

GREENFIELD AUTO MANUFACTURING PLANT

**A Project of
HYUNDAI NISHAT MOTOR (PRIVATE) LIMITED**



ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT REPORT (ESIA)

SEPTEMBER 2017

TABLE OF CONTENTS

INTRODUCTION & SCOPE OF ESIA STUDY	8
1. INTRODUCTION & SCOPE OF ESIA STUDY	1
1.1. INTRODUCTION	1
1.2. PROPOSED PROJECT'S PROPONENT	2
1.3. MARKET POTENTIAL IN AUTOMOBILE SECTOR IN PAKISTAN	5
1.4. SCOPE OF ESIA STUDY	7
1.5. APPROACH AND METHODOLOGY	8
1.6. METHODOLOGY FOR EVALUATING IMPACTS	9
1.7. METHODOLOGY FOR EVALUATION OF SOCIO-ECONOMIC AND CULTURAL CONDITIONS; AESTHETIC VALUES; POPULATION AND COMMUNITIES	10
1.7.1. Objective	10
1.7.2. Data Sources and Collection Methodology	10
1.7.3. Study area.....	12
1.7.4. Universe	12
1.8. DETAILS OF RESTORATION AND REHABILITATION AT THE END OF THE PROJECT LIFE	12
POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK	13
2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	13
2.1. APPLICABLE HOST COUNTRY ENVIRONMENTAL AND OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS	13
2.2. NATIONAL ENVIRONMENTAL REGULATORY/LEGAL REQUIREMENTS ...	13
2.3. GUIDELINES FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS (NOVEMBER 1997/2000).....	17
2.3.1. Guidelines for Public Consultations	18
2.3.2. National Environmental Quality Standards (NEQS)-1993, Amended 2000.....	August 18
2.3.3. National Environmental Quality Standards for Ambient Air - November- 2010.....	19
2.3.4. National Standards for Drinking Water Quality - November, 2010.....	19
2.3.5. National Environmental Quality Standards for Noise - November, 2010	19
2.3.6. Sectorial Guidelines for Environmental Reports	19
2.3.7. Guidelines for Sensitive and Critical Areas	20
2.3.8. National Resettlement Policy and Ordinance	20
2.3.9. The National Forest Policy 2001 of Pakistan	20
2.3.10. Forest Act, 1927	21
2.3.11. Industrial Relation Ordinance, 2002	22
2.3.12. Pakistan Explosive Act, 1884 [updated December 6, 2014]	23
2.3.13. Provincial Local Government Ordinances, 2001	23
2.3.14. Factories Act, 1934	23
2.3.15. Land Use	25
2.3.16. Regulatory Framework	25
2.3.17. Deregulation of the Economy	25
2.3.18. Import Policy	25
2.3.19. Infrastructure Facilities	25
2.3.20. Incentives	26
2.3.21. International and National Non-Governmental Organizations	26

2.4.	INTERNATIONAL FRAMEWORK – (APPLICABLE INTERNATIONAL ENVIRONMENTAL AND OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS).....	26
2.4.1.	The Equator Principles (June 2013).....	27
2.4.2.	Multilateral Investment Guarantee Agency (MIGA) - Policy on Environmental and Social Sustainability, Effective October 1, 2013	27
2.4.3.	International Finance Corporation’s (IFC) Policy on Environmental and Social Sustainability, Effective January 1, 2012	32
2.4.4.	The World Bank Environmental Assessment Process	33
2.4.5.	IFC Environmental, Health and Safety – General Guidelines (April 30, 2007).....	33
2.4.6.	IFC Environmental, Health and Safety – Metal, Plastic, and Rubber Products Manufacturing (April 30, 2007).....	34
2.4.7.	ILO - Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)	35
2.4.8.	OHSAS 18000	36
2.4.9.	ISO 14001	36
2.4.10.	ISO 26000	37
2.4.11.	IFC - Good Practice Note Addressing Grievances from Project-Affected Communities	38
2.4.12.	The UN Global Compact	38
2.5.	CATEGORIZATION OF THE HNMPL PROJECT.....	39

