of Study 16
1.5 Requirement of EIA Study for the Proposed Project 17
1.6 Scope of Services and Approaches to Carry Out the Study 17
1.7 Specific Tasks for the Study Team 18
1.8 Detail of Consultancy 18
1.9 Brief description Nature, Size and Location of Project 20
Location 20
Significance Impact 24
1.10 Field Visit 24
1.11 Policy, Legal and Administrative Framework 25
1.12 Identification of Impacts 25
1.13 Evaluation of Impacts 25
1.14 Identification of Mitigation Measures 26
1.15 Development of Environmental Management Plan and Environmental Monitoring Plan 26
Chapter # 02 27
Project Description 27
2.1 General 27
2.2 Type and category of the project 27
2.3 Current status of the project 28
2.4 Project Justification 28
2.5 Alternatives Considered, and Reasons for their Rejection 28
2.5.1 Alternative site 28
2.5.2 Reasons of Rejection 29
Selected Site 1: 29
Design/technology alternatives, their selection and rejection criteria 31
Environmental Alternatives, their selection and rejection criteria 31
Economic Alternatives, their selection and rejection criteria 31
2.6 Location of project 32
2.7 Land Acquisition 34
Road Access 34

Scanned with CamScanner

2.8 Study Area 34
2.9 Project Process 34
2.10 Vegetation features of the project 38
2.11 Magnitude of the operation including capital cost, and associated activities 38
2.12 Time Schedule 39
2.13 Water Requirement and waste water treatment: 39
Waste water treatment: 39
Design of septic tank 39
2.14 Sources of Water 40
2.15 Solid Waste Management 40
2.16 Atmospheric Emissions 41
2.17 Electrical Works 41
2.18 Fire Protection System 41
2.19 Restoration / Rehabilitation Plan 41
2.20 Government approvals required by the project: 41
CHAPTER # 3 42
DESCRIPTION OF ENVIRONMENT 42
3.1 Introduction 42
3.2 General 42
3.3 Physical Environment 42
3.4 Location 42
3.5 Temperature 43
3.6 Soils 43
3.7 Climate 44
3.8 Dust Storm 44
3.9 Earthquakes 44
3.10 Biological Resources 46
3.11 Fishery and Aquatic Biology 46
3.12 Biodiversity 46
3.13 Forests 47
3.14 Flora in the Project Area 47
3.15 Fauna 47
3.16 Language 47
3.17 Tribes & People 47
3.18 Geographical Indications 48

Scanned with CamScanner

3.19 Education 48
3.20 Main Crops 48
3.21 Main Fruits 48
3.22 Dress 48
3.23 Public Health/Welfare 49
3.24 Recreational Resources and Development: 49
3.25 Aesthetic Values 49
3.26 Quality of Life Values 49
3.27 Site of Physical &Cultural Heritage 50
3.28 Suitability of the Site 50
3.29 Water Quality 50
3.30 Ground Water 50
3.31 Wastewater/ surface water 50
CHAPTER # 4 51
Screening of Potential Environmental Impacts and Mitigation Measures 51
4.1 General 51
4.2 Project Location 51
Table 4.1 Typical Impacts during the project and its Mitigation Measures 51
4.3 Impacts during the Design Phase 54
4.3.1 Seismic Hazard 54
4.3.2 Traffic Congestion and Disturbance to People 55
4.3.3 Emergency Response 55
4.3.4 Energy Conservation 55
4.4 Likely adverse impacts during construction phase 55
4.4.1 Placement of Establishment Material on Site 56
4.4.2 Disposal of Establishment Waste/ Excavated Material 56
4.4.3 Dust Generation 57
4.4.4 Noise 57
4.4.5 Flora 58
4.4.6 Fauna 58
4.4.8 Poverty Alleviation 58
4.4.9 Sanitation and Solid Waste Disposal 58
4.4.10 Workers' Safety and Hygienic Conditions 59
4.4.11 Air Quality 60
4.5 Likely adverse impacts during Operation stage 63

Scanned with CamScanner

4.5.1 Air Quality 63
4.5.2 Noise 64
4.5.3 Groundwater Consumption 64
4.5.4 Wastewater Generation 65
4.5.5 Solid Waste 65
4.5.6 Emergency Response 65
4.6 Potential Environmental Enhancement Measures 66
4.7 Corporate Social Responsibility (CSR) 66
4.8 Structural Stability 66
4.9 Undertaking 66
4.10 Base line environmental data 66
4.10.1 Ambient Air Quality 67
4.10.2 Noise Levels 67
4.10.3 Water Quality 67
CHAPTER # 5 68
ENVIRONMENTAL MANAGEMENT PLAN & MONITORING PROGRAM 68
5.1 Purpose and Objectives of the EMP: 68
5.2 Management Approach: 68
5.3 Institutional capacity 68
5.4 Training of building contractor 69
5.5 Responsibility of EMP 70
5.6 Environmental Technical Assistance and Training Plan 76
5.7 Monitoring Plan 83
5.8 Training schedules 83
5.9 Need for Disaster Management and Emergency Response System 83
5.10 Equipment Maintenance Detail 84
5.11 Environmental Budget 84
5.12 Schedule of implementation 84
5.13 Environmental Practitioners and Experts 85
Responsibilities of Functionaries 86
5.14 Proposed Environmental Management and Monitoring Plan (EMMP) 87
5.15 Proposed Monitoring Program to Asses performance or output of EMP 87
Particulate Matter (PM10) 87
4.1 Proposed EMP reporting and reviewing procedure 89
CHAPTER # 6 98

Scanned with CamScanner

INVOLVEMENT OF STAKEHOLDER/ PUBLIC CONSULTATION 98
6.1 EIA and Public Consultation Process 98
6.2 Proponent 98
6.3 Objectives of the Public/Stakeholders Consultation 98
6.4 Methodology 99
6.4.1 Responsible Authority 99
6.4.2 Issues Discussed with the stakeholders 99
6.5 Environmental Practitioners and Experts 100
Other Departments and agencies 101
A series of consultation was carried out with WAPDA, Municipality officers and other government sectors 101
Responsible Authority 101
Environmental Practitioners and Experts 101
Proponent Environment Management Team 102
Affected and Wider Community 102
There is no population present in the safe radius of the site that's why community will not be disturbed due to project operation. Although the opportunity of employment will increase if the project will approve. 102
Summary of Issues Raised by Stakeholders 102
A summary of the key issues raised by stakeholders and how these are being addressed by Project Proponent is provided in Table below. 102
CHAPTER NO # 07 104
ASSESSING IMPACTS 104
7.1 Methodological Approach to Assessing Impacts 104
7.2 Evaluation of Identified Impacts 104
7.3 Environmental impact Matrices 105
7.3.1 Identification of VECs 109
7.3.2 Significance Rating of Impacts 110
7.4 Delineation of Project Corridor of Impact (COI) 110
CHAPTER NO # 8 111
MITIGATION AND IMPACT ASSESSMENT 111
8.1 Purpose of Mitigation Measure 111
8.2 When problem will occur and when it should be addressed? 111
8.3 Where problem should be addressed? 111
8.4 How the problem should be addressed? 111
8.5 Ways of Achieving Mitigation Measures? 111

Scanned with CamScanner

8.5.1 Changing in Planning Design 112
8.5.2 Improved Management and Monitoring Practices 112
a. Compensation in Money Terms 112
b. Replacement/Relocation/Rehabilitation 113
CHAPTER # 9 114
CONCLUSION AND RECOMMENDATIONS 114
9.1 Conclusion 114
9.2 Recommendations 115
TERM OF REFERENCES 116
1.0 Introduction 116
2. Environmental Impact Analysis 116
3. Responsibility of Consultant 116
Consultant Proponent 118
Glossary 119
List of Abbreviation 121
References 123
Environmental Practitioners and Experts 125
Environment Management Team 125

Scanned with CamScanner

LIST OF FIGURES

Figure 1 location of project 21
Figure 2 alternative site location 29
Figure 3 Google Map of Project 33
Figure 4 Indicates Project Area in Punjab Soil Map 43
Figure 5 Pakistan Seismic Activities and Zoning Map 45
Figure 6 Pakistan Tectonic Basins 46

Scanned with CamScanner

LIST OF TABLES

Table 1.1: List of Team Members.....19

Table 4.1 Typical Impacts during the project and its Mitigation Measures 58

Table 5.1 Summary of Impacts and mitigation measure.....74

Table 5.2 Environmental Management Plan 80

Table 7.1 Environmental impact Evaluation Matrix during Construction Phase 95

Table 7.2 Characterization of Impacts.....99

Scanned with CamScanner

Chapter # 01

Introduction

This Section of the report provides an overview of the rational of the Project, objective of project, requirement of the project, purpose of the report and approach adopted to conduct the Environmental Impact Assessment (EIA).

For the project, Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura, the purpose of this Environmental impact Assessment (EIA) guideline is to provide clear and concise information to all stakeholders (Proponents, Consultants, Government Ministries, Departments and Agencies, Members of the Public, Expert in relevant disciplines and interested groups, the organized private sector, non-governmental organizations, professional bodies, host and project affected communities) to improve and streamline the EIA study carried out for pharmaceutical product unit. This guideline will also assist stakeholders to identify the environmental issues, mitigation measures and alternatives that need to be assessed and considered during the study.

1.1 Purpose of the report

Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab, in compliance with the legal requirement for Punjab Environment Protection Act-1997 (Amended 2012), Section 12- for obtaining No Objection Certificate (NOC) before starting and construction activity at the project site. The other relevant regulations and guidelines considered while preparing this EIA report

The other relevant regulations and guidelines considered while preparing this EIA report include:

- Policy and procedures for filing, review and approval of environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.
- Guidelines for sensitive and critical areas.
- Detailed sectorial guidelines.

Scanned with CamScanner

Various aspects like environmental, social, physical and other aspects of the project both during construction and its regular occupancy are highlighted in this EIA report. Measures necessary to be adopted to mitigate any environmental impacts on any part of the environment around are also described. All the important information is also provided as described under the format used to help decision makers, EPA Punjab in the present case, before issuing the desired Environmental Approval.

1.2 Identification of project and proponent

Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura.

Proponent: Muhammad Yahya Khan S/O Saif Ur Rehman Khan R/O Raiwind Road, Flat No 243-A, Government Offices Housing Society, Lahore

1.3 Scope of study

The scope of the EIA Study includes collection and scrutinizing of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the proposed Project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures along with the cost have been incorporated in this EIA Report. This report will be submitted to Pakistan Environmental Protection Agency (Pak-EPA) for approval.

1.4 Objective of Study

The overall objective of this EIA is to carry out a detailed environmental assessment of the project area; to assess impacts caused by the different activities of the proposed project and to address measures to mitigate adverse environmental impacts arising from the execution of the proposed project.

The specific objectives of the EIA Study are as follows:

- To determine pre-project state of affairs to assess post-project conditions if they have changed for better or worse
- Documentation of all the resources likely to be affected due to the implementation of the proposed project
- To provide maximum information to the proponent and other stakeholders about the existing environmental conditions and the implications of the proposed project

Scanned with CamScanner

- Allow the Planners to minimize potential impacts of the proposed project on different environmental conditions such as physical environment, biological environment and socio-economic environment
- To facilitate decision makers to take informed decisions

1.5 Requirement of EIA Study for the Proposed Project

The development projects bring about changes, both positive and negative, in the environmental and social settings of the project area. The intensity and level of change, however, depends upon the nature of the project and the baseline environmental conditions of the area. For the last four decades, this aspect has gained a momentum both at official and public level. As a result of this, official regulations and laws have been promulgated for the protection and conservation of the physical, biological and social environment. The law makes it mandatory to carry out environmental assessment studies before commencement of construction activities of any project. EIA is mandatory according to the Pakistan Environmental Protection Act (PEPA1997) Section 12 (1) of the PEPA-1997, which states that:

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

According to Pakistan Environmental protection Agency (Review of IEE and EIA) Regulations 2000, the proposed project falls under category B (9) of Schedule II, which requires EIA before commencement of construction.

1.6 Scope of Services and Approaches to Carry Out the Study

The Terms of references stipulated following major objectives of this study i.e.

- Identify adverse environmental and social impacts associated with various project components and phases of project implementation.
- Describe baseline environmental and social conditions of the whole project corridor.
- Identification of environmental and social impact of the project and suggest mitigation measures.
- To assess and establish the existing environmental and socioeconomic conditions in the Project area.

Scanned with CamScanner

- To implement and execute environmental safeguards considering the harmful effects due to the Project.
- To propose mitigation and monitoring measures that can be incorporated into the design of the Project to remove or reduce the damaging effects of various factors, as far as possible, and to control and monitor, residual factors. To facilitate environmental decision making.
- To facilitate an appropriate follow up process with requirements for monitoring, management, audit and evaluation.
- To assess the proposed activities and to ensure that they comply with the relevant environmental and social regulations and standards.
- Describe the governing national and international laws & regulatory framework on environment and institutional arrangements.
- Prepare Environmental Management Plan (EMP) and Environmental Costs etc.
- To prepare an EIA report as per the relevant guidelines for submission to the Provincial Environment Protection Department.
- Specific Tasks for the Study Team.
- Based upon the available information, a set of tasks has been conceptualized for the Project.

1.7 Specific Tasks for the Study Team

Task 1: Examination and analysis of relevant environmental regulations

Task 2: Initial consultations with the relevant agencies and stakeholders

Task 3: Description of the Project and alternatives

Task 4: Description of the Environment

Task 5: Prediction and Evaluation of the impacts

Task 6: Institutional and legal aspects

Task 7: Environmental Management Action Plan

Task 8: Consultation with stakeholders

1.8 Detail of Consultancy

The services of environmental consultant **EnterTech Environment Division** have beentaken by the proponent for the formulation of Initial Environmental Examination Report (IEE) Report. It is an environmental consultancy firm that has an unrivalled reputation for providing

Scanned with CamScanner

high quality tailored services. **Entertech Environment Division** is a dynamic, responsive and innovative in providing this cost-effective solution. **Entertech Environment Division.** comprising of Environmental Engineers & Consultants, and rendering their services to clients in both industrial and the government sectors.

With the visionary leadership of its veteran management and enthusiasm of its team, it is committed to come up with innovative ways of maintaining and enriching the Environmental Profiles / Portfolios of its prestigious clients with activities having a strong and lasting impact to their corporate image. It has attracted and retained staff with an unrivalled depth and breadth of expertise and experience that they have from working, not just in consultancy but also in commercial, industrial and regulatory environments. With its pool of Environmental Consultants, Environmental Scientists and Environmental Engineers, company offers one stop solutions tailored to its client's needs..

CONTACT DETAILS:

Qualified professionals with relevant experiences of conducting environmental assessment have contributed to the preparation of EIA Report. The team has been shown in Table below:

Table 1.1: List of Team Members

Sr. #	Name	Highest Qualification	Roles
Technical Team Member			
	Mr. Waqas Ahmad Khan	MPhil in Environmental Sciences	Team Leader
Members			
	Dr. Nusrat Ehsan	PhD in Environmental sciences	EIA Expert
	Mr. Abdul Rehman	MPhil Environmental Sciences (UOL)	Field Analyst
	Muhammad Haris	BS(Hons) Environmental Sciences (UOL)	Report Writing
	Fajar Waheed	BS(Hons) Environmental Sciences (UOL)	Report Writing

Scanned with CamScanner

	Masooma Batool	MPhil Environmental Sciences (GCU)	Report Writing
	Iqra Malik	MPhil Environmental Sciences	Report Writing

1.9 Brief description Nature, Size and Location of Project

Keeping in view the design, construction and operation phases of the project along with potential impacts generated during the course of the project, the proposed plan is subjected to fall under the category of the projects that require EIA as per Pakistan Environmental Protection Agency (PAK-EPA) (2000) regulations.

The proposed project is Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. This guideline will also assist stakeholders to identify the environmental issues, mitigation measures and alternatives that need to be assessed and considered during the study.

Location

Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura.

The land co-ordinates of the project site are as follows:

East…….. Road

West……..…Open Land

North……. Industrial Unit

South……. Industrial Unit

Coordinates

31.730165, 74.067431

Scanned with CamScanner

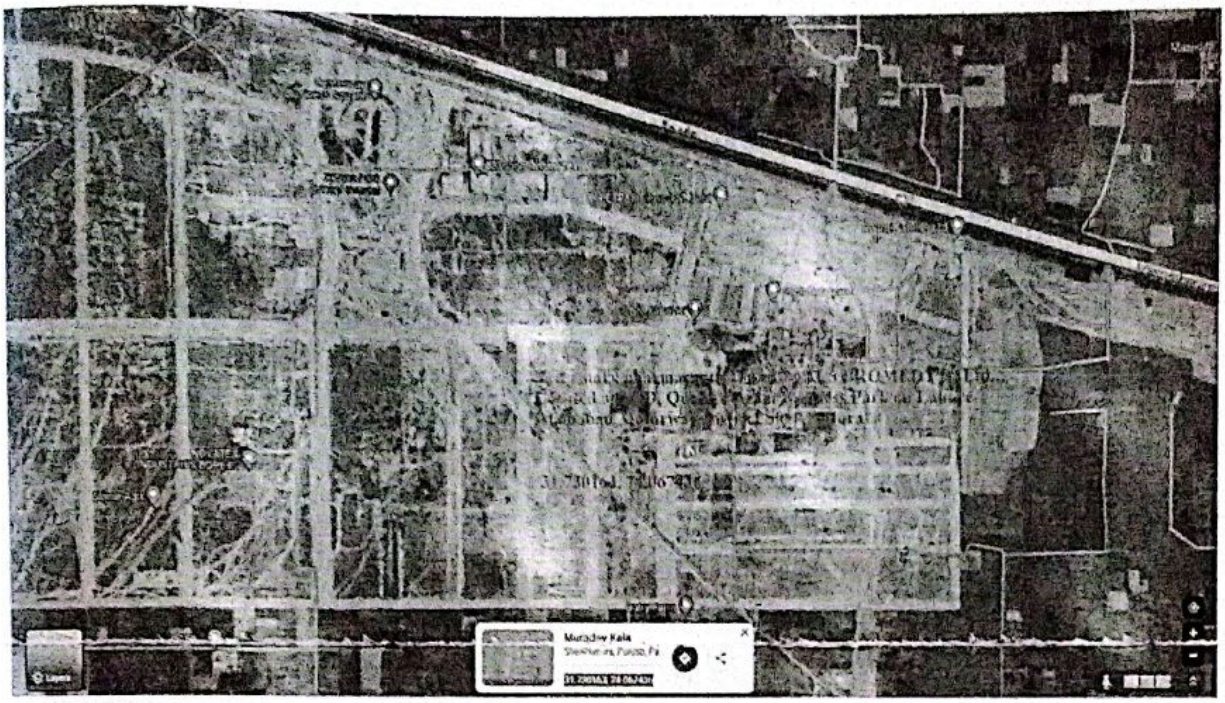


Figure 1 location of project

Scoping

The proposed project is a Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. The subject project falls in the category II B (2) of Schedule II, any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation, 2000 requiring EIA. Further required to full fill the legal requirements of section 12 of the PEPA Act 1997 (Amended 2012).

Spatial and Temporal Boundaries of the Assessment

Temporal and spatial boundaries for the effects assessment are defined by the characteristics of the project and the VECC being assessed. These boundaries encompass time periods and areas during and within which the VECCs are likely to interact with or be influenced by the project. Spatial boundaries vary according to the nature of the VECC but generally are defined in terms of:

The definition of the RSA may take into consideration the factors such as:

- Habitat for sensitive life stages;
- Wildlife migration routes and ranges;

Scanned with CamScanner

- Areas of potential effects from dispersed or intermittent project activities, such as, air transport, and road haul; and
- Areas within which there is potential for cumulative effects with other projects.

Temporal boundaries for project-related effects are defined in terms of the project phases:

Baseline – covers ecological, physical and human-related characteristics of the environment, as characterized in the initiation of the construction phase;

Construction – includes all activities associated with project construction and before commencement of project such as:

- transportation corridors construction;
- mobilization of equipment and supplies to the site by road and air;
- construction of site facilities, including camp, infrastructure, ore stockpile, waste rock storage dump, TWRMF, water management facilities (diversions, settling ponds, seepage collectors etc.)
- camp operations and personnel transport during construction;

Decommissioning – includes all activities to decommission site facilities and remove equipment and materials from the site, recontour the site and restore drainage patterns to stable long-term conditions, stabilize the wastes (TWRMF and waste rock) for safe long-term maintenance, and implement the final site reclamation procedures to prevent erosion and restore vegetation cover where feasible;

Closure – refers to conditions that will exist on the site after the site is abandoned and revegetation is complete.

Temporal boundaries are also defined for the cumulative effects assessment, spanning baseline to a point in the future, within which project effects on VECCs are predicted to overlap with effects of other projects or activities. Spatial and temporal boundaries for each VECC are detailed in respective report sections.

Scanned with CamScanner

IMPORTANT ISSUES AND CONCERNS RAISED DURING CONSULTATION

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 100 people will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities for workers of the company and students will also be accommodating. The internship program will offer the students to develop professional skills.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concrete.	Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements as suppliers.	Proponent has main focus that they will buy all the material regarding construction and plant operation from the local market. This will help the local and small business and to people who are keen interested to become suppliers.

Scanned with CamScanner

Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.
Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all the key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program. Water treatment will be done by the proponent that will help to safe disposal of the water.

Significance Impact

The construction of the project can create some adverse impact on the existing environment. The acoustic impacts, dust emission, traffic congestion, safety and sanitation during the construction period would be limited to construction of building and site preparation. Since the new building would be set up in existing warehouse premises, the resettlement won't be an issue here. During construction, the contractor will adopt all necessary measures to reduce the probable environmental impacts from different aspects. There are minimal impacts during operation period and construction will be responsible to take necessary steps during operation. The significant impacts in different phases i.e. (i) due to project location and preparation, (ii) construction phase and (ii) operation phase have been identified using the checklist process. From this process, the main potential environmental impacts, which may arise due to construction, can be grouped as follows: (i) Atmospheric emissions and Air quality, (ii) Noise generation, (iii) Water pollution and waste water disposal, and (iv) Health and safety. However, the magnitude of these impacts shall be very low and insignificant.

1.10 Field Visit

The consultant team visited the Project site and adjoining areas frequently to collect baseline data and investigated physical, biological, and socioeconomic resources. In addition, meetings were held with the

Scanned with CamScanner

Environmenta Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.
Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all the key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program. Water treatment will be done by the proponent that will help to safe disposal of the water.

Significance Impact

The construction of the project can create some adverse impact on the existing environment. The acoustic impacts, dust emission, traffic congestion, safety and sanitation during the construction period would be limited to construction of building and site preparation. Since the new building would be set up in existing warehouse premises, the resettlement won't be an issue here. During construction, the contractor will adopt all necessary measures to reduce the probable environmental impacts from different aspects. There are minimal impacts during operation period and construction will be responsible to take necessary steps during operation. The significant impacts in different phases i.e. (i) due to project location and preparation, (ii) construction phase and (ii) operation phase have been identified using the checklist process. From this process, the main potential environmental impacts, which may arise due to construction, can be grouped as follows: (i) Atmospheric emissions and Air quality, (ii) Noise generation, (iii) Water pollution and waste water disposal, and (iv) Health and safety. However, the magnitude of these impacts shall be very low and insignificant.

1.10 Field Visit

The consultant team visited the Project site and adjoining areas frequently to collect baseline data and investigated physical, biological, and socioeconomic resources. In addition, meetings were held with the

Scanned with CamScanner

stakeholders and community members in the Project area to collect primary information about the Project and record their views and concerns regarding the proposed project.

The rapid Social Appraisal methodology was applied to discover the facts (empirically verifiable observations or verifying the old facts) on the prevailing socio-economic and cultural conditions of the Project area. Various aspects of the physical environment probed during the survey.

1.11 Policy, Legal and Administrative Framework

This section comprises policy, guidelines, statutory obligations and roles of institutions concerning EIA study of the proposed project.

The objective of the review of legal and administrative framework is to obtain information on all legislation pertaining to the Project development. The Consultant Experts reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the Project.

1.12 Identification of Impacts

The impacts have been identified for the methodical consideration of likely or possible significant impacts on the environment because of construction and operational activities. The aim of this task was to assess the associated risks with these impacts. The identification of impacts is a key activity in the environmental assessment process, which is based on the professional judgment of team's experience supported by national and international guidelines.

1.13 Evaluation of Impacts

Each impact identified has been evaluated against its significance in the terms of its s;;verity and likelihood of its occurrence. The impact evaluation process was carried out to prioritize each potential impact and screen out insignificant or inconsequential impacts. The significance of the impacts has been assessed in terms of the effects on the natural ecosystem, level of public concern and conformity with legislative or statutory requirements. The assessment of the severity was to consider the nature, magnitude, extent and location, timing and duration and reversibility of the potential impact. The evaluation of the significant impacts will outline the basis for development of environmental mitigation and monitoring program.

Scanned with CamScanner

1.14 Identification of Mitigation Measures

The objective of identification of mitigation measures is to identify practices, technologies or activities that would prevent or minimize all significant negative environmental impacts and propose physical and procedural controls to ensure that mitigation is effective. On the basis of the impact evaluation performed, changes or improved practices have been suggested, where practical, in the planned activities, to prevent and control unacceptable adverse impacts resulting from the normal or extreme events. Monitoring requirements have been defined and institutional arrangements for monitoring have been suggested.

1.15 Development of Environmental Management Plan and Environmental Monitoring Plan

An Environmental Management Plan (EMP) has been developed for effective implementation of the recommended mitigation measures. The EMP includes controls to minimize the identified impacts, and monitoring program to monitor residual impacts, if any, during the operation. The EMP also describes procedures to be followed during the operation of the Project and identify roles and responsibilities of all concerned personnel, including reporting in the operational phase. Together with Environmental Management Plan, an Environmental Monitoring Plan has been framed to ensure that all the corrective actions to counter the adverse environmental impacts have been taken.

Scanned with CamScanner

Chapter # 02

Project Description

2.1 General

The veterinary pharmaceutical industry in Pakistan has grown during the past recent decades. At the time of the independence of Pakistan in 1947, there were few production units in the country. Currently, Pakistan has more than 800 large volume veterinary pharmaceutical formulation units, including those operated by 25 multinationals present in the country. Almost all the raw materials used in making of medicine are sourced from abroad. About 50 percent of them are imported.

There are only a few bulk drug Active ingredient producers and Pakistan mainly depends on imports of bulk drugs for its formulation needs resulting in frequent drug shortages. Political disturbances and allegations of under-invoicing add to the uncertainty of imports and clashes with the customs and tax authorities are common. Pakistan veterinary pharmaceutical industry is trying to upgrade itself and today the majority industry is following local Good Manufacturing Practices (GMP) laws, with a few in accordance with international guidance.

Objective of the Project

The Pakistan veterinary Pharmaceutical Industry meets around 90% of the country's demand of finished dosage forms and 4% of Active ingredients. The National pharma industry has shown growth over the years, particularly over the last decade. Currently the industry has the capacity to manufacture a variety of traditional products ranging from simple pills to capsules, ointments, Medicine Powder, Injections and syrups. The project will evaluate the environment impact assessment of the company from construction to operational phases analyses.

2.2 Type and category of the project

The project is based on Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. The subject project falls in the category II B (2) of Schedule II, any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5, of PEPA, Regulation, 2000 requires an EIA. Further the client is required to full fill the legal requirements of section 12 of the PEPA Act 1997 (Amended 2012).

Scanned with CamScanner

2.3 Current status of the project

Proposed site for the Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. As proponent is seeking for Environmental Approval so they can start their construction on immediate basis. No activity is performed in the premises till the approval of the Environmental NOC.

2.4 Project Justification

A proponent shall provide necessary and adequate information on the justification for the project. This shall include a summary of the report of the Project's feasibility study; the need, value and sustainability (social, cultural and economic) of the Project. Such justification shall exclusively define the benefits of the project to its intended end-users and indicate the over-riding advantages or positive impact of the project over its anticipated environmental impacts. The justification may also include the rationale for selecting the project amongst various available options or alternatives and any socioeconomic factor justifying the project.

2.5 Alternatives Considered, and Reasons for their Rejection

Alternative sites were identified initially for the proposed project. These sites were also located in district Sheikhupura, however; the present site has been selected after consideration of the other two alternative sites. These sites and their reasons of rejection are summarized below:

2.5.1 Alternative site

Scanned with CamScanner





Figure 2 alternative site location

2.5.2 Reasons of Rejection

Selected Site 1:

The reasons of rejection of this site are:

- Agriculture land
- Underground water was deep and not easy to extract. Ground water quality was not good.
- Nearest to residential area
- Security threat was present
- Wastewater disposal drain was not existing
- Availability of access roads

Scanned with CamScanner

- Communication facilities
- Availability of electricity
- Basic infrastructure
- Sewerage system
- Approved drainage system
- Less/few vegetation/plantation
- Less fauna species at site
- Convenient plot layout
- Subject selected site surrounded by industrial area except one site which is open land

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment and others related facilities. Keeping these requirements and their feasibility and other basic infrastructural requirements at the site, the selected site is ideally suited for Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. In reference to the project site alternatives, several lands were evaluated. The final selection of site is based on following criterion:

- **Accessibility:**

The site should be accessible from a permanent road to allow ready transport.

- **Water Supply:**

Availability of adequate water supply, which should also, meets drinking water standards.

Scanned with CamScanner

- **Soil condition for civil Structure:**

Suitability and stability of soil condition required for the civil structure.

- **Sufficient land Availability:**

Availability of sufficient land to design and layout plan in an appropriate manner, with consideration of future expansions.

Electricity:

Availability of electricity from the WAPDA for an uninterrupted supply of power, required for the project.

Design/technology alternatives, their selection and rejection criteria

The technology/design selected for the proposed project "Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura" is environmental and economically friendly. Hence, proponent does not consider any other alternatives for other technologies.

Environmental Alternatives, their selection and rejection criteria

The project simply involves the Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. This selected site is environmentally friendly and sustainable. There is no specie present that will be harm due to Project. Hence, there is no environmentally alternative considered for this specific project.

Economic Alternatives, their selection and rejection criteria

The current selected mythology, designing and technique is economically efficient and provides extensive job creation avenues. It refers to the shift of materials used in the proposed project towards environmentally friendly and sustainable materials in present case. All machinery, equipment and materials procured for the said project will be environmentally friendly and sustainable. Hence, there is no material alternative considered in this case.

Scanned with CamScanner

2.6 Location of project

[illegible]

Scanned with CamScanner

Coordinates 31.730163, 74.067436



Figure 3 Google Map of Project

Scanned with CamScanner

2.7 Land Acquisition

Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura, land is allotted to Veterinary pharmaceuticals Unit M/S (Pvt.) Limited; allotment letter has been attached with supporting documents for the total area of 4 Kanal (0.5Acers).

Road Access

The site is easily accessible from M2 Lahore Islamabad Motorway .

2.8 Study Area

a) On-site assessments and interviews with relevant personnel including workers, managers, and local people.
b) Visits of two renowned and international paper and board industries.
c) Collection of the samples from both effluent and underground water and analyzing the laboratory experimental data.
d) Preparation of EIA report from the interviews of relevant workers and local people.
e) Literature review of relevant issues and locate findings.

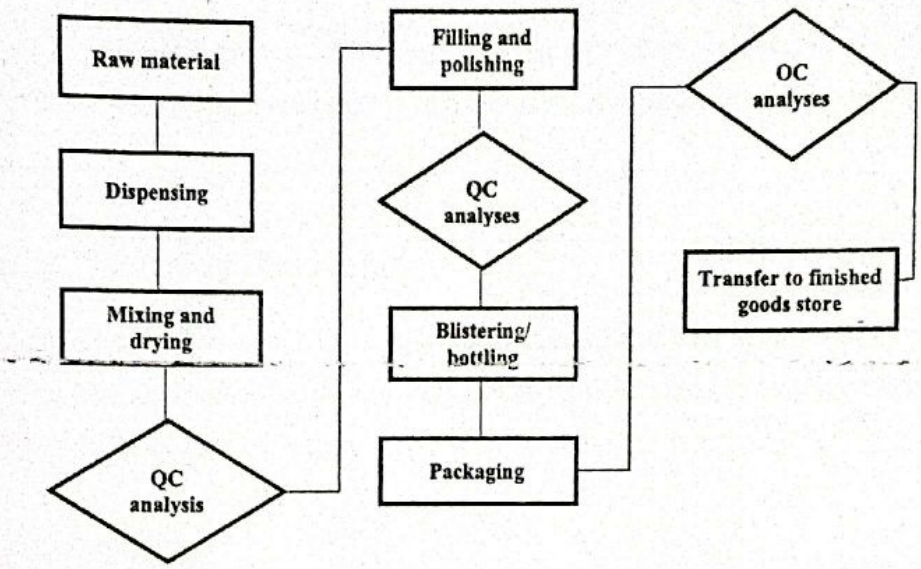
2.9 Project Process

Same process involves during pharmaceutical production. Raw material details and final process details has been attached as Annexure

Scanned with CamScanner

VETERINARY PHARMACEUTICAL POWDER SUSPENSION

Powder Section (process flow) (Antibiotic)



1. Raw Material:

This is where the primary ingredients or materials needed for the product are gathered. This could include any basic materials, chemicals, or components required for the manufacturing process.

2. Mixing and Drying:

In this step, the raw materials are mixed together in the correct proportions to create the product. This might involve chemical reactions or physical mixing. Drying may also be necessary if there's excess moisture in the mixture.

3. Filling and Polishing:

Once the product is prepared, it may need to be filled into containers or molded into specific shapes. Polishing could involve refining the appearance or texture of the product.

4. QC Analysis (Quality Control):

Scanned with CamScanner

Quality control is crucial at various stages of production. This step involves testing and inspection to ensure that the product meets the specified quality standards. This can include checking for defects, ensuring consistency, and confirming that it meets safety and regulatory requirements.

5. Dispensing:

Dispensing refers to the process of transferring the product from one container to another or from one part of the production line to another. It can also involve metering and measuring the product precisely.

6. Transfer to Finished Goods Store:

Once the product has passed quality control and is deemed ready for distribution, it is transferred to a finished goods store or warehouse. This is where the finished products are stored until they are ready to be shipped to customers.

7. Blistering/Bottling:

Depending on the product and its packaging requirements, it may need to be placed into blister packs or bottles. This is often seen in pharmaceuticals or consumer goods.

8. Packaging:

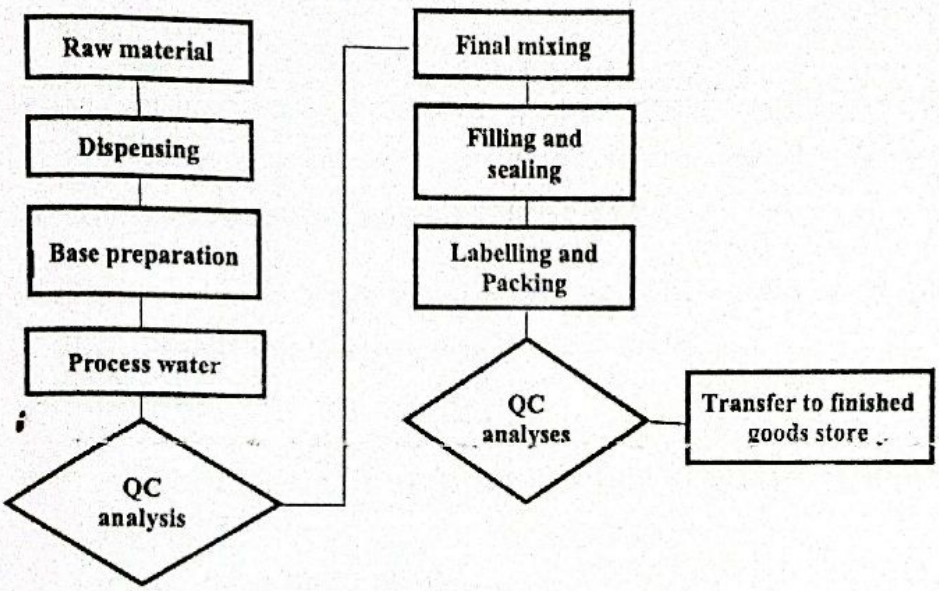
Packaging is the process of placing the product into its final packaging, which could be boxes, cartons, bags, or other types of containers. The packaging may also include labeling and branding elements.