DESCRIPTION OF THE PROJECT42

3.	DESCRIPTION OF THE PROJECT	42
3.1.	INTRODUCTION	42
3.2.	PROPOSED PROJECT LOCATION.....	42
3.3.	HNMPL PLANT CAPACITY	42
3.4.	ASSEMBLY PLANT DETAILS	49
3.5.	ASSEMBLY PLANT LAYOUT	51
3.6.	FUEL, ENERGY & WATER REQUIREMENT	55
3.7.	WASTEWATER.....	56
3.8.	TRANSPORTATION AND LOGISTICS.....	57
3.8.1.	Truck Traffic	57
3.9.	ORGANIZATION STRUCTURE.....	58
3.10.	MANPOWER REQUIREMENT.....	59
3.11.	PROPOSED PROJECT SCHEDULE	59

4 60

ANALYSIS OF ALTERNATIVES60

4.	ANALYSIS OF ALTERNATIVES.....	60
4.1.	GENERAL.....	60
4.2.	DO NOTHING ALTERNATIVE.....	60
4.3.	PROJECT SITE OPTION.....	61
4.4.	TECHNOLOGY OPTIONS	62
4.5.	CONSTRUCTION TECHNOLOGY OPTIONS	62

5 63

BASELINE CONDITIONS IN THE AREA POTENTIALLY AFFECTED BY PROJECT63

5.	BASELINE CONDITIONS IN THE AREA POTENTIALLY AFFECTED BY PROJECT.....	63
5.1.	PHYSICAL ENVIRONMENT.....	64

5.2.	ENVIRONMENTAL AND SOCIAL BASELINE5-2	64
5.2.1.	Physical Features & Topography	64
5.2.2.	Seismicity.....	65
5.2.3.	Geology and Soil.....	67
5.2.4.	Climate.....	67
5.2.5.	Water Resources	71
5.3.	ENVIRONMENTAL BASELINE MONITORING.....	71
5.3.1.	Ambient Air Quality	72
5.3.2.	Noise Monitoring	74
5.3.3.	Soil Quality of Project Area.....	75
5.3.4.	Water Quality Monitoring of Project Area	76
5.4.	BIOLOGICAL ENVIRONMENT.....	82
5.4.1.	Flora	82
5.4.2.	Fauna.....	84
5.5.	SOCIO-ECONOMIC ENVIRONMENT.....	87
5.5.1.	Methodology	87
5.5.2.	Geographical Location and Surrounding Settlement.....	87
5.5.3.	Demography.....	88
5.5.4.	Culture Customs and Traditions	88
5.5.5.	Economy	88
5.5.6.	Social and Physical Infrastructure	89
5.5.7.	Archeological and Cultural Sites	90
6	91	
	POTENTIAL (UNMITIGATED) ENVIRONMENTAL, HEALTH & SAFETY	
	IMPACTS	91
6.	POTENTIAL (UNMITIGATED) ENVIRONMENTAL, HEALTH & SAFETY	
	IMPACTS	91
6.1.	METHODOLOGY FOR ANTICIPATING ENVIRONMENTAL IMPACTS	91
6.2.	ENVIRONMENTAL IMPACTS ASSESSMENT DURING CONSTRUCTION	
	PHASE.....	92
6.2.1.	Land Acquisition.....	93
6.2.2.	Erosion/Sedimentation.....	94
6.2.3.	Contaminated Soil.....	95
6.2.4.	Petroleum, Oils, and Lubricants (POL) Storage, Handling and Disposal	96
6.2.5.	Construction Site/Camps Layout and Establishment.....	96
6.2.6.	Construction Material Transportation, Handling, Use and Storage.....	96
6.2.7.	Air Quality	96
6.2.8.	Surface Water.....	98
6.2.9.	Groundwater	98
6.2.10.	Solid Waste	100
6.2.11.	Noise Impact	101
6.2.12.	Fire Risk.....	101
6.2.13.	Ecological Impacts.....	102
6.2.13.1.	Terrestrial Systems	102
6.2.13.2.	Fauna and Flora	102
6.2.14.	Impacts on Human Population.....	103
6.2.15.	Traffic Impact	103
6.2.16.	Socio-economic Impacts	103
6.2.17.	Public Services and Facilities	104
6.2.18.	Cultural Resource Impacts.....	104

6.3.	ENVIRONMENTAL IMPACTS ASSESSMENT DURING OPERATION PHASE	104
6.3.1.	Effects on Local Air Quality	106
6.3.2.	Noise	106
6.3.3.	Landscape and Visual	106
6.3.4.	Ecology	107
6.3.5.	Soil, Ground Water and Surface Water Contamination	107
6.3.6.	Transport	109
6.3.7.	Solid Waste Management	109
6.3.8.	Societal Impacts During Operations	110
6.3.9.	Economic Impact	110
6.4.	IMPACTS DURING DECOMMISSIONING PHASE	111
6.5.	HEALTH IMPACT ASSESSMENT	112
6.6.	POTENTIAL IMPACTS SUMMARY	112
	PROPOSED ENVIRONMENTAL PREVENTION & MITIGATION MEASURES ..	115
7.	PROPOSED ENVIRONMENTAL PREVENTION & MITIGATION MEASURES	115
7.1.	MITIGATION MEASURES DURING CONSTRUCTION PHASE	115
7.2.	MITIGATION MEASURES DURING OPERATION PHASE	120
7.3.	OTHER MITIGATION MEASURES	124
7.3.1.	Waste Minimization and Treatment & Disposal Measures	124
7.3.2.	Natural Resource Management	124
7.3.3.	Mitigation of Human Impacts	124
7.3.4.	Occupational Safety & Health Measures	125
8.	ENVIRONMENTAL MANAGEMENT & MONITORING PLAN	126
8.1.	GENERAL	126
8.2.	ENVIRONMENTAL MANAGEMENT PLAN (EMP)	126
8.2.1.	Objectives of EMP	126
8.2.2.	Structure of EMP	126
8.3.	INSTITUTIONAL REQUIREMENTS	127
8.4.	REGULATORY REQUIREMENTS	127
8.5.	SPECIFIC IMPLEMENTATION RESPONSIBILITIES	127
8.6.	AUDITING	130
8.7.	ENVIRONMENTAL MANAGEMENT PLAN (FOR CONSTRUCTION & OPERATION PHASE)	130
8.8.	ENVIRONMENTAL MONITORING PROGRAM	159
8.9.	REPORTING STRUCTURE AND OUTCOMES	161
8.10.	ENVIRONMENTAL MANAGEMENT AND MONITORING COST	161
9.	STAKEHOLDER ENGAGEMENTS	163
9.1.	GENERAL	163
9.2.	IDENTIFICATION OF STAKEHOLDERS	163
9.2.1.	Primary Stakeholders	163
9.2.2.	Secondary Stakeholders	163
9.3.	STAKEHOLDER ENGAGEMENTS PLANNING	164
9.4.	STAKEHOLDER CONSULTATION PROCESS	164
9.5.	PRIMARY STAKEHOLDERS CONSULTATION	165

9.5.1. Topics for Discussion	166
9.5.2. Consultation Teams	172
9.6. MEETINGS WITH SECONDARY STAKEHOLDERS	173
9.7. OUTCOMES OF CONSULTATIONS	173
10	175
10. MIGA – PERFORMANCE STANDARDS ON SOCIAL & ENVIRONMENTAL SUSTAINABILITY	175
10.1. GENERAL.....	175
10.2. PERFORMANCE STANDARD 1 - SOCIAL AND ENVIRONMENTAL ASSESSMENT AND MANAGEMENT	175
10.2.1. Social and Environmental Assessment	175
10.2.2. Management Program.....	175
10.2.3. Organizational Capacity.....	175
10.2.4. Training.....	175
10.2.5. Monitoring	175
10.3. PERFORMANCE STANDARD 2 – LABOR AND WORKING CONDITIONS. ..	176
10.3.1. Working Conditions and Management of Work Force.....	176
10.3.2. Protecting the Work Force	176
10.3.3. Occupational Health and Safety.....	176
10.4. PERFORMANCE STANDARD 3, POLLUTION PREVENTION AND ABATEMENT	177
(a) General.....	177
(b) Pollution Prevention, Resource Conservation and Energy Efficiency.	177
10.5. PERFORMANCE STANDARD 4, COMMUNITY HEALTH, SAFETY AND SECURITY	178
(a) General Requirements	178
(b) Infrastructure and Equipment Safety	178
(c) Hazardous and Safety	178
(d) Environmental and Natural Resource Issues	179
(e) Community Expose to Disease.....	179
(f) Emergency Preparedness and Response.....	179
(g) Security Personnel Requirement	179
10.6. PERFORMANCE STANDARD 5 – LAND ACQUISITION AND INVOLUNTARY RESETTLEMENT.....	179
(a) General Requirements	179
10.7. PERFORMANCE STANDARD 6 – BIODIVERSITY CONSERVATION AND SUSTAINABLE RESOURCE MANAGEMENT	179
(a) Habitat	179
(b) Modified Habitat.....	180
(c) Natural Habitat	180