9. Additional QC Analysis:

Quality control may be performed again at this stage to ensure that the product has not been compromised during packaging

Scanned with CamScanner

PHARMACEUTICAL VETERINARY SYRUP MANUFACTURING PROCESS



1. **Raw Material:**

   This is where the initial materials or ingredients needed for the product are gathered.

2. **Dispensing:**

   Dispensing involves measuring and transferring the raw materials in the required quantities for the manufacturing process.

3. **Base Preparation:**

   In this step, a base or foundation for the product may be prepared. This could involve mixing certain ingredients or components to create a stable base.

4. **Final Mixing:**

   The final mixture of all ingredients or components is prepared in this step. This is often a critical stage where the product's quality and characteristics are determined.

5. **Filling and Sealing:**

   The product is filled into its final containers, and those containers are sealed to prevent contamination or spoilage. This step is crucial for ensuring the product's integrity.

Scanned with CamScanner

6. Labeling and Packing:

The product containers are labeled with necessary information such as product details, branding, and instructions. After labeling, the products are packed into their final packaging for distribution.

7. Process Water:

This step might involve the use of water as a component or cleaning agent in the manufacturing process. Ensuring the quality and purity of process water is essential for product consistency.

8. QC Analyses (Quality Control):

Quality control analyses are performed to check the product's quality, safety, and compliance with standards. This step may involve various tests and inspections.

9. QC Analysis:

This step appears to be a duplicate of the previous one, "QC Analyses," which is focused on quality control testing.

10. Transfer to Finished Goods Store:

Once the products have passed quality control and are ready for distribution, they are transferred to a finished goods store or warehouse. This is where they are stored until they are shipped to customers.

The order and specific details of these steps may vary depending on the industry and the type of product being manufactured. If you have any specific questions

2.10 Vegetation features of the project

The project site has few and scattered amount of vegetation, only five trees will be cut during construction. Project site is open land that will help to avoid land clearing, mainly shrubs, weeds and grasses are present over there in scattered quantity.

2.11 Magnitude of the operation including capital cost, and associated activities

This project is of plotting for M/S BROMED Pvt. Ltd l company with all above mentioned facilities. Different plotting will be done in Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura.

Scanned with CamScanner

Total area of the project is 4 Kanal (0.5Acers), the total cost of the subject proposed project will be PKR 150 million Approximately.

2.12 Time Schedule

The project will be completed within 6 months after getting the Environmental approval.

2.13 Water Requirement and waste water treatment:

Water Requirement of proposed project is about 08 gallons per capita per day of water will be required for total workers. Domestic Water will be used for the proposed project well will be installed to meet the water requirements.

Design Population	Per Capita Consumption Per day (Inclusive and unaccounted for water)
700-2000	8 glns
2000-5000	10 glns
5000-10000	15 glns
10000-25000	20 glns
1000-25000	30 glns (with sewerage facilities)
25000-1 lac	40 glns (with sewerage facilities)
Above 1 lac	50 glns (with sewerage facilities)

(water supply, sewerage and drainage scheme, Punjab public health and engineering department)

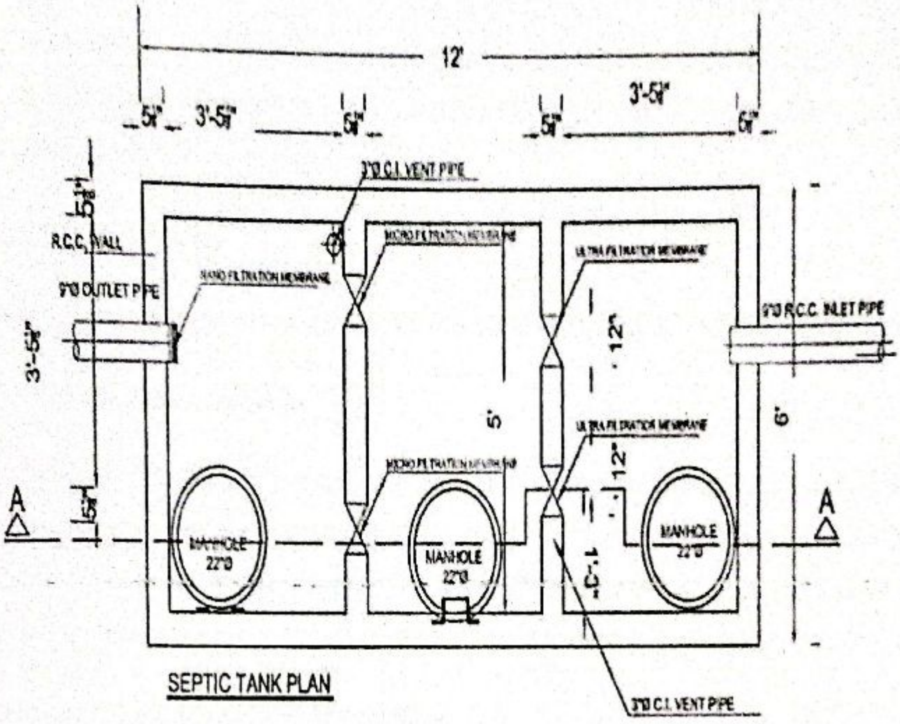
Waste water treatment:

Septic tanks will be constructed for the sewage treatment because only municipal sewage wastewill be produced during project. After being treated in septic tanks some of the waste water will be used for water sprinkling to avoid dust emission and for the Gardening purpose withinthe premises of project site.

Design of septic tank

Septic tank will be installed within the boundary wall of the project site. Proposed design is given in below Fig.

Scanned with CamScanner



2.14 Sources of Water

Underground water at the project site is available at the depth of 150-200 feet and source of water for the industrial process will be the tube well. According to the chemical analysis report water is fit for the drinking.

2.15 Solid Waste Management

Solid waste will primarily consist of the domestic solid waste from during construction. About 150 kg/day of domestic solid waste will be generated from the project. The garbage will be collected at a designated area within the area as an intermediate garbage disposal. From this place, garbage will be collected and transported to a suitable location for final disposal. The location for this final disposal will be decided in consultation with the City District Government.

Scanned with CamScanner

2.16 Atmospheric Emissions

Dust and particulate matter will be generated during the construction activities. Sprinkling of water will be done on dust tracks, stock piles; raw material will be covered by plastic sheets, loading and unloading of raw material will be done at night etc.

2.17 Electrical Works

The design criterion for the electrical works will be in compliance with the requirements of WAPDA.

2.18 Fire Protection System

An addressable fire protection system with detection and alarm annunciation and other installations etc. would be provided to protect against any fire hazards. Fire buckets and fire extinguishers will be placed at all sensitive places within the proposed project. There will be two security guards round the clock to improve and maintain the security of the project site and also in its vicinity.

2.19 Restoration / Rehabilitation Plan

All possible precaution will be taken to prevent an untoward incident in terms of life and property losses. The demolition materials will possibly be reused and recycled. All excavated surfaces will be termite proofed.

On completion of the project, the debris will be removed from the site in order to maintain aesthetics of the project. All measures will be undertaken for ensuring occupational safety, security and clean environment in the project area. Ornamental trees and flower plants will be planted inside peripheral area of the unit premises to restore the land.

2.20 Government approvals required by the project:

Project proponent has obtained approval for disposal of liquid waste and others concerned departments are in process.

Scanned with CamScanner

CHAPTER # 3

DESCRIPTION OF ENVIRONMENT

3.1 Introduction

This chapter describes the baseline conditions, which cover the existing physical, ecological, and socio-economic environment of the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other agencies namely Irrigation Department, Meteorological Department, Forest offices and prevailing environmental laws and environmental quality standards etc.

3.2 General

An environmental baseline study is intended to establish a database against which potential project impacts can be predicted and managed later. This section covers a comprehensive description of the project area, including environmental attributes which are expected to be affected by the project, as well as, those which are not expected to be directly affected by the construction and operation of the project. The existing environmental conditions around the project have been considered with respect to physical, biological and socio-economic aspects. A site visit was conducted to survey the field area and to collect environmental data on physical, biological and socio-economic parameters. Further, consultations were held with the general public and stakeholders of the project area in order to seek the public opinion on the implementation of the subjected project.

3.3 Physical Environment

3.4 Location

Sheikhupura lies between the river Ravi which flows along its boundaries with India and river Sutlej which flow its boundary with Sheikhupura District. The districts may be divided into two parts, a low lying or reverie area along the two bordering rivers and upland, away from the rivers. The reverie area is generally inundating during monsoon season. The water level in this area is higher than in the upland. The soil is sandy. The upland is flat plains sloping from north-west to south-west. The general height of the area is from 150 to 200 meters above the sea level.

Scanned with CamScanner

3.5 Temperature

Over the course of a year, the temperature typically varies from 5°C to 30°C and is rarely below 2°C or above 44°C.

3.6 Soils

These are river transported deposits (alluvium), which are quite thick and fairly homogeneous in extent. The top soil consists of brown, soft to firm clayey silt / silty clay having slight plasticity and contents of dissolved salts. The top layer is likely to extend about 3 to 6 meter below natural ground, where it is underlain by silty fine sand/fine sand. This layer generally continues to deeper depths. These layers of silty clay and sandy gravel may also exist below 10-meter depth.

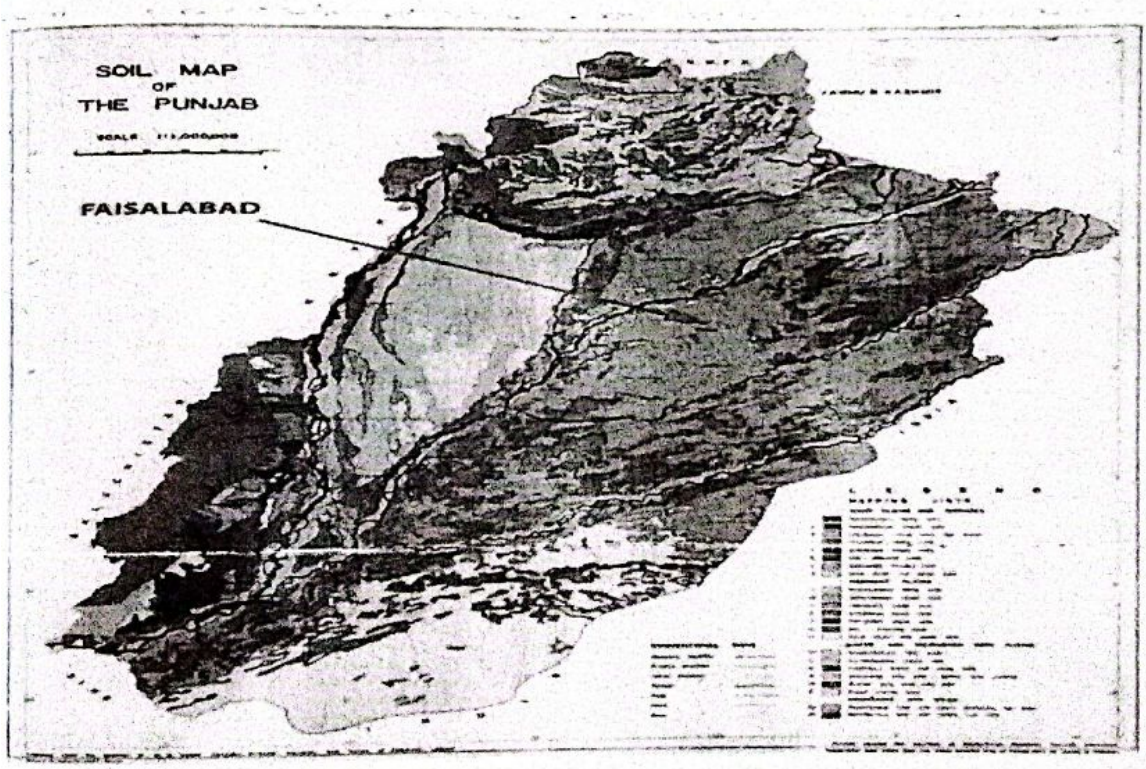


Figure 4 Indicates Project Area in Punjab Soil Map

Scanned with CamScanner

3.7 Climate

Sheikhupura has extremes of climate; the summer season begins from April and continues till September. June is the hottest month. The mean maximum and minimum temperature for this month are about 45 and 27 degrees Celsius respectively. The winter seasons lasts from November to February. January is the coldest month. The mean maximum and minimum temperatures for the coldest month are 22 and 0 degree Celsius respectively. Rainfall Towards the end of June monsoon conditions appear and during the following two and a half months the rainy season alternates with sultry weather. The winter rain falls during January, February and March ranging from 23 to 31 millimeters.

Climate data for Faisalabad [hide]

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	26.6 (79.9)	30.8 (87.4)	[illegible] (99)	44 (111)	47.5 (117.5)	48 (118)	46.1 (115.0)	42 (108)	41.1 (106.0)	40 (104)	[illegible] (97.5)	29.2 (84.6)	48 (118)
Average high °C (°F)	19.4 (66.9)	22.2 (72.0)	27.1 (81.3)	34.2 (93.6)	39.7 (103.5)	41.0 (105.8)	37.1 (98.8)	35.5 (95.9)	36.8 (98.2)	33.6 (92.5)	28.2 (82.8)	22.1 (71.8)	31.6 (88.9)
Average low °C (°F)	4.8 (40.6)	7.6 (45.7)	12.6 (54.7)	18.3 (64.9)	24.1 (75.4)	27.6 (81.7)	27.8 (82.2)	27.2 (81.0)	24.5 (76.1)	17.7 (63.9)	10.4 (50.7)	6.1 (43.0)	17.4 (63.3)
Record low °C (°F)	-2.9 (26.8)	-1.4 (29.5)	1 (34)	7 (45)	13 (55)	17 (63)	19 (66)	18.6 (65.5)	15.6 (60.1)	9 (48)	2 (36)	-1.3 (29.7)	-4 (25)
ge precipitation mm (inches)	31.5 (1.24)	41.3 (1.63)	49.1 (1.93)	43 (1.7)	24 (0.9)	103 (4.1)	202.4 (7.97)	190.6 (7.50)	100.3 (3.95)	9.8 (0.39)	2.6 (0.10)	20.4 (0.80)	743 (29.3)

Table- 3.1 Monthly Temperature and Precipitation

3.8 Dust Storm

Storms rarely occur in the project area.

3.9 Earthquakes

The area is not listed in the seismic potential zone.