(d)	Critical Habitat	180
(e)	Legally Protected Areas.....	180
(f)	Invasive Alien Species.....	180
(g)	Management and Use of Renewable Natural Resources	180
10.8.	PERFORMANCE STANDARD 7 – INDIGENOUS PEOPLES.....	180
(a)	Development Benefits	181
(b)	Special Requirements	181
(c)	Relocation of Indigenous People from Traditional or Customary Lands.....	181
10.9.	PERFORMANCE STANDARD 8 – CULTURAL HERITAGE.....	181
10.10.	METHODOLOGY FOR EVALUATING ENVIRONMENTAL IMPACTS.....	181
11.	GRIEVANCES REDRESSING MECHANISM (FORMAL AND INFORMAL CHANNELS)	182
11.1.	FORMAL CHANNEL.....	182
11.1.1.	Environmental Legislation.....	182
11.1.2.	Punjab Environmental Act and Environmental Management	182
11.1.3.	Enforcement of PEPA and Liability	183
11.2.	GRIEVANCE REDRESS MECHANISM- INFORMAL	186
11.2.1.	Procedure for Redress of Grievances.....	186
11.2.2.	Proposed Mechanism for Grievance Redress	186
11.2.3.	Operating Principles for PCU	188
11.3.	COMPENSATION FOR ENVIRONMENTAL DAMAGES	190
	SOCIAL MANAGEMENT PLAN	191
12.	SOCIAL MANAGEMENT PLAN.....	191
12.1.	SOCIAL MANAGEMENT PLAN - INTRODUCTION	191
12.2.	CONSTRUCTION PHASE - SMP.....	191
	Construction Camp	193
	Direct Workforce Impacts.....	193
	Most Probable Population Influx Scenario	194
	Population Influx Impacts and Mitigation	194
12.3.	SOCIAL MANAGEMENT AND MITIGATION PLAN	195
12.3.1.	Water Supply	196
12.3.2.	Sanitation	196
12.3.3.	Waste Disposal.....	196
12.3.4.	Health Issues	197
12.3.5.	Population Management and Security Issues	197
12.4.	OPERATION PHASE - SMP.....	198
12.4.1.	Traffic Management Plan	198
12.4.2.	Truck Parking & Rest Area.....	199
12.5.	COMMUNITY HEALTH AND SAFETY.....	199
12.6.	HEALTH AND SAFETY	200

12.7.	RECOMMENDATIONS AND MITIGATION MEASURES	200
12.8.	COMMUNITY DEVELOPMENT	202

1

INTRODUCTION & SCOPE OF ESIA STUDY

1. INTRODUCTION & SCOPE OF ESIA STUDY

1.1. INTRODUCTION

The proposed “Green Field” project is to establish a facility, in Pakistan, to assemble and distribute vehicles of Hyundai Motor Corporation, ranked in 5th by sales volume in 2016, in Pakistan. The proposed project will be setup by a consortium of Nishat Group (Pakistan), Sojitz (Japan) and Millat Tractor (Pakistan).

The consortium has selected the proposed factory site situated in M-3 Industrial City in Faisalabad, Punjab, Province of Pakistan. The proposed project named Hyundai Nishat Motor (Private) Limited [HNMPL] (hereinafter referred as the “Project”), has been established and registered in Lahore.