Scanned with CamScanner

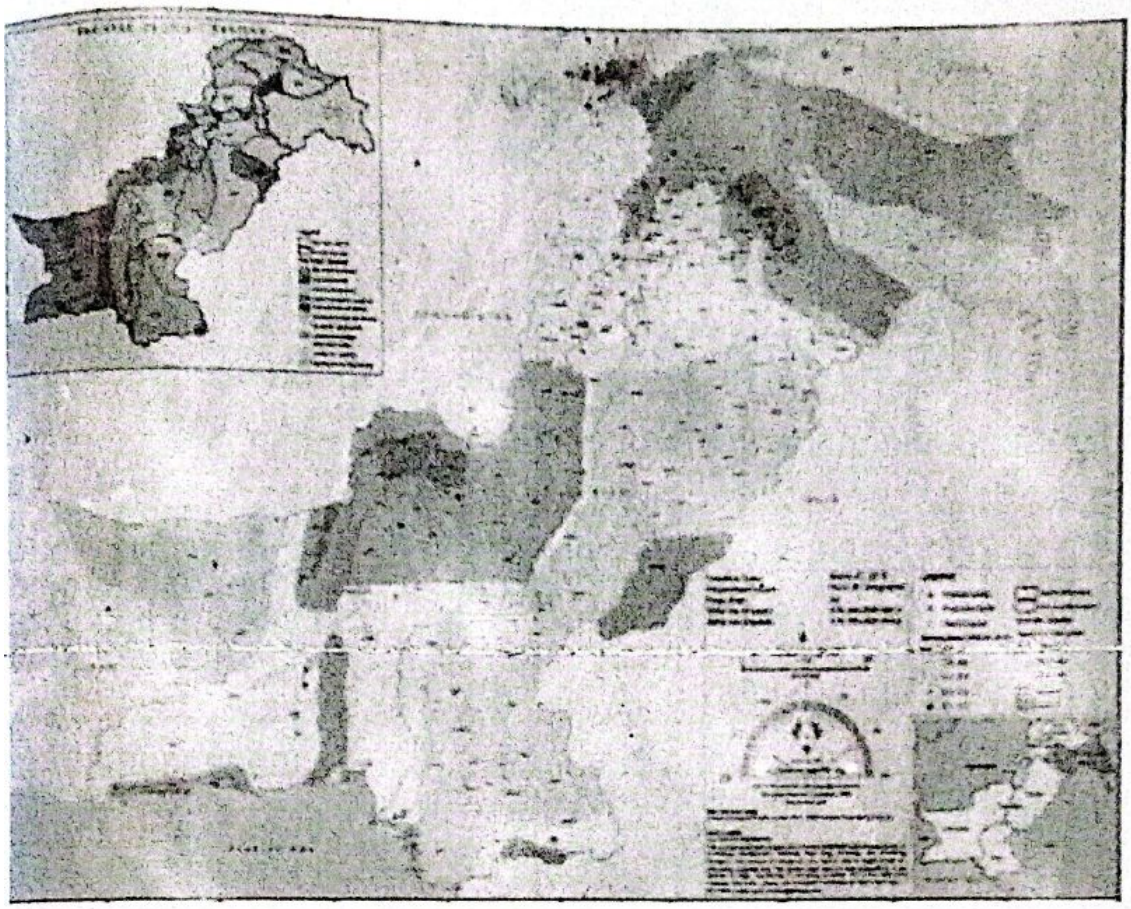


Figure 5 Pakistan Seismic Activities and Zoning Map

Scanned with CamScanner

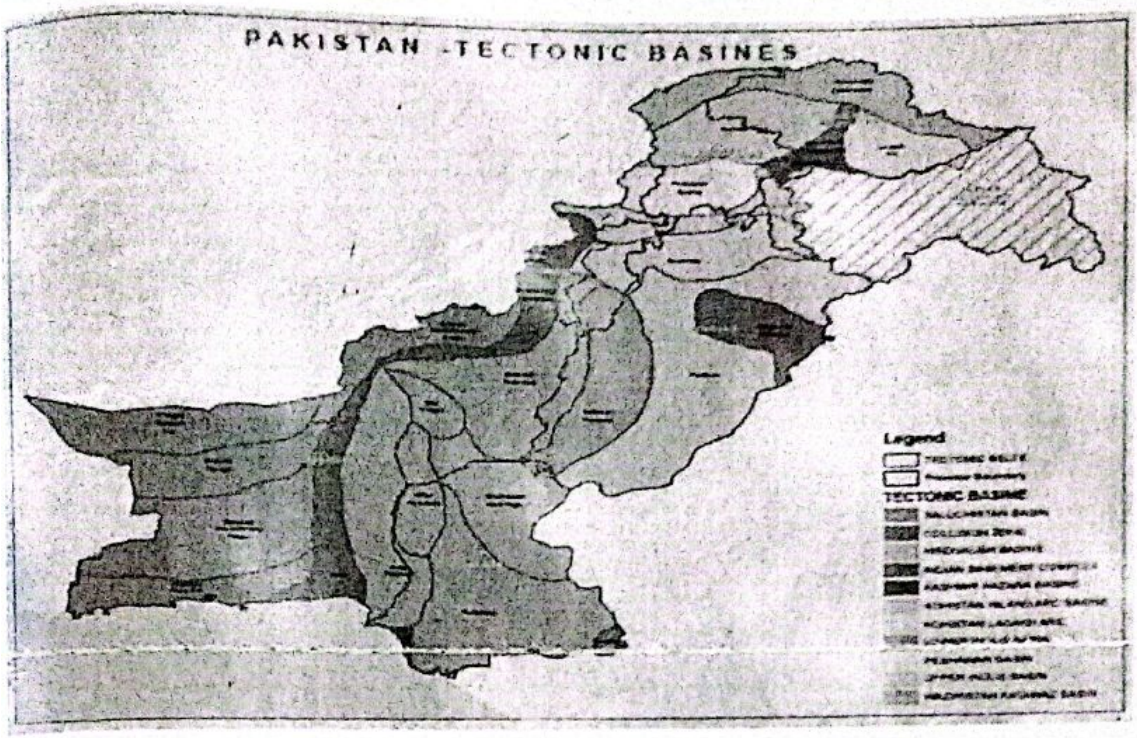


Figure 6 Pakistan Tectonic Basins

3.10 Biological Resources

There is no fish farming in the area either natural or commercial.

3.11 Fishery and Aquatic Biology

The project area is almost free from any commercial fishing activity. There are no lakes, even natural water ponds in the vicinity. Therefore, Fishery or any worth mentioning aquatic biology in this area is out of question.

3.12 Biodiversity

Natural capital of a country mainly includes all of the country's wilderness areas and scenic landscapes, including also with their associated flora and fauna. Pakistan has a total of nine major ecological zones. The contribution of the "Natural Capital" is recognized at three distinct levels: species, genera, and communities (habitat and ecosystem) both collectively and within each level, the range or variety of the resources are referred to as the "Biological Diversity". The term has relevance for each of Pakistan's administrative units district, province, and particularly country. The more the number of species, genera, and habitats and ecosystems present within these units, the greater is said to be the biodiversity. The biodiversity of the area, with this background, is discussed as under.

Scanned with CamScanner

3.13 Forests

An area of 13784 acres is under forest in the district. There is also linear plantation of 1604 kilometers alongside the roads/rails/canals in the district. Trees grown in the area are Kau, Phalai, Kikar and Shisham.

3.14 Flora in the Project Area

Project site is free from any protected plant species. Flora of the district has been greatly modified by human agency of the old open forests of small trees and shrubs; there remains only a few Rakhs or portions of forest which are kept as gazing ground for cattle etc. Amongst trees the most important are Kikar (Acacia arbica), Shisham or Tahli (Dalbergia sissoo), Beri (Zizyphus jajaba), Toot (Morus marlaccae), Sharin (Albizzia lebbek, Dharek (Malia azerdaracb), Phulahi (Acacia modesta), and Nim (Melia indica), Piple (Ficus indica) are planted for shade.The growth in Rakhs is composed mainly of three kinds of trees Jand (Prosopis spicigera), Karril (Capparis aphylla), and van or Jal (Salvadora obeoides). Occasionally pelu (acacia Loucophhloea) and Farash (Tamarix articulate) are also found. Pilchi (Tamarix gallio) is found on moist sandy soil along the rivers and is used for wicker-work, basket making etc.

3.15 Fauna

Project site is free from any protected animal species. Wolf and jackal are the only wild animals of an importance. The former being met with occasionally in the low land wastes of Sheikhupura but jackal is found everywhere.

3.16 Language

1 Punjabi

2 Urdu, being the national language of Pakistan is universally spoken and understood, while English is also understood and spoken by educated people. Famous singer Ustad Bade Ghulam Ali khan was also from Sheikhupura gharana of Indian classical music

3.17 Tribes & People

The principal tribes and tribes residing in Sheikhupura District are Pathan, Ansari, Bhatti, Malik, Arain, Jut, Sherwani, Safdar, Sunyare Rajput, Rehmani Mayo, Dogar, and Sheikh, the refugees from East Punjab that settled in the district largely belong to these tribes and clans. There are mueens or village artisans

Scanned with CamScanner

including Christians, blacksmiths, carpenters, potters, barbers, weavers etc. These mueens are found in all villages and are generally paid in kind at the time of each harvest.

3.18 Geographical Indications

The Project Director (Geographical Indications), Industries, Commerce & Investment Department, Government of the Punjab has identified the following Important Geographical Indications in the district:

- Power Looms (Textile Cloth)
- Agricultural Implements

3.19 Education

Sheikhupura is having a higher literacy rate when it is compared with other cities of the country. It is made possible due to its prolific educational institutions.

According to the 1998 census, Sheikhupura population was 6,318,745. Mid-2006 government estimates put the population at somewhere around 10 million, which makes it the second largest city in Pakistan, after Karachi. It is considered to be one of the 30 largest cities of the world

3.20 Main Crops

Major crops of the town are wheat, grain, peas, barley are the important crops of Rabi season, while Kharif crops are cotton, sugarcane, potato, bajra, oil seeds which are shipped by rail and road to other parts of the country.

3.21 Main Fruits

Guava, Orange and Watermelon are the main fruits grown in the district. Besides, Grapes, Phalsa, Java Plum and Lychee are also grown in minor quantity in the district.

3.22 Dress

The local dress consists of a Kurta without collar covered by a waist-coat or Kurti and a loose loin cloth or trousers. A long piece of cloth called Chaddar is usually thrown over the willers. Achkan and Sherwani are worn on formal occasions by most people, but quite a large number of Muhajirs (refugees) wear these as normal dresses. In the villages, a Kurta with The-band (sheet round of legs) and Safa on willers is the most common dress. The Pagri still carries a sign of respectability and some people in the cities while

Scanned with CamScanner

most people in the villages have this as the sole head-dress. The women's clothes are generally more colorful with popular shades of red and yellow. Women clothing consists of Shalwar, Kamiz and Dopatta or Chaddar to cover their heads and upper part of the body. Phulkari is a silk embroidered shawl often fancied by the rural women-folks. Saree is only worn by women in towns and cities on formal occasions. The most common footwear for men in the villages is shoes of rough leather usually made by the village shoemaker. Boots are worn by those living in the cities and towns while women folk-wear sandal or slippers. Purdah is very common amongst the lower, middle and upper middle-class women but rare amongst women of upper class.

3.23 Public Health/Welfare

Though earlier very few specialist doctors were available and most of the people resorted to the adjacent city of Sheikhupura for their health care needs. But now, in Sheikhupura District Headquarter Hospital is providing health facilities. Where as many small hospitals and clinics are providing basic health services as well, in rural and urban area.

3.24 Recreational Resources and Development:

The project area has not any private recreational facilities.

3.25 Aesthetic Values

Like the general trend among the citizens of area, most of the people have low awareness about environment. Even then, some people take cleanliness and neatness of the environment lightly. Some people throw municipal solid wastes (MSWs) on the streets. Sense of personal responsibility to keep the environment clean as good citizens is even now lacking among a few people.

3.26 Quality of Life Values

- **Religion**

The population of Sheikhupura is over 99% Muslim.

- **Customs**

The peoples are very much concerned about castes and beliefs, visiting shrines is very common among them.

- **Electric Supply**

WAPDA power supply will be available at the site.

Scanned with CamScanner

- **Telephone Facilities**

Both Landline and Cellular telephone facilities are present in the project area.

- **Educational Facilities**

No educational facility is present in the vicinity of the project area.

3.27 Site of Physical &Cultural Heritage

There are no documented or protected sites of archaeological, cultural, historical & religious significance in the project area. No visible signs were observed of such sites while conducting the field work.

3.28 Suitability of the Site

The site does not fall in environmental sensitive area and all commodities are at a suitable distance from project site as they will not impacted by the construction activities even locals will get more benefits and job opportunities. No replacement, relocation and rehabilitation are required for the development of proposed project.

3.29 Water Quality

The surface water is of good for irrigation.

3.30 Ground Water

Underground water is available and its quality is not enough good for drinking at lesser depths. The residents of area mostly use ground water for drinking which is contaminated due to industrial activities in the area. Water is continuously being contaminated by the injection of industrial wastewater through injection well in the study area.

3.31 Wastewater/ surface water

Proper sewerage system is not available in the area; there is no drain for the disposal of industrial wastewater as well. Mostly industries are injecting water in ground or may use in their own land for irrigation. It is highly recommended that water from the industries must be treated before use in irrigation. Govt. must take steps to provide proper industrial and domestic sewerage system in the area.

Surface water of the area is good for irrigation

Scanned with CamScanner

CHAPTER # 4

Screening of Potential Environmental Impacts and Mitigation Measures

4.1 General

This section identifies the potential impacts; related with design, construction and operation of the project on the physical, ecological and socio-economic domains of the environment. Accordingly, mitigation measures have also been proposed to manage the environment and for sustainable development.

Legal requirements of the PEPA and the PEQS Punjab will be the rating standard for the activities. Compliance with the EMP and EMMP, as per recommendations in this EIA report will be adhered to with full spirit.

4.2 Project Location

Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway at Sheikhupura.

- **Magnitude**
- Type of impact (direct, indirect, and cumulative)

- **Immediacy**
- Temporal extent (during construction, after construction)
- Spatial extent (local, widespread)

- **Sustainability and Reversibility**
- Mitigation (fully, partially)
- Monitoring (fully, partially)

Table 4.1 Typical Impacts during the project and its Mitigation Measures

Impacts	Typical Mitigation Measures
Soil	• Installation of drainage ditches • Runoff and retention ponds Minimize disturbances and scarification of the surface

Scanned with CamScanner

	• Usage of appropriate monitoring and control facilities for construction equipment deployed • Methods to reuse earth material generated during excavation
Resources – fuel / construction materials, etc.	• Availing the resources which could be replenished by natural systems etc.
Deforestation	• Plant or create similar areas • Initiate a tree planning program in other areas
Water pollution	• Storm water drainage system to collect surface runoff • Treatment of all effluents containing acid/alkali/organic/toxic wastes Ground water Monitoring • Use of biodegradable or otherwise readily treatable additives Neutralization and sedimentation of wastewaters, where applicable Dewatering of sludge and appropriate disposal of solids • Controlling discharge of sanitary sewage and industrial waste into the environment • Avoid activities that increases erosion or that contributes nutrients to water (thus stimulating alga growth) • Treated wastewater (such as sewage, industrial wastes, or stored surface runoffs) can be used as cooling water makeup.
Air Pollution	• Adopt sprinkling of water, wetting of roadways to reduce traffic dust and re-entrained particles • Control vehicle speed on sight • Ensure periodical wash of construction equipment and transport vehicles to prevent accumulated dust • Ensure vehicles are covered during transportation • Provide dust collection equipment at all possible points • Maintain dust levels within permissible limits • Provision of PPEs such as nose masks etc.
Noise Pollution and Vibrations	• Use of suitable muffler systems/enclosures/sound-proof glass paneling on heavy equipment/pumps/blowers as appropriate

Scanned with CamScanner

	• Pumps and blowers may be mounted on rubber pads or any other noise absorbing materials • Proper scheduling of high noise generating activities to minimize noise impacts • Usage of well-maintained construction equipment meeting the regulatory standards • Periodic maintenance of equipment/replacing whenever necessary/lubrication of rotating parts, etc. • By using damping, absorption, dissipation, and deflection methods Performance specifications for noise represent a way to insure the procured item is controlled.
Social	• Health and safety measures for workers • Development of traffic plan that minimizes road use by workers, upgrade of roads and intersections • Ensure public involvement • Exploration of alternative approach routes in consultation with local community and other stakeholders
Occupational Health and Safety	• Provision of worker camps with proper sanitation and medical facilities, as well as making the worker camps self- sufficient with resources like water supply, power supply, etc. • Arrangement of periodic health check-ups for early detection and control of communicable diseases • Provide preventive measures for potential fire hazards with requisite fire detection, fire-fighting facilities and adequate water storage
Construction	• Have a Transport Management Plan in place in order to prevent/minimize the disturbance on surrounding habitats • Initiate traffic density studies
Solid / Hazardous Wastes	• Proper handling of excavated soil • Proper plan to collect and dispose-off the solid waste generated onsite. Identify an authorized waste handler for segregation of

Scanned with CamScanner

	construction and hazardous waste and its removal on a regular basis to minimize odor, pest and litter impacts • Prohibit burning of refuse onsite

Environmental Management Plan

- The administrative and technical organizational structure to ensure proposed project monitoring programmed for approved mitigation measures are implemented including the involvement of the ministry and other stakeholders.
- The EMP devised to mitigate the adverse impacts of the project should be detailed including allocation of resources and responsibilities for plan implementation.
- Details of the emergency preparedness plan and on-site and off-site disaster management plan should be discussed extensively.
- Environmental Monitoring Program should be detailed to provide specific information on monitoring pollutants at receiving environment for the appropriate notified parameters – air quality, ground and surface water, land etc., during project phases; specific program to monitor safety and health of workers, appropriate monitoring network has to be designed and proposed, to assess the possible residual impacts on environmental components and details of in-house monitoring capabilities and the recognized Ministry, department and agencies for conducting the monitoring.

Remediation Plans after Decommissioning

- The need to decommission the project (temporarily or permanently) at any point.
- Develop appropriate plan for the restoration of the environment to include soil, air, water, land, vegetation, fauna, socio-economic, cultural and other components.

4.3 Impacts during the Design Phase

The potential environmental impacts of the establishment work along with the mitigation measures during the pre-establishment/design stage of the Project are described in this Section.

4.3.1 Seismic Hazard

Seismic Zoning Map of Pakistan showing Project site area (Figure 5 and 6).

Scanned with CamScanner

Mitigation

Structure of the project is designed for even moderate to large earthquakes. For seismic hazard analysis, updated structural and seismic evaluations are consulted.

4.3.2 Traffic Congestion and Disturbance to People

Due to the establishment of the proposed industrial project, the traffic in the Project area will increase and may result in traffic disruption if proper parking facilities are not provided within the establishment area. This will be a temporary and moderate negative impact.

Mitigation

Adequate parking facilities for the workers will be provided within the premises during establishment to avoid any disturbance in the traffic flow on the project's road. Parking space will be provided during operational phase.

4.3.3 Emergency Response

Disasters such as earthquakes, flooding and other manmade disasters, such as fires, may occur which have to be considered for minimizing their impacts. This will be a permanent and moderate negative impact.

Mitigation

Complete equipment control system, fire escape stairs and secured access system supplemented with close circuit surveillance equipment/alarms will be included in the design of project. Adequate internal and external water distribution system will be designed, which could also supply adequate quantity for fire-fighting during emergency.

4.3.4 Energy Conservation

- Energy conservation lights will be used to put a minimum load on the electricity system.
- Design of the building will be energy efficient (30-40% less energy consumption as compared to conventional methods) and the building will be centrally air conditioned.
- Local material will be used up to maximum level to avoid transportation.

4.4 Likely adverse impacts during construction phase

The anticipated environmental impacts related to the establishment Project have been studied for the establishment stage and have been discussed here.

Scanned with CamScanner

- Establishment Noise
- Dust Emission during Establishment
- Change of Land Use
- Water Sourcing
- Vehicle and Equipment Exhaust
- Soil Contamination
- Socioeconomic Impacts
- Community and worker's Safety
- Traffic Disturbance
- Employment Conflicts
- Poverty Alleviation
- Project and Community Interface

These impacts are discussed and their mitigation measures are also written below:

4.4.1 Placement of Establishment Material on Site

Improper and hazard placement of the establishment material can block the roads, passages and walkways. This is a temporary and moderate negative impact.

Mitigation

All establishment material will be placed at the specified place and kept covered within the project site premises and will not be placed on roads / passages / walkways. Only authorized persons will be allowed to access the material.

4.4.2 Disposal of Establishment Waste/ Excavated Material

Dumping of establishment wastes/excavated material in the surrounding area may result in dust pollution. This will be a temporary and moderate negative impact.

Mitigation

Management of Establishment activities will be done in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site. The contractors will be bound by contractual obligations to take care of the waste generated from the establishment activities to avoid any discomfort to the community.

Scanned with CamScanner

4.4.3 Dust Generation

Substantial quantity of dust in and around the active establishment area may be generated from the traffic/machinery movement and transportation of establishment material at the project site. Prolonged exposure to dust might result in respiratory tract infections and asthmatic problems to the establishment workers, the natives of the area and commuters. This will be a temporary and moderate negative impact.

Mitigation

Establishment phase of the new building can be effectively mitigated by the implementation of simple procedures by the Contractor including but not limited to the following:

- During establishment, the activities will be conducted in a controlled way with water sprinkling to avoid the dust pollution.
- All excavation work will be sprinkled with water.
- Establishment workers will be provided with masks for protection against the inhalation of dust, and
- Vehicle speed on the roads along the Project Site will be prescribed and controlled accordingly

4.4.4 Noise

When the establishment work is undertaken, constant operating of machinery will raise the noise level in the Project Area. Since noise is a by-product of human activity, the area of exposure increases as a function of the mobility and establishment of structures. Noise due to the establishment will be a temporary and minor negative impact will be resulted.

Mitigation

Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

- Selection of up-to-date and well-maintained equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.
- Confining of excessively noisy areas and limiting the work to normal working hours in the day.
- Providing the establishment workers with suitable hearing protection like ear cap, or earmuffs and train them for their use.
- Regular checkups and maintenance of the establishment equipment.

Scanned with CamScanner

4.4.5 Flora

Operation phase Project will not involve any cutting of bushes and trees. However, new trees will be planted by the management to keep the environment clean. This will be a moderate positive impact.

Mitigation

Not required

4.4.6 Fauna

There is no wildlife present in the Project area. Also, the local animals and bird species of the area are mostly domesticated and will not be adversely affected by the Project execution.

Mitigation

Not required.

4.4.7 Relocation of Utilities

The establishment of the operation phase for the project structure will not involve relocation of any public utilities.

Mitigation

Not required

4.4.8 Poverty Alleviation

Establishment of the operation phase of the project structure will generate the employment opportunities for the population living in the area. This will be a temporary minor positive impact.

Mitigation

Not required

4.4.9 Sanitation and Solid Waste Disposal

During the establishment stage, solid waste and sanitary wastewater will be generated at the Project site due to the establishment activities and presence of the temporary toilet(s). Staggering of solid waste on the ground will give rise to unhygienic conditions and spread of diseases. Similarly, if the wastewater is allowed to stagnate in water ponds on the site, it can create unhygienic conditions and some of the wastewater may also percolate the soil, thereby, polluting the groundwater. This may pose a moderate negative impact.

Scanned with CamScanner

Mitigation

All the solid waste will be disposed-off in accordance with the regulations. The contractor will provide wastewater facility for the toilet waste to treat the sanitary wastewater before its discharge into public sewer.

4.4.10 Workers' Safety and Hygienic Conditions

The establishment activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the Project. This will be a moderate negative impact.

Mitigation

Implementation of the following measures will ensure health and safety of the workers and the public during the establishment phase:

- The Contractor will ensure that the establishment workers/labor are trained in safety procedures for all relevant aspects of establishment;
- Establishment workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;
- Formal emergency procedures will be developed for establishment site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;
- The safety of the public at all stages of the establishment will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags;
- Proper illumination will be provided at night;
- Sides of the excavation area will be covered with corrugated protection sheets to avoid any sliding of soil;
- Only one entrance will be provided in the area excavated for foundations;
- Warning signs will be displayed in local language.
- Fence will be used all around the site.

Scanned with CamScanner

4.11 Air Quality

During establishment, the continuous operation of machinery and movement of the heavy trucks and vehicles may generate gaseous emissions. These emissions may create public health risks and nuisance on the bio-physical environment. This will be a temporary and minor negative impact.

Mitigation

The Establishment Contractor of the Project will ensure regular spraying of water on the access roads to minimize the dust generation and regular monitoring of all vehicles, equipment, and machinery used for establishment. All vehicles, machinery, equipment and generators used during establishment activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.

Environmental Impacts and Mitigation Measures for Pre- Construction and Construction Phase

IMPACTS	MAGNITUDE	RECOMMENDATION MEASURE	RESPONSIBLE AUTHORITY
PRE-CONSTRUCTION PHASE			
Site Clearance	Minor	• Site clearance shall be carried out to in such a way that the clearance and grubbing waste is disposed immediately in the designated dumping site identified for the project. • In no case the waste material shall be disposed in the river or any other sensitive environment components.	Project Proponent
CONSTRUCTION PHASE			
AIR POLLUTION • Dust emissions likely to occur during the excavation of the top soil.		**DEVELOPMENT OF PROCEDURES FOR:** • All vehicles transporting construction material shall be covered with Tarpaulin to avoid	Project Proponent

Scanned with CamScanner

• Dispersion of particles from Stockpiles during high velocity wind. • Dust resulting from construction Work		fugitive dust during transportation. • Speed limits on unpaved surfaces on site to limitdust. • Watering all active construction areas when necessary. • Cover all trucks hauling soil, sand and other loose materials, soil stabilizers on all unpaved access roads and staging areas at construction sites. • Fast growing trees will be planted around the project area to act as a wind breaker to reduce the particulate matter. • Covering or use of wind sheets around the stockpiles to avoid air pollution through dispersion.	
Waste • Construction waste from construction activities. • Domestic waste from worker's camp.		• Ensure prevention of inappropriate disposal of waste material. • Conduct separate collection of construction and domestic waste to promote recycling and re-use	Project Proponent
Water Quality • Run-off water from construction Area • Drainage of wastewater on ground can contaminate the soil and groundwater. • Inappropriate		• WWTP will need to be constructed which will be cemented to prevent the groundwater contamination • Proper disposal of waste material on dumping sites to avoid leachate generation and contamination of ground water/surface water. • Prohibit illegal dumping of waste. • The quality of water (wastewater discharged from the camps) shall	Project Proponent

Scanned with CamScanner

disposal of waste. • Open sewerage water disposal on land can contaminate ground water and cause generation of mosquitoes and various other insects in the area. • Leakage of oil and chemical materials from construction activity		be analyzed once in three months during construction, for its compliance to the disposal's standards of pollution control authorities.	
Noise: • Noise caused by construction machinery and vehicles used for mobilization of Construction equipment and workers.		• Control noise through control of working hours and selection of less noisy equipment. • Prohibit use of Pressure Horns. • Provision of acoustic enclosures (hood and shrouds) on generator. • Proper maintenance of vehicles and construction equipment. • The construction materials shall be properly maintained and barricades shall be provided around the site for reducing the noise levels. • Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery. • The personal protective equipment (PPE) will be provided to the construction workers and its usage will be made mandatory	Project Proponent

Scanned with CamScanner

Health and Safety: • Fall from height Accidents etc.		• Provide Personal Protective Equipment to workers • Health and Safety Training for all site personnel. • Documented procedures to be followed for all site activities. • Provide adequate welfare facilities to workers • Proper arrangement of lighting to reduce accidents.	Project Proponent
Emergency Management		• First aid kits and emergency treatment facilities shall be provided at the work sites, camp sites and all other ancillary facilities.	Project Proponent
Project Site • Loss of vegetation on site and clearance.		• Clearance with successful restoration, improvement and long-term management of the surrounding areas for conservation and productive uses will provide significant compensation.	Project Proponent

4.5 Likely adverse impacts during Operation stage

The anticipated environmental impacts related to the operation phase Project have been studied for the operational stage as discussed herewith.

4.5.1 Air Quality

During operational stage of the project, the continuous operation of generator, air conditioners etc. may deteriorate the quality of air in the open area. This will be a permanent and minor negative impact.

Mitigation

In order to minimize air pollution, following mitigation measures are recommended:

Scanned with CamScanner

- An air quality monitoring and improvement plan will be developed to keep the air pollution levels from generator, air conditioners, plant room etc. within the limits of National Environmental Quality Standards (PEQS);
- Level of air pollution (as specified in the (PEQS) will be monitored on regular basis and appropriate mitigation measures will be implemented;
- For control of indoor air quality, carbon filters will be used in addition to normal filters to remove odor from circulating air; and
- Vehicles with excessive smoke emissions will not be allowed to enter the building.

4.5.2 Noise

During the operational stage, noise levels are anticipated to increase. Noise will be generated due to increased number of visitors, movement of vehicles in the parking area, operation of machinery and generators etc., for which proper mitigation measures are required. This will be a permanent and moderate negative impact.

Mitigation

Noise generation from the generators will be minimized through the application of engineering solutions through noise proofing of the generator's room. The good quality generators will be purchased that will generate minimum noise. Noise levels of generators, machinery etc. will be monitored and staff working near them will be provided with ear muffs and noise protection.

4.5.3 Groundwater Consumption

The ground water will be used within the project site for domestic purpose. Water storage will also be required for emergency response in case of a fire. Prolonged water consumption may in the long run lower/deplete the underground water table. This will be a permanent and moderate negative impact.

Mitigation

An effective 'Water Conservation Plan' will be developed and staff will be trained in operational water conservation measure such as use of water efficient/economy appurtenances and reuse of wastewater for gardening of the trees/plants. Less water consumption will also reduce the load on the sewerage system. Following operational measures will be adopted for water conservation:

- Taps will not be kept running while cleaning and buckets will be used for holding water instead;
- It will be made sure that all faucets, circulating pumps etc. do not leak and are in good repair;

Scanned with CamScanner

- Any leaking or dripping faucet, pump or toilet will be reported immediately;
- All the utility bills will be kept in a safe place to track the consumption of water; and
- Purchase and use of water-saving equipment will be practiced;
- An effective training program will be implemented about water conservation.
- Rainwater will be harvested for use in landscaping purposes.

4.5.4 Wastewater Generation

Sewage water will be the main wastewater generated.

Mitigation

The proponents of the Project will be to construct wastewater treatment facility to bring the waste water quality up to a minimum pollution level before its discharge in the existing public sewer.

4.5.5 Solid Waste

Solid waste generation is an important issue. Improper management of solid waste directly affects the health of the people and becomes breeding place for the mosquitoes, other insects and rodents.

Mitigation

All raw materials will be recycled during the activities such as road filling and maintenance purposes. HSE manager will be appointed by the proponent to manage the solid waste on regular basis, to ensure the good housekeeping at site and in production unit, to inspect any discrepancies arise due to improper functioning of the HSE conditions and to adopt the proper solid waste management system.

4.5.6 Emergency Response

The operation of the project site will involve staff, occupants and visitors who may have accidents. In addition, disasters such as earthquakes and fires may occur which have to be considered for minimizing their impacts. This will be a permanent and moderate negative impact.

Mitigation

- An Emergency Response Plan for earthquakes and manmade disasters will be developed by the Management. Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics. Emergency drills will be carried out periodically. A full-time First Aid Provider will be employed to help the affected in case of any accident.

Scanned with CamScanner

- Exact time of evacuation in case of a potential emergency can be precisely estimated after carrying out emergency drills (when the building is completed and operational). However, it can be assumed that the whole building will be evacuated within 6 minutes of an emergency.

1.6 Potential Environmental Enhancement Measures

The operation phase of the project has a number of positive impacts, which include:

- No residential and commercial structures will be affected.
- The project has a potential to create employment opportunities, and will improve the standard of living/ livelihood of the population in the project area.
- The project will help in economy growth of Pakistan

4.7 Corporate Social Responsibility (CSR)

CSR means "the continuing commitment by business to behave ethically and contribute to economic development while improving quality of life of the workforce and their families as well as of the local community and society at large. CSR Commit entrusted with task of identifying areas where the Management could participate positively to the development and improvement of better society in the project area. The Commit pharmaceutical factory mandate is to initiate, facilitate, coordinate and monitor CSR projects of the Company.

4.8 Structural Stability

While carrying out the detailed designing of the project building structural, engineering, safety and seismic considerations have been taken into account to make it structurally viable and environment friendly. Project proponent has obtained structural stability certificate for the project's structures.

4.9 Undertaking

The proponent has committed to comply with the relevant Establishment by-laws/ safeguards and the environmental enactments for the environmental preservation. Project proponent has given Undertaking and Affidavit a, respectively

4.10 Base line environmental data

Base line environmental data of the project area was monitored. Environmental data was collected through actual onsite monitoring for ambient air quality, noise levels and through laboratory testing of various water samples. Required details of monitoring are reported as under.

Scanned with CamScanner

4.10.1 Ambient Air Quality

Details of the monitored gaseous pollutants and particulates are given under respective headings as below.

- Gaseous
- For obtaining site specific base line (primary) data, ambient air quality monitoring was done at 5 Points on the quarries and outside boundary lines.
- DRAGER, Germany manufactured ambient air quality monitoring equipment was used. Monitoring was carried out for Sulfur dioxide (SO2), Nitrogen oxides (NOx--NO and NO2) and Carbon monoxide (CO).
- Particulates
- Particulate's monitoring was done at 5 locations of the project site.
- Iso-Kinetic the Casella System (Instrument) designed to comply with BS 3405 and ISO-9096 for compliance monitoring of particulate matter (particulates) was used for the monitoring.

4.10.2 Noise Levels

LEADER Sound Level Meter, Japan was used for noise levels monitoring. Monitoring for noise levels was carried out at 05 points within project site and outside boundary lines.

4.10.3 Water Quality

Water samples were collected from project sites, Laboratory test results of these water samples are reported.

Scanned with CamScanner

CHAPTER # 5

ENVIRONMENTAL MANAGEMENT PLAN & MONITORING PROGRAM

5.1 Purpose and Objectives of the EMP:

- The primary objectives of the EMP are to:
- Facilitate the implementation of the mitigation measures identified in the EIA
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:
- Ensure the complete implementation of all mitigation measures
- Ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated
- Environmental situations identify training requirements at various levels

5.2 Management Approach:

The overall responsibility for compliance with the environmental management plan rests with the project proponent.

A certain degree of redundancy is inevitable across all management levels, but this is in order to ensure that compliance with the environmental management plan is crosschecked.

5.3 Institutional capacity

Project Proponent will be responsible for Monitoring and Evaluation, but Environment consultant (of the proponent) will responsible to monitor EMP implementation in the field and reporting to the Project Proponent. The Project Proponent will integrate monitoring reports in the main monthly reports of the project. The Environment Specialist of Supervision Consultant will carry out a final evaluation at the end of the Project. District Office of the EPA at the project area will monitor the overall activity at the site.

Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE/Project Manager
- In-Charge Administration
- Supervisor of project

Scanned with CamScanner

- Environmental Engineer

raining for the management/contractors/engineers and workers on environmental aspects of the project ill be arranged. It will be imparted by a team of experienced trainers.

Table: Explains the information about Personal Training Program.

PROVIDED BY	CONTENTS	TRAINEES/EVENTS	DURATION
Organizations specializing in environmental management and monitoring	Short seminars and courses Environmental laws and regulations daily monitoring and supervision	Three seminars for Project staff	3 days
Organizations specializing in social management and monitoring	Short seminars and courses on social awareness	Three seminars for Project staff dealing in social matters	3 days
Organizations specializing in occupational health	Short lectures relating to occupational health and safety	Two seminars for workers	2 days

5.4 Training of building contractor

Training of building contractor & workers will be the part of the TORs regarding the construction of the project. The provisions given in EIA Report ***Chapter 4 Screening of Potential Environmental Impacts & Their Mitigation Measures*** **will be followed.**

TORs will be including the training and submission of reports in the following area:

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports

Scanned with CamScanner

Maintenance of Water Consumption records

Testing of water and waste water and submission of Environmental Monitoring Reports

Placement of safety signs/boards during construction

Sprinkling of water on the roads and dusty tracks

Monitoring of generator emissions

Training regarding all other aspects of HSE will be ensured by the contractor during the construction phase.

5.5 Responsibility of EMP

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint an HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage the all HSE condition at the PEQS.

Table Proposed mitigation measure

Serial	Environmental Issues/ Impacts	Mitigation Measures
PLAN NING, SITE SELECTION AND DESIGN STAGE		
1	Observance of administrative and legal formalities	It is recommended for obtaining of approval from other relevant departments
2	Acquisition of land	The proposed land is the property of the project proponent
3	Loss of environmentally sensitive areas	There is no any sensitive area near the project site however the project proponent will achieve the PEQS at the boundary wall of the subject project to avoid the environmental impacts on the nearby industrial unit

Scanned with CamScanner

4	Changes in traffic pattern	There is no need to change the traffic pattern due the development of the subject project because no. of industries has been developed at the same link road only few vehicles will visit the project on daily basis
5	Potential conflicts with stakeholders	There is no any conflict at the current stage of the project. Neighboring industries were visited regarding their concerns. They have no any objection regarding development of the subject project as per proposed design. It is recommended to Settle the issues through scoping and specitic group discussions
6	Resettlement issues	No resettlement issues
7	Project Design	Structure Stability Assessment of soil has been done, as per building design i.e., total area of building, etc. Provision of Emergency Exits, Assembly Points, firefighting arrangements, water storage for firefighting should be incorporated in the design.
SITE DEVELOPMEN STAGE		
1	Erosion due to stripping and site clearance	Sprinkling of water on road side or dusty tracks.
2	Generation of dust	Careful loading and unloading of construction materials is recommended.

Scanned with CamScanner

		Sprinkling of water on construction site and surrounding areas is recommended.
3	Generation of noise	Avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner.
4	Local flooding/ponding	Immediate repair and maintenance of water supply pipes and sewers in case of any defect will be undertaken.
5	Outbreak of fire	Firefighting equipment must be maintained at the site in good working condition.
6	Safety	Safety of the workers and others must be ensured.
7	Labor issues	Employ the local labor as far as possible. Wages of the labor should be as per Government policy.
CONSTRUCTION STAGE		

Scanned with CamScanner

1	Minor erosion of land	□ There are two types of erosions: Wind Erosion Water erosion It is recommended to construct the boundary wall first that will reduce the soil erosion due to wind and chances of water erosion due to water flow from the adjacent will be reduced also. Clearing of land should be step wise; vegetation should be removed only from the area where main building will be developed. Add more vegetation, restore the land by more plantation. Sprinkle water on dusty tracks is recommended.
2	Contamination of land and water	Hazardous substances like, fuel, etc. should be kept on concreted surface. Essential services like water supply, sewerage disposal and solid waste management must be in working condition.

Scanned with CamScanner

3	Impacts of dust, noise and flue gases on neighbors	Sprinkle water on dusty tracks is recommended, avoid suing forbidden horns at the site. Do not throw heavy equipment and construction materials in haphazard manner. Proper tuning of vehicles and machinery must be ensured. Schedule construction timings should be implemented for minimum disturbance to neighbors. Continuous Environmental monitoring must be ensured as per proposed monitoring plan.
OPERATION STAGE		
1	Contamination of land and water sources	Continuous vigilance on maintenance of services. Tarpaulin sheets must be placed to avoid leaching of water into ground.
2	Fire breakouts	Training of workers regarding flammable substances will be ensured. SOPs of fire prevention will be adopted like forbidden of smoking, regular testing of electricity infrastructures and regular testing of gas supply system to the industry. Firefighting equipment must be kept in working condition at site.

Scanned with CamScanner

3	Safety/security concerns	Safety of the workers and others will be ensured. Privacy of the neighbors will not be disturbed.
4	Malfunction of utilities	It is proposed to appoint maintenance engineer with technicians like plumber and electrician for smooth operation of utility services.
5	Occupational Health, Safety and Environment	Regular medical check-ups must be ensured to improve the working condition and efficiency of workers. Relevant safety devices like belts, gloves and testers must be strictly used by the operators at the work site. Safety of management, workers and visitors must be ensured. Observance of construction and safety codes must be ensured. Provision of emergency exits must be ensured.
6	Production of Solid Waste	Area for solid waste must be reserved within the subject project. The solid waste must be managed on regular basis. The waste will be disposed-off in environment friendly way.

Scanned with CamScanner

.6 Environmental Technical Assistance and Training Plan

n order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge n the related areas. HSE/Project Manager should play a key role in this respect and arrange the training rograms.

SE/Project Manager will provide training to staff and workers about the best environmental management ractices at the construction site and affective implementation of the EMP.

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS), usage of personal protection equipment's, and health and safety related issues on the construction site. The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of Sexually Transmitted Infections (STI) HIV/AIDS and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation. HSE/Project Manager will arrange Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid.

Scanned with CamScanner

TABLE 5.2 Environmental Management Plan (EMP)

Sr. No.	Project Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility	
				Implementation	Monitoring
PRE-CONSTRUCTION PHASE					
1	**Clearance**	Minimize harm to the site	• Site clearance shall be carried out to in such a way that the clearance and grubbing waste is disposed immediately in the designated dumping site identified for the project. • In no case the waste material shall be disposed in the sea or river or any other sensitive environment components.	By Contractor with coordination of Proponent staff	Project Proponent
CONSTRUCTION PHASE					
2	**Pollution:** • Dust emissions likely to occur during the excavation of the top soil. • Dust resulting from construction work • Use of heavy machinery can generate exhaust and dust emissions	Compliance with prescribed PEQS to control air pollution	Development of procedures for: • All vehicles transporting construction material shall be covered with Tarpaulin to avoid fugitive dust during transportation. • Speed limits on unpaved surfaces on site to limit dust. • Watering all active construction areas when necessary. • Cover all trucks hauling soil, sand and other loose materials, soil stabilizers on all unpaved access roads and staging areas at construction sites. • Fast growing trees will be planted around the project area to act as a wind breaker to reduce the particulate matter. • Covering or use of wind sheets around the stockpiles to avoid air pollution through dispersion.	Contractor with coordination of Proponent staff	Project Proponent

Scanned with CamScanner

3	**Waste Construction** waste from construction Activities Domestic waste from workers camp Waste Construction waste from construction Activities Domestic waste from workers camp	• Proper & safe handling and disposal of construction related waste. • Compliance with applicable waste management rules for waste disposal. • Implementation of waste • Management plan	• Ensure prevention of inappropriate disposal of waste Material. • Conduct separate collection of construction and domestic waste to promote recycling and re-use. • No waste or debris will be thrown in the nearest canal water or other water bodies	Contractor with coordination of Proponent staff	Project Proponent
4	Water Quality • Run-off water from construction area. • Drainage of wastewater on ground can contaminate the soil and groundwater. • Inappropriate disposal of waste. Open sewerage water disposal on land can contaminate ground water and cause generation of mosquitoes and various other insects in the area. • Leakage of oil and chemical materials from construction activities.	• Control of ground water or surface water pollution from construction activity	• WWTP will need to be constructed which will be cemented to prevent the groundwater contamination • Proper disposal of waste material dumping sites to avoid leachate generation and contamination of ground water/surface water Prohibit illegal dumping of waste. • The quality of water (wastewater discharged from the camps) shall be analyzed once in three months during construction, for its compliance to the disposal standards of pollution control authorities.	During Construction Phase by Contractor with coordination of Proponent staff	Project Proponent

Scanned with CamScanner

5	*Noise* • Noise caused by construction machinery and vehicles used for mobilization of construction. • Compliance with prescribed PEQS to control Noise pollution equipment and workers.	• Control noise through control of working hours and selection of less noisy equipment.	• Prohibit use of pressure horns. • Provision of acoustic enclosures (hood and shrouds) on generator. • Proper maintenance of vehicles and construction equipment. • Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery • The personal protective equipment (PPE) will be provided to the construction workers and its usage will be made mandatory	During Construction Phase by Contractor with coordination of Proponent staff	Project Proponent
6	Health and Safety • Falls from working at Heights • Other Accidents etc.	• Prevention of any possibility of work site accident impact on worker's health	• Provide Personal Protective Equipment to workers. • Health and Safety Training for all site personnel. • Documented procedures to be followed for all site activities. • Provide adequate welfare facilities to workers. • Proper arrangement of lighting to reduce accidents.	During Construction Phase by Contractor with coordination of Proponent staff	Project Proponent
7	Emergency Management	• Prevention of any possibility of work site accident.	• First aid kits and emergency treatment facilities shall be provided at the work sites, camp sites and all other ancillary facilities.	During Construction Phase by Contractor with coordination of Proponent staff	Project Proponent

Scanned with CamScanner

8	Project Site • Loss of vegetation on site and clearance.	• Minimize Construction impacts on flora and fauna	• Clearance with successful restoration, improvement and long-term management of the surrounding areas for conservation and productive uses will provide significant compensation	During Construction Phase by Contractor with coordination of Proponent staff	Project Proponent
OPERATIONAL PHASE					
9	Air Quality Gaseous emission from Generators, equipment's vehicles such as: •NOx •CO •S02 •PM • Heat	• Compliance with prescribed PEQS , to control air pollution.	• Use of new, efficient vehicles. • Proper maintenance, rationalization of • traffic management system to optimize transport efficiency. • Use of scrubbers to minimize the release of air contaminants to the environment. • Proper ventilation including diluted and • local exhaust ventilation as required by the equipment.	HSE officer of Project Proponent	Project Proponent
10	Water Pollution • Waste water arising from washing of: Spillage on floor Used bottles	• Control of groundwater or surface water pollution from operational activities.	• Preventative Maintenance and Monitoring Program • Installation of effluent treatment so any wastewater produced complies with wastewater standards of PEQS • Runoff water is collected in the pond and discharged after appropriate treatment • Awareness training to be provided to all personnel regarding responsibilities to the environment.	HSE officer of Project Proponent	Project Proponent

Scanned with CamScanner

11	Solid wastes • Sewage and Packaging materals.	• Proper & safe handling and disposal of waste. Compliance with applicable waste management rules for waste disposal. • Implementation of waste management plan	• Implementation of waste management program consisting of reduce, reuse and re-cycling of materials • Systematic collection and protected storage of waste • Waste disposal at appropriate and designated site • Inspection and preventative maintenance of operational equipment and waste handling	HSE officer of Project Proponent	Project Proponent
12	Health Hazards There may be high risk of following health hazards due to chemicals: • Skin diseases, Eye irritation, Lung's diseases, Manual handling, Lifting, holding, putting down, Pushing, Pulling, Carrying or movement of a load, Are few of the largest cause of injury in the	• Workers Health and Safety	• Workers would be provided with pre- employment medical checkups and during employment periodic health Checkups • Proper treatment of effluent before disposal • Provision of personal protective equipment • Workers would be trained to handle chemicals and heavy loads.	HSE officer of Project Proponent	Project Proponent
13	Emergency response There are always chances of natural or manmade disasters like: • Fires due to electrical short circuiting	• Prevention of any possibility of site accident	The following mitigation measures will be adopted to minimize or eliminate the emergency situations: • The design of building will incorporate emergency exits during emergency situation • Adequate water tanks should be designed, which could supply adequate quantity of water for firefighting during emergency. • Take boundary of safety tape around the electrical implements. • Never permit smoking, fires, or welding within the	HSE officer of Project Proponent	Project Proponent

Scanned with CamScanner

			immediate area. • Avoid excessive heat, flame, or ignition sources. • Locate an ABC-type fire extinguisher in close proximity Avoid sources of high temperature and sparks in mixing areas		
			• Training of staff and employee will be conducted with regular intervals in order to train them. • First Aid facilities will be available at each block • The emergency numbers of Government Departments like Rescue 1122, Civil Defense, Fire Fighting, Bomb Disposal Squad, Local Police Station will be displayed at appropriate site.		
14	TRAFFIC AND TRANSPORT Increased heavy vehicles traffic	• Reduces risk of heavy traffic loads and related problems.	• Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered.	HSE officer of Project Proponent	Project Proponent
15	Access to social services Employment opportunities	• Empowerment of locals to possible extent. • Increase in employment and business opportunities for locals.	• Provision of employment to every affected person on fair Basis.	HSE officer of Project Proponent	Project Proponent

Scanned with CamScanner

Monitoring Plan

opponent will ensure overall monitoring the project so that all intended activities may take place in ordance with environmental assessment. Monitoring will be done on quarterly basis.

SR. NO.	MONITORING PARAMETER	MONITORIG LOCATION	REMARKS
1	NOISE	Construction Vehicle/ Machinery/ Welding work	Construction vehicles / machinery will be checked regularly for noise level by the contractor during construction phase.
2	SMOKE EMISSIONS	Construction Vehicle/ Machinery/ generators	Construction vehicles / machinery / generators will be checked regularly for smoke emissions by the contractor during construction phase.
3	WATER QUALITY	Ground Water/Surface Water	Sampling and laboratory testing will be done on monthly basis during the Construction.

5.8 Training schedules

Training for the management/contractors/engineers and workers on environmental aspects of the project will be arranged. It will be imparted by a team of experienced trainers. Training will be done on monthly basis.

5.9 Need for Disaster Management and Emergency Response System

In order to cope up with the possible hazards, it is imperative to prepare the Disaster Management Plan and rehearse it frequently. To evaluate effectiveness of the system preparedness exercises and drills should be undertaken frequently. Small courses should be run to train the relevant persons about their actions during emergency. The administration staff need to be familiar with the firefighting procedures and equipment.

Scanned with CamScanner

Equipment Maintenance Detail

subject project is Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., ated at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura, the ponent of the subject project will maintain records for Health Safety & Environment and will hire nvironment/HSE manager to check and deal with the HSE issues. The subject project will maintain ical facilities, firefighting Equipment's as fire buckets, fire hydrants and fire extinguishers and records their periodic fillings or replacement and will ensure proper housekeeping and essentials facilities.

Environmental Budget

is also required to effectively implement the mitigation measures is important for the sustainability of Project both in the construction and operation stages of the Project. Project proponent will allocate the ronmental Budget for the Training, maintenance and management of Environment is 100,000/- arterly that will include filling and maintenance of equipment's, restoration, plantation, and strategic ning to cope with any emergency situation and formulate the disaster management plan to cope with ural disaster. Any equipment or devices failure or replacement will not be included in this budget.

Schedule of implementation

e proponent is waiting for the environmental approval from environmental protection department. No truction work has been initiated so far as the company is waiting for the Environmental Approval m the Department. After the approval, the project construction work would be carried out within 6-8 nths.

Scanned with CamScanner

Activities	2.5 Months			2.5 Months			2.5 Months			2.5 Months		
	4W	4W	2W	4W	4W	2W	4W	4W	2W	4W	4W	2W
Detailed Designing												
Mobilization of Contractors												
Lean Development Period												
Peak installation Period												
Plantation at Site												
Commissioning												
Weeks												

5.13 Environmental Practitioners and Experts

Name	Post	Qualification
Talha Abid	HSE Manager	MPhil Environmental Sciences (NEBOSH)
Ali Malik	HSE Officer	MPhil Environmental Sciences
M Abuzar	Senior Environmentalist	BS Environmental Sciences
Masooma Batool	Senior Environmental Officer	MPhil Environmental Sciences
Mubeen Sohail	HSE Officer	BS Environmental Sciences
Fajar Waheed	Environmentalist	BS Environmental Sciences
Muhammad Haris	Environmentalist	BS Environmental Sciences

Following functionaries will be involved in the implementation of EMMP:

- The project Proponent as owners of the EMMP.
- Project contractor(s) as executors of the EMMP during installation and operational phase of the project.
- Operational & Maintenance (O&M) and the Health, Safety and Environment team of the project as an executor of the EMMP during the installation and operational phase of the project.

Scanned with CamScanner

Designation	Responsibilities
Manager	• Direct operations at the site. • He will act as team lead. • Interact with other executives, staff and community residents. • Effectively motivate staff to follow protocols and to work productively. • Look after the Health and Safety Related issues. • Responsible for scheduling staff and ensuring that supplies are stocked. • He will play a direct role in developing business goals for the project they run, and he will help to produce a business plan to ensure that those goals are met.
Accountant	• Proper management of the funds for the CSR. • Development of fund proposal for environment related expenses. • Ensuring the smooth transaction of funds for environmental related projects/activities. • He will prepare the yearly budget. • Taking minutes in meetings and other administrative duties. • During his shift timings, he will be responsible to look into smooth functioning of the process in environmentally sustainable way. • He will be responsible to rectify any problem regarding environmental matter in collaboration with concerned authorities. • Prepare reports on different events and incidents. • He will report all matters regarding E.M. to the manager.

Responsibilities of Functionaries

- Responsibilities of Management of Project

Management of the project will be responsible for the environmental management and supervisory affairs during the project activities. Environmental personnel designated by the management of the project will look after the environmental related issues during the project activities. The responsibilities of environmental personnel are as follows:

- Monitoring progress of the project as per planned schedule of activities.
- Exercising oversight over the implementation of environmental mitigation measures by the contractor.
- Documenting the experience in the implementation of the environmental process.
- Preparing training materials and implementing programs.

Scanned with CamScanner

- Maintaining interfaces with the other lined departments/ stakeholders and
- Reporting to the management of the project on the status of EMMP implementation.

5.14 Proposed Environmental Management and Monitoring Plan (EMMP)

The Environmental Management and Monitoring Plan (EMMP) will be used as a management and monitoring tool for implementation of the mitigation measures identified in the EIA report.

The EMMP matrix lists down:

- The required mitigation measures recommended in the EIA report.
- The person/organization directly responsible for adhering to or executing the required mitigation measures and monitoring adherence to the mitigation measures.
- The parameters, which will be monitored to ensure compliance with the mitigation measures.
- The timing at which the mitigation or monitoring has to be carried out.
- Budget allocated for management practices (cost of EMMP).
- Project Proponent will hold primary and overall responsibility for ensuring full implementation of the EMMP.

5.15 Proposed Monitoring Program to Asses performance or output of EMP

Monitoring Instrument:

Particulate Matter (PM10)

For PM10 mini volume air sampler was used. In PM10 Sampler air is drawn into the omnidirectional inlet head at a flow rate of 20 LPM. The air is then accelerated toward the first impaction stage where particulate with aerodynamic diameters greater than 10 µm are collected (filtered out). The air stream, carrying particulate 10 microns and smaller, continues down the inlet toward the second impaction stage where particles larger than 2.5 microns are collected. Finally, particulate 2.5 mm and smaller continue down the inlet where they are collected on a 46.2 mm diameter, ring supported filter media disc.

Noise Level

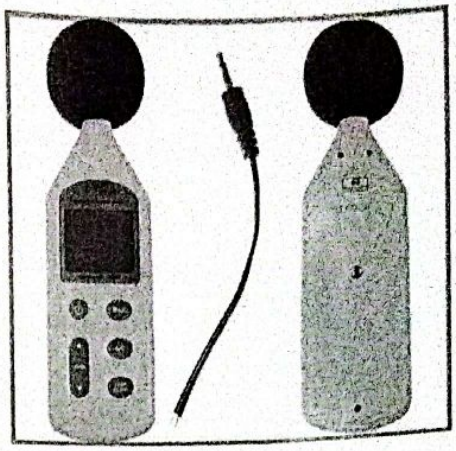
The description of the instrument used for the noise level monitoring is given below:

Scanned with CamScanner

Name: Digital sound level meter

Model: AR824

Company: Intel Instruments plus



Features:

- ✓ +/-1.5 dB accuracy with 0.1 dB resolution
- ✓ A&C weighting
- ✓ Four Measurement Level Ranges
- ✓ Overall range: 30-130 dB
- ✓ Frequency Range: 31.5 Hz to 8 kHz
- ✓ AC and DC output
- ✓ Record Max values over time
- ✓ Over range indication
- ✓ Auto power off and Max Hold functions
- ✓ Utilizes 0.5"(12.7mm) condenser microphone

Calibration:

Self-calibration time: 10 sec (every turn on)

Specification:

- ✓ Display: Large 5 Digit LCD
- ✓ Resolution: 0.1 dB
- ✓ Overall Range: 30 to 130 dB "A", 35 to 130 dB "C"
- ✓ Sound Level Ranges: 30-80 dB, 50-100 dB, 60-110 dB, 80-130 dB
- ✓ Basic Accuracy: +/-1.5 dB
- ✓ Time Weighting: Fast or Slow
- ✓ Sampling Frequency: 2/sec

Methodology adopted:

Noise level measurements were carried out in a way that monitoring round was completed in one go.

Sources of Noise Pollution

Scanned with CamScanner

Major sources of noise generation are industrial activities and vehicular traffic along the main road. Noise levels were monitored within and outside of boundary walls of the project site. Noise profile of the project site near the main road is shown in sub-section.

Water Quality:

Lab analysis results of ground water in the area has already submitted in EPA, with case submission documents.

Proposed EMP reporting and reviewing procedure

The EMP shall specify the procedures for the review and revision of the EMP during Project implementation and have a version control procedure. At a minimum, the site-specific EMP shall be reviewed by the Contractor to determine if an amendment or a major revision is warranted:

- At least once every six (6) months or on a seasonal basis;
- As a result of changes in the project or changes in the anticipated environmental effects of the project;
- After corrective actions have been taken in response to an environmental incident;
- After an adaptive management measure has been proposed;
- A material revision is one which would be relevant to the question of whether an adverse environmental effect is more likely to occur, or become more adverse, and be significant;
- After a material revision of the EMP is proposed that changes a commitment such as:
    - a reduction or increase of monitoring or reporting requirements; or making a specification less stringent or more stringent

Scanned with CamScanner

6.2 ENVIRONMENTAL MANAGEMENT PLAN

Serial No	Environmental Parameter/ Element	Mitigation measure to be taken during:		Responsibility
		Construction	Regular operations	
Physical Environment				
1	Waste water	-The sewage to be generated shall be discharged into the **Waste Water Treatment** Facility for its treatment and then it will drain into nearby drain -Domestic/construction waste water after Treatment will be drained into nearby local sewage drain. Periodic cleaning of the Waste Water Treatment Facility is Recommended	The sewage to be generated shall be discharged into the Waste Water Treatment Facility (WWTP) for treatment at PEQS levels. Sewage and other waste effluents will be handled to avoid contaminating surface and groundwater. No contaminated effluents will be released into the environment without having been treated. Monitoring will be conducted by EPA certified lab if required	Environmental/Project Manager

Scanned with CamScanner

2- Health & safety	Local people will be informed in advance when work is about to start in an area. This may result in people keeping young children away from work areas. Safe driving practices will be adopted, particularly while passing through settlements Job opportunity will be provided to local people of the area Basic health facilities will be provided to employees	Fire Fighting Equipment's & system will be installed. Basic health facilities will be provided to Employees Security guards will be present Job opportunity will be provided to local people of the area	Environmental/Project Manager
3- Water supply	It shall be ensured that no activity tempers with the water supply system.	It shall be ensured that no activity tempers with the water supply system. Project proponent committed to provide safe drinking water to all workers and staff	Environmental/Project Manager
4. Solid wastes	Limited solid wastes from the construction activities shall be segregated and duly disposed-off. The solid redundant material will be disposed-off away from the city adequately. None of these wastes shall be accumulated	Solid waste will be handed over to the local Government after collection Solid waste bins will be placed at suitable places Area for solid waste disposal will be allocated within the subject project	Environmental/Project Manager

Scanned with CamScanner

	on site. It shall be ensured that none of the wastes or materials of construction spread on the public roads or on the foot path or else. Construction Solid waste will be stored in solid waste bins and will be handed over to Sheikhupura Development Authority (FDA) Solid waste management division, and also, construction waste will be used for road repairing and maintenance purpose.	Sludge will be replaced on regular basis. Proper solid waste management system will be adopted.	

Scanned with CamScanner

5	Noise	In order to avoid noise in the project area, vehicles to carry raw materials, shall be operated during night time as far as possible. The project construction activities don't involve any activity which may create high noise levels. Ear plugs will be provided & implemented..	In order to avoid noise in the project area, vehicles to carry domestic and commercial materials, shall be operated during night as far as possible. No activity producing extra ordinary levels of noise will be allowed as a policy matter. Generators will be installed in a specially constructed room where its noise will be curtailed within the limiting values of the	Environmental/Project Manager
6	Gaseous emissions and particulate matter/dust emissions	Construction materials i.e., sand, clay and like will be transported to the project site during night time and will be stored away from the road or foot path. They will be kept under cover to avoid any fugitive dust. Dust may generate during unloading of raw materials.	Diesel fired generator shall cater for emergency situation only. Their exhaust will be emitted through an adequately fabricated stack. Monitoring will be conducted as per PEQS if required	Environmental/Project Manager

Scanned with CamScanner

		All equipment, generators, and vehicles used during the project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions. All project vehicles will be checked emitting smoke. Ambient air quality has been monitored by EPA certified Lab and results are incorporated within the report.		
7	Soil erosion	The clearing of vegetation along proposed site will be minimized as far as possible. Minor & scattered vegetation is present that include shrubs and grasses only. Open fires will not be allowed anywhere outside the proposed site. Fuel-wood and shrubs will not be used as fuel during project activities.	Maximum plantation is recommended within at outside the land subdivision and for this area is reserved. Tarpaulin sheets will be placed under generator (s), and other leaching substances. Land will be restored by planting indigenous plants	Environmental/Project Manager

Scanned with CamScanner

8	Traffic-related Problems	The vehicles number will be regulated in a way that no stampedes occur on the site. As far as possible, large size vehicles in very limited number may visit the project site during night time.	The project site has additional area reserved exclusively for parking cars and motor cycles. No vehicle or motor cycle will be allowed to be parked in the front of the road and project as well.	Environmental/Project Manager
9	Trash burning	No trash burning will be allowed in or oust side the unit building.	No trash burning will be allowed on the roads and streets.	Environmental/Project Manager
10	Dust	The open place in front of the building will be duly cleaned after sprinkling of water to avoid any dust to spread around.	Plantation will be ensured in open space to avoid dust.	Environmental/Project Manager
BIOLOGICAL ENVIRONMENT				
11	Fauna and Flora	Proposed site is devoid - off any protected species of both fauna & flora	Awareness programs will be planned regarding the protection of fauna & flora. Species of Indigenous plants will be planted at site.	Environmental/Project Manager
SOCIOECONOMIC IMPACTS				

Scanned with CamScanner

12	Resettlement Issues	There is no any issue of resettlement due to the construction of the subject project.	There will not be any issue of resettlement due to the operation of the subject project.	Environmental/Project Manager
13	Change in Cultural Language	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	proponent
14	Education	School and colleges exist in the area. The project proponent will initiate an educational awareness program.	School and colleges exist in the area. The project proponent is committed to initiate an educational awareness program	proponent
15	Health	Heath facility already exists near the project site at the distance of about 1-km. The project proponent should provide first aid facilities at site and also social security and medical checkups of the workers.	Heath facility already exists near the project site at the distance of about 1-km. The project proponent is committed to provide first aid facilities at site and also social security and medical checkups of the workers.	proponent

Scanned with CamScanner

16	Culture, Norms of the area	Maximum local employment should be ensured to preserve the culture of the Area	Maximum local employment should be ensured to preserve the culture of the Area.	proponent
17	Gender inequality	Women involvement in decision making process should be ensured.	Women involvement in decision making process should be ensured.	proponent

Scanned with CamScanner

CHAPTER # 6

INVOLVEMENT OF STAKEHOLDER/ PUBLIC CONSULTATION

6.1 EIA and Public Consultation Process

Stakeholder participation in planning and management of the social and environmental issues assists in reducing the concerns of stakeholders and hence increases public acceptance towards development programs. Consultation process entitles the stakeholders with opportunities to participate in key decisions that will affect their lives. Therefore, detailed public consultation meetings were arranged at different levels of the planning process. For this purpose, periodic consultation meetings were held with various project stakeholders. Different aspects and impacts of the proposed project were highlighted regarding their impacts on the physical, biological, and socio-economic environment of the project area. Stakeholders' trepidations regarding various aspects like existing environment, and impacts of the project on the surrounding environment were emphasized and have been added to this EIA report.

6.2 Proponent

Muhammad Yahya Khan S/O Saif Ur Rehman Khan R/O Raiwind Road, Flat No 243-A, Government Offices Housing Society, Lahore

6.3 Objectives of the Public/Stakeholders Consultation

Public consultation plays a vital role in studying stakeholders' perspectives regarding the project and henceforth the successful implementation and execution of the proposed project. Public involvement is a compulsory feature of Environmental Impact Assessment, which leads to improved and acceptable decision-making. 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 activities from public perception. The consultation sessions also served as a source of firsthand information about the users and the beneficiaries' expectations from the project. Dialogue with the stakeholders and recording their concerns at appropriate stages of the project would help to tailor the project in line with stakeholders' aspirations and so increases the likelihood for public acceptance of the project and its subcomponents. It also helps to develop and maintain communication links between the project proponents and stakeholders, providing opportunities to the public to influence the project design in a positive manner. This ensures that the views and concerns of the

Scanned with CamScanner

stakeholders are incorporated into the project design and implementation with the objectives of reducing or offsetting negative impacts and enhancing benefits of the proposed project.

6.4 Methodology

6.4.1 Responsible Authority

The consultation process began with the identification of the most pertinent stakeholders. Identification of the stakeholders for the proposed project plays a crucial role in development and also assists in quantifying the role of different stakeholders involved. Impacts identified by the stakeholders are measured through matrix method and mitigation measures are proposed according to the intensity of the identified impacts. Efforts were made to identify the relevant stakeholders through a systematic process based on the nature and degree of their actual and perceived stakes related to the project.

6.4.2 Issues Discussed with the stakeholders

Following issues were discussed during the stakeholder consultation meetings:

- Concerns, apprehensions, and views of the community and the stakeholders over the project activities relating to design, construction and operational aspects.
- Probable adverse impacts of the project activities on various components of the environment i.e., physical, biological, and social components.
- Possible remedies for the concerns and apprehensions, how the concerns can be effectively addressed?

Identification of any specific personal or site related concerns

- How the project operations can happen in accordance with user/beneficiaries' expectations?
- Beneficial factors and involvement opportunities of the local people in the set of activities of project during construction and operational phases.
- Material's transport management during construction and operational phase of the project.
- Management of water, wastewater and solid waste during construction and operational phase of the project.
- Natural hazards, associated risks and precautionary measures.
- Traffic issues subjected to activities during different phases of the project.

Scanned with CamScanner

Environmental Practitioners and Experts

cording to the EIA rules and regulations, this report will be compiled and submitted to the vironment Protection Department (EPD) and after the review on the report this report will disseminated to the public. This dissemination and information sharing exercise will then followed by public participation through print media in which the public will be requested their reviews. The copies of the report will be placed in the EPA for comments from the blic which will be incorporated in the report. As per rules and regulations, Environment otection Department will hold a public hearing at the proposed project site.

The proposed Project does not have direct impacts on any individual; therefore, no primary stakeholders are identified. Secondary stakeholders are institutional stakeholders, which include Project Proponent, local Government representatives, and Government officials of the relevant departments, NGO, general public, local residents, shop keepers, vendors, hospital owners/staff, teachers, pedestrians, and businessmen/traders of the city. The categories of the stakeholders who provided useful feedback, included:

- Project Proponent
- Government officials
- Environmental practitioners and experts
- Teachers/students
- Shopkeepers

All those stakeholders have different types of stakes according to their involvements in various aspects of the Project. The consultant tried to contact all the stakeholders and shared their views and concerns and also interacted with the community-based organizations that can support the community.

Meetings With Stakeholders/ Environmental Practitioners and experts

A series of consultation was carried out with stakeholders and general public in Industrial Estate Sheikhupura and nearby areas.

The purpose of this survey was to achieve the objectives of the consultation, highlight the main issues in the implementation of the proposed Project and finally propose mitigation measures. Open and close ended questionnaire was used to collect the views concerning the assessment survey. Scoping sessions and informal group discussions were also carried out with local residents and local government representatives regarding the proposed Project. The outcome

Scanned with CamScanner

of whole consultation process was very encouraging. The following issues were discussed during Informal Meetings with local representatives:

i. Brief Description of the Project
ii. Current economic condition in the area
iii. Suggestions for improvement in the current industrial system and all activities related to industry
iv. Perceptions about the proposed Project
v. Perceived impacts of the proposed Project

The local poor people predominantly requested for unskilled and semi-skilled jobs during implementation of the Project. On the basis of the consultations so far, it appears that the Project will have no insurmountable environmental and social impact. The community generally supported the proposed Project. They have opinion that the Project will not only provide livelihood during construction stage, but also will help to eradicate the burning issue of regarding import of materials.

Other Departments and agencies

A series of consultation was carried out with WAPDA, Municipality officers and other government sectors

Responsible Authority

HSE manager will be responsible for all the operational activities

Environmental Practitioners and Experts

Name	Post	Qualification
Talha Abid	HSE Manager	MPhil Environmental Sciences (NEBOSH)
Ali Malik	HSE Officer	MPhil Environmental Sciences
M Abuzar	Senior Environmentalist	BS Environmental Sciences
Masooma Batool	Senior Environmental Officer	MPhil Environmental Sciences
Mubeen Sohail	HSE Officer	BS Environmental Sciences
Fajar Waheed	Environmentalist	BS Environmental Sciences
Muhammad Haris	Environmentalist	BS Environmental Sciences

Scanned with CamScanner

oponent Environment Management Team

Talha Abid	HSE Manager
Ali Malik	HSE Officer
Abdul Rehman	Senior Environmentalist

ffected and Wider Community

There is no population present in the safe radius of the site that's why community will not be disturbed due to project operation. Although the opportunity of employment will increase if the project will approve.

Summary of Issues Raised by Stakeholders

A summary of the key issues raised by stakeholders and how these are being addressed by Project Proponent is provided in Table below.

	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
ployment portunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Around 100 people will be employed by the industry.
ining portunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodating. The internship program will offer to the students to develop professional skills.
alth & fety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concrete.	Development of Transport Management Plan including traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.

Scanned with CamScanner

...y and ...s ...pment	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so, they can become suppliers.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.
...onmental	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.
...r quantity and ...ty	Water quality and quantity, and impacts from the wastewater disposal are all key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program. Water treatment will be done by the proponent that will help to safe disposal of the water.

Scanned with CamScanner

CHAPTER NO # 07

ASSESSING IMPACTS

7.1 Methodological Approach to Assessing Impacts

The main impacts of the policy which need to be assessed are summarized below.

Social / Public Health impacts
• Changes in health outcomes for patients
Economic impacts
• Changes in expenditure on pharmaceuticals (plus any changes in other healthcare costs)
• Costs incurred by industry in providing additional information to patients
• Costs of enforcing information provision standards
• Administrative burdens associated with notifying the regulatory body of information provision
• Other possible impacts (e.g. on competition and innovation)
Environmental impacts
• No significant environmental impacts have been identified.

A number of elements of research have been carried out to gather data to inform an assessment of these impacts:

- The literature review has generated some useful qualitative and quantitative material relevant to the impact of providing information to patients about medicinal products and health-related issues in order to gather evidence on.
  - The effects on patients, health professionals, health systems and public health of the provision of information to patients on medicinal products and illnesses.
  - The distinction between information and advertising.
  - The relative effectiveness of different information channels, such as the internet and written information.
  - The effects of how information is presented (drawing on behavioral economics research into framing effects).

7.2 Evaluation of Identified Impacts

Methodology adopted for the identification, evaluation and analysis of environmental impacts by the proposed project is "Matrix Method and Significance Rating of Impacts".

Scanned with CamScanner

Environmental impact Matrices

The environmental impact matrices have been developed to evaluate magnitude of the impacts of various project activities on different environmental settings for construction and operation phases and are shown in **Tables** respectively.

A Matrix method helps in identifying the potential temporal & spatial impact and screens the project for environmental and social soundness. Each project activity is screened separately with regard to its construction and operation phases according to the various physical, ecological and social parameters. These impacts are characterized on the basis of extent, timing, magnitude, reversibility, probability, nature and duration. **Table 7.1 shows** the characterization of impacts

Scanned with CamScanner

Table 7.1 Environmental impact Evaluation Matrix during Construction Phase

	VEC/VSE	VEC/VSE Rating	Establishment and Functioning of Construction Camps workshops etc.	Excavation Operation of burrow and quarry Areas.	Transportation of construction Materials and Equipment's	Open storage of Construction materials, fuels etc.	Operation of Concrete	Functioning of Power generators	Land Acquisitions	Solid & Liquid waste management	Impact Score
Components	Air Quality and dust	0.10	-3	-3	-2	-2	-3	-2	0	-1	-1.6
	Soil Erosion & contamination	0.05	-2	-2	-3	-2	-3	-1	0	-3	-0.8
	Ground water Quality	0.10	-3	-2	-2	-2	-2	-1	0	-2	-1.4
	Noise	0.10	-3	-4	-2	0	-3	-3	0	-1	-1.6
	Flora	0.12	-1	-2	-2	-1	-1	0	0	-1	-1.0
Bi physical environment e	Fauna	0.06	-2	-2	-2	-1	-2	-2	-2	-2	-0.9

Scanned with CamScanner

Socioeconomic Environment	Traffic management	**0.20**	**-3**	**-3**	**-4**	**-3**	**-2**	**-1**	**0**	**-2**	**-3.6**
	Social and cultural conflict	**0.07**	**-3**	**0**	**-1**	**-1**	**-1**	**-1**	**-4**	**-2**	**-0.9**
	Health and safety of Workers & community	**0.10**	**-3**	**-3**	**-3**	**-2**	**-3**	**-2**	**0**	**-3**	**-1.9**
	Employment/ Economic activity	**0.10**	**3**	**3**	**2**	**0**	**1**	**1**	**-4**	**3**	**0.9**
		Legend	+Positive	0	No impact	2	Minimum impact	4	Severe impact		
			-Negative	1	Negligible impact	3	Moderate impact				

Scanned with CamScanner

Environmental Impact Evaluation Matrix during Operational Phase

	Components	Valued Ecological components	VECs Rating	Activities			
				Movement of Vehicles	Vehicles Emission	Dumping of solid waste in drain	
	Biophysical Environment	Flora	0.05	0	-2	0	-0.10
		Fauna	0.05	-3	0	0	-0.15
		Noise and Vibration	0.10	-3	0	0	-0.30
		Drainage	0.20	-2	0	-3	-1.0
	Socio Economic Environment	Road Safety	0.20	-4	0	-4	-1.60
		Economic Activity	0.15	3	0	0	0.45
		Traffic Management	0.25	4	0	-3	0.25
Legend	+Positive	0	No impact	2	Minor impact	4	Severe impact
	-Negative	1	Negligible impact	3	Moderate impact		

Scanned with CamScanner

Environmental Impact Evaluation Matrix during Operational Phase

	Components	Valued Ecological components	VECs Rating	Activities			
				Movement of Vehicles	Vehicles Emission	Dumping of solid waste in drain	
	Biophysical Environment	Flora	0.05	0	-2	0	-0.10
		Fauna	0.05	-3	0	0	-0.15
		Noise and Vibration	0.10	-3	0	0	-0.30
		Drainage	0.20	-2	0	-3	-1.0
	Socio Economic Environment	Road Safety	0.20	-4	0	-4	-1.60
		Economic Activity	0.15	3	0	0	0.45
		Traffic Management	0.25	4	0	-3	0.25
Legend	+Positive	0	No impact	2	Minor impact	4	Severe impact
	-Negative	1	Negligible impact	3	Moderate impact		

Entertech Labs (Pvt) Ltd.
114 E Nawab Town, Raiwind Road, Lahore.
Phone: +92 423 2326882, +92 302 4707938,
Waqas.ahmed@iesolutions.pkiesolutions.pk

Scanned with CamScanner

7.2 Characterization of Impacts

	Timing	Magnitude	Reversibility	Probability	Nature	Duration
	Short Term	Negligible	No Change	Very Unlikely	Indirect	Temporary
	Medium Term	Low	Reversible	Unlikely	Direct	Permanent
	Long Term	Medium	Slowly Reversible	Likely		
Regional	Multi-year and Permanent Impact	High	Irreversible	Certain		

Table Characterization of Impacts

In addition to assigning the numerical values to each marked box in the Matrix, plus (+) or minus (-) signs are used to show whether an impact is beneficial or adverse. The weighted matrix was applied to the environmental components listed on the y-axis against the activities of the proposed project listed on the x-axis prior to mitigation measures. In this process, numerical values were assigned from 0 to 1 for biophysical environment and socio-economic environment to indicate the significance of the affected environmental and social components. These numerical values were then multiplied with the individual project activity rating/values and all added to get an overall impact score. This impact score gives the relative significance of impacts for a specific component. The highest impact score gives the level of significance of that impact.

7.3.1 *Identification of VECs*

Biophysical and human environments that, if altered by the project, would be of concern to regulatory agencies, indigenous community, resource managers, scientists, stakeholders, and/or the general public. VECs are typically selected for assessment on the basis of regulatory issues, guidelines, and requirements; consultation with

Scanned with CamScanner

ency agencies, the public, stakeholder groups; field reconnaissance; and the ssional judgment of the Study Team.

Significance Rating of Impacts

overall significance of the impacts was defined based on the result of a combination he ratings. Each identified impact was analyzed individually according to a number criteria including descriptions of their extent, timing, magnitude, reversibility, bability, nature and duration. Taking into account these criteria, potential ificance was classified as either:

- Low: The impact which has a slight influence on the natural and socio-economic environment;
- Medium: The impact which can be eliminated/ mitigated after applying the appropriate mitigation measures; and
- High: an impact, which, if not mitigated, could stop the project from proceeding

7.4 Delineation of Project Corridor of Impact (COI)

COI is a limit which identifies the area where direct and indirect impacts of the project activities are envisaged like existence of forests, game reserves, wetlands, archaeological sites etc. The limit for COI for the proposed project is taken as 250 meter radius for collection of baseline information, impacts assessment and mitigation measures of physical, ecological as well as social resources. As the location of construction/contractor camps, vehicles, equipment yard, material quarry areas and access tracks have not been defined yet, so impacts evaluated due to these facilities in this section will be of generic nature

Scanned with CamScanner

CHAPTER NO # 8

MITIGATION AND IMPACT ASSESSMENT

Purpose of Mitigation Measure

...basic purpose of mitigation measures is to reduce the impacts of the project "Construction ...Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-...am Business Park on Lahore-Islamabad Motorway, at Sheikhupura, on the socio-...vironment up to the maximum possible extent. The mitigation measures are suggested based ...the following parameters:

8.2 When problem will occur and when it should be addressed?

The impacts from the Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. ...Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at ...Sheikhupura, will occur during the development and operation due to the civil work involved ...and the people residing in the project area. These issues included; noise generation, fugitive ...dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and ...Safety issues and change in the geographic features of the area. These all problems should be ...addressed on-site where they are being generated, to avoid the residual or adverse impacts.

8.3 Where problem should be addressed?

The problem will be generated from site development and operation of the unit. So, it should ...be addressed on source i.e., at site within the same timeframe.

8.4 How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. ...For example, against dust emissions sprinkling of water may be done on regular basis, for solid ...waste proper solid waste management and disposal practices may be adopted, to manage liquid ...waste proper treatment may be made before discharging into the receiving body.

8.5 Ways of Achieving Mitigation Measures?

Following ways will be adopted to reduce the impacts of the quarrying:

Scanned with CamScanner

8.5.1 Changing in Planning Design

For the process, industrial land is selected. The process selected for Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd. Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura. Project is the controlled system where physical, biological and chemical hazards are controlled or managed effectively. The chances of the biological contamination are reduced significantly. There is no endangered and threatened species present in the project area that could be impacted due to the installation of the facility. Moreover, there is not any human settlement or infrastructure that will be dislocated or dismantled due to the proposed project development. No adverse impact is therefore being envisaged due to the installation of the facility in the proposed location as the process employed is controlled as for the management. Hence, there is no need to change the design of project.

8.5.2 Improved Management and Monitoring Practices

The anticipated impacts had been reduced significantly by adopting better management activities, as it will be carried out for betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the wastewater generation, solid waste management, by-product management, noise and public nuisances in check. Following practices that need to be adopted to reduce the impact significantly

a. Compensation in Money Terms

Due to the construction of the facility, the vegetation present on site will be removed and the geography/landscape of the area will be slightly changed on the permanent basis, however, there is no protected or environmentally sensitive area present within 10.0 km vicinity of the project that could be impacted due to the Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura project. Hence, no compensation in the will be required. However, for the removal of the one tree from the leased area 3-5 trees will be planted as the compensation along the facility boundary.

Scanned with CamScanner

b. Replacement/Relocation/Rehabilitation

The proposed project is located in industrial area. There is no sensitive area, population or natural resource is present which could be impacted due to the installation of the facility. No replacement, relocation and rehabilitation are required because construction and operational phase

Scanned with CamScanner

CHAPTER # 9

CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

- The EIA study reveals that the project is economically viable, socially acceptable and environment friendly. On completion of the project Construction of Veterinary pharmaceutical Unit by M/S BROMED Pvt. Ltd., Located at 26-D Quaid-e-Azam Business Park on Lahore-Islamabad Motorway, at Sheikhupura, it will generate additional jobs during construction and operation phases.
- Project is environmentally friendly and pollution free
- The proponent has committed to implement the project in the environment friendly manner.
- Project proponent has ensured to install the WWTP to treat the wastewater prior to discharge into drain or use for irrigation purposes.
- Project proponent has ensured to adopt the proper solid waste management
- Proponent has ensured to adopt all the necessary measures to control any impact if resulting from the project.
- Project proponent has ensured to provide the safe drinking water to all workers and staff.
- Project proponent has prepared and implemented very comprehensive Emergency Preparedness and Response Standard Operating Procedures.
- Project proponent has prepared and implemented very comprehensive Security and Fire Fighting Standards Operating Procedures.

Main environmental issues are as under:

- Production of Solid Waste
- Generation of waste water
- Generation Noise

Scanned with CamScanner

- Traffic issues
- Health and Safety issues

9.2 Recommendations

- In view of the comprehensive screening process and findings of the present study there is no need of conducting further investigations.
- Tree plantation.
- RO Plant recommended for the safe drinking water supply to the workers of industry
- Waste water treatment Facility should be installed.
- Proper solid waste management system should be followed according to direction of the Local Government.
- The untreated wastewater should not be reused for irrigating the vegetation and lawns without treatment.
- High standards of bio-security and safety should be enforced during operation stage. Safety of the workers should be top priority for the management.
- Industry should continue to assist the local communities as a corporate/social responsibility.
- The present EIA report is enough to meet the administrative and legal framework. Therefore, the environmental approval may be accorded for the present project.

Scanned with CamScanner

TERM OF REFERENCES

1.0 Introduction

IES Environmental Solutions has been asked to submit the technical proposal for this project to fulfill the legal requirements under Pakistan Environmental Protection Act 1997 (amended 2012).

Part A- Completion of EIA

2. Environmental Impact Analysis

The proponent is required to prepare an environmental assessment study and get approval from EPA prior to commencement of the project.

3. Responsibility of Consultant

The consultant would undertake surveys, conduct studies, consult with the community and compile the EIA report. The EIA should cover all likely construction and operation activities and will include, but not to be limited to, an assessment of the environmental and social impacts relating to the land.

The following tasks shall be conducted for the completion of work.

1) Procedure of Environmental Assessment

After the award of work of Environmental Assessment study, consultant will carry out following activities:

a. Kick of meeting with client to collect the requisite information regarding project i.e. Design reports, drawings, feasibility study, topographic survey etc. Site topographical surveys and underground reservoir survey reports will be shared by client.
b. Site survey and environmental monitoring of groundwater, noise, wastewater and ambient air quality.
c. Socioeconomic survey of the area.

Scanned with CamScanner

d. Secondary data collection from district department (Forest, drainage, meteorological)
e. Assessment of environmental and socioeconomic project and mitigation measures
f. Preparation of environmental management and monitoring plan.
g. Environmental assessment report preparation and submission to client for review and comments if any.
h. Follow up of case in EPA till its final Environmental Approval Responsibilities of the Client

Responsibilities of the Client

I. Provision of necessary documents and studies about the features and description of the project.
II. Provision of copy of the geotechnical study including seismic study.
III. Site topographical surveys and underground reservoir survey reports.
IV. Basic data for quantification of solid waste, water use, wastewater and its safe disposal.
V. Detail of each commercial activity and its expected magnitude.
VI. Provision of review fee for EPD.
VII. Health and safety plan.

B) Securing NOC and Approval from Govt. Departments

a. Consultant will prepare and submit a complete final Environmental Assessment report to the client along with requisite documents provided by the proponent for onward submission to EPA Punjab securing NOC.
b. Consultant, as required by environmental law, will submit the report along with bank draft of review fee in the name DG EPA, application, affidavit and undertaking provided by the client.
c. EPA Punjab raises queries on EIA report and sends to the client. At this stage, consultant will reply all the queries raised by EPA. Client/Consultant will submit the reply to EPA.
d. After the approval of Environmental report, a notice for the committee of experts for the proposed project will be issued by EPA Punjab. Consultant will prepare and deliver presentation before committee of experts. All the questions raised by committee of experts will be responded by the consultant.

Scanned with CamScanner

e. After committee of experts, NOC is issued to the client.

f. Consultant will facilitate the client till the issuance of NOC by concerned Government Department from EPA Punjab.

Consultant **Proponent**

Scanned with CamScanner

Glossary

- **Ambient:** relating to the immediate surroundings of something
- **Base line:** Conditions prevailing at the time of study or before initiation of any project
- **Baseline:** Conditions prevailing at the time of study or before initiation of any project
- **Discharge:** means spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping
- **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 vapor
- **Environment budget:** Monitory assets reserve for environmental activity.
- **Environment:** means air, water and land; all layers of the atmosphere; all organic and inorganic matter and living organisms; the ecosystem and ecological relationships; buildings, structures, roads, facilities and works; all social and economic conditions affecting community life; and the inter-relationships between any of the factors mentioned
- **Environmental Impact Assessment:** means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, migratory 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
- **Fauna:** Animal life occurring in particular region or time.
- **Flora:** plant life occurring in particular region or time.
- **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 environmental effect for requiring preparation of an environmental impact assessment
- **National Environmental Quality Standards:** means the permissible standards for emission of air pollutants and noise and for discharge of effluent and waste

Scanned with CamScanner

- **Nuisance:** A person, thing or circumstances causing inconvenience or annoyance.
- **pH:** negative log of hydrogen concentration:
- **Proponent:** the person who intends to carry-out a proposed project.
- **Sustainability:** means such developments that meet the needs of the present generation without compromising the ability of future generations to meet their needs
- **Waste:** means any material, substance, or by-product eliminated or discarded as no longer useful or required after the completion of a process

Scanned with CamScanner

List of Abbreviation

BOD	Biochemical Oxygen Demand
C&I	Commerce and Investment
CEPTP	Common Effluent Pretreatment Plant
COD	Chemical Oxygen Demand
DCP	Dry Chemical Powder
EIA	Environmental Impact Assessment
EMP	Environmental Management Plant
EMMP	Environmental Mitigation & Monitoring Plan
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
GOP	Government of Pakistan
GOPb	Government of Punjab
HSE	Health, Safety & Environment
HC	Horticulture Committee
IEE	Initial Environmental Examination
Kmp/h	Kilo Meter Per Hour
Km	Kilo Meter
LESCO	Lahore Electricity Company
PEQS	Pakistan Environmental Quality Standards
NOC	No Objection Certificate
NWFP	North West Frontier Province
OSHA	Occupation Health and Safety
PEPA -97	Pakistan Environmental Protection Act, 1997
PCGIP	Punjab Cities of Governance Improvement Project
PM	Particulate Matters

Scanned with CamScanner

PEPO-83	Pakistan Environmental Protection Ordinance, 1983
TDS	Total Dissolved Solids
TMA	Tehsil Municipal Administration
UC	Union Council
WAPDA	Water and Power Development Authority
WWTF	Waste Water Treatment Facility
WHO	World Health Organization
API	American Petroleum Institute
CO_2	Carbon dioxide
°C	Degree Celsius
M/S	Masses
INR	International normalized ratio
FY	Fiscal Year

Scanned with CamScanner

References

i. *Disaster Risk Management Plan, 2008.* State Disaster Management Authority, Government of Punjab

ii. Mughal M.S. and Muslim M., 2010 *RAPID APPRAISAL VEGETATION SURVEY OF MIRPUR AND KOTLI DISTRICTS OF AZAD JAMMU & KASHMIR.* Pakistan Journal of Forestry

iii. *Building Code of Pakistan Seismic Provisions 2007,*

iv. Nasir, Y.J. and Rubina, A.R., 1995, *Wild Flowers of Pakistan,* Oxford University Press, Karachi

v. Pakistan Council of Research in Water Resources, Government of Pakistan, Report *of the National Water Quality Management Programme, Phase I*

vi. Pakistan Council of Research in Water Resources, Government of Pakistan, *Report of the National Water Quality Management Programme, Phase II*

vii. Pakistan Council of Research in Water Resources, Government of Pakistan, *Report of the National Water Quality Management Programme, Phase III*

viii. Pakistan Environmental Protection Agency, Government of Pakistan, Islamabad, *Waste Disposal Guidelines*

ix. Bureau of Statistics, Government of Pakistan, Islamabad, *Population Census of Pakistan, 1998*

x. Pakistan Meteorological Department, Government of Pakistan, Islamabad, *Published Data*

xi. Guidelines for Preparation and Review of Environmental Report

xii. Guidelines for Public Consultation

Scanned with CamScanner

xiii. Labor Laws

xiv. Meteorology Department Data (From Website)

xv. National Environmental Policy

xvi. National Environmental Quality Standards (Self- Monitoring And Reporting By Rules, 2001)

xvii. OSHAS 1800 for Health and Safety

xviii. Environmental Protection Act, 2000

xix. Environmental Protection Agency (Review of IEE/EIA) Regulations 2009

xx. Sectoral Guide Lines for Environmental Reports, Industrial States

xxi. The Land Acquisition Act 1894

Scanned with CamScanner

List of Team Members

Sr. #	Name	Highest Qualification
	Mr. Waqas Ahmad Khan	MPhil Environmental sciences
Members		
	Muhammad Ali Shahid	M.Phil. Environmental sciences, GIS Expert, PGD in Environmental Law (Pu)
	Mr. Abdul Rehman	MPhil Environmental Sciences (UOL)
	Muhammad Haris	BS(Hons) Environmental Sciences (UOL)
	Fajar Waheed	BS(Hons) Environmental Sciences (UOL)
	M.F	Environmentalist

Environmental Practitioners and Experts

Name	Post	Qualification
Talha Abid	HSE Manager	MPhil Environmental Sciences (NEBOSH)
Ali Malik	HSE Officer	MPhil Environmental Sciences
M Abuzar	Senior Environmentalist	BS Environmental Sciences
Masooma Batool	Senior Environmental Officer	MPhil Environmental Sciences
Mubeen Sohail	HSE Officer	BS Environmental Sciences
Fajar Waheed	Environmentalist	BS Environmental Sciences
Muhammad Haris	Environmentalist	BS Environmental Sciences

Environment Management Team

Talha Abid	HSE Manager
Ali Malik	HSE Officer
Abdul Rehman	Senior Environmentalist

Scanned with CamScanner