Feasibility study for the project was finalized among the parties, and the final investment decision by all of the partners is targeted by the end of October, 2017.

HNMPL, for carrying out detailed Environmental and Social Impact Assessment (ESIA), hired the services of **Integrated Environment Consultant (IEC)**, Head Office # 11, 2nd Floor, Anwar Tower, 99-Shadman, Lahore, Pakistan. IEC have carried out a number of such Environmental and Social Impact Assessment (ESIA) studies and prepared reports, thereof. This ESIA report has been prepared as per requirement of HNMPL for Multilateral Investment Guarantee Agency (MIGA) and lenders.

The spirit of the Equator Principles (EPs) - “seeking to ensure that the projects we finance are developed in a manner that is socially responsible and reflect sound environmental management practices” has been adopted by and large by Multilateral Agencies and almost all national and international Development Finance Institutions (DFIs). As such it has become just an important pre-requisite for securing loan for the project and this spirit has also been kept in mind while preparing this report.

While this ESIA Report has been prepared for the Project keeping in line with the guidelines of World Bank Group/MIGA/IFC, however, in order to qualify the project for MIGA, the Scope of the ESIA report extends to the following:

MIGA Performance Standards on Environmental & Social Sustainability (October 1, 2013); International Finance Corporation’s Performance Standards on Environmental and Social Sustainability (January 1, 2012); MIGA document “Access to Information Policy”; International Finance Corporation, Access to Information Policy January 1, 2012; International Finance Corporation’s Environmental, Health, and Safety, General Guidelines, April 30, 2007; IFC

Environmental, Health, and Safety Guidelines, General EHS Guidelines: Environmental Air Emissions And Ambient Air Quality (April 30, 2007); IFC Environmental, Health, and Safety Guidelines for Metal, Plastic, and Rubber Products Manufacturing (April 30, 2007); IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission And Distribution, (April 30, 2007); ILO Labour Standards (Core Labour Standards and Basic Terms and Conditions of Employment for all Workers, including subcontractors) and OHAS 18001 for Occupational Health and Safety; International Organization for Standardization (ISO) 14000 Standards.

1.2. PROPOSED PROJECT'S PROPONENT

A brief detail of the Project proponents is presented below:

Nishat Group (Pakistan)

Nishat group of companies is a premier business house of Pakistan. The group has presence in all major sectors including Textiles, Cement, Banking, Insurance, Power Generation, Hotel Business, Agriculture, Dairy and Paper Products. Today, Nishat Group is considered to be at par with multinationals operating locally in terms of its quality products and management skills.

Nishat is one of the largest conglomerates in Pakistan and widely dedicates in many sectors such like Banking (MCB Bank Limited), Textile (Nishat Mills Limited and others), Insurance (Adamjee Insurance Company Limited and others). Nishat has long history and experience in wide sectors in Pakistan.

Diversity of operations is the reason why The Nishat Group is Pakistan's biggest corporate entity. Operating in production, financial and service sectors, it is a major contributor to core areas of business as versatile as textile, cement, power generation, hospitality, banking and insurance, and real estate development.

The Group's legacy spans well over 60 years, wherein it has continued to hold its nerve and invest in the economy to become a name that evokes trust, ensures reliability and delivers efficaciously. Nishat Mills stands as the largest textile composite unit in Pakistan to date and the MCB Bank is recognized as the country's most dependable financial institution. In addition to its long established track record of successful businesses, The Nishat Group has always pioneered the way in more avant-garde pursuits, most recently introducing exceptional prospects in the hospitality industry with the launch of The Nishat Hotel and Properties, a sister hotel of London's most premier hotel and club, The St. James Hotel and Club. The

Emporium Mall shopping complex ushers the consumers and clients into a world of modern lifestyle.

Sojitz Corporation (Japan)

Sojitz Corp. is a multinational general trading company with a worldwide network comprising of 400 group companies and operations in some 50 countries. Sojitz operations include automotive, aerospace and IT, Infrastructure, energy, metals and coal, chemicals, food and agri, lifestyle comm. And retail division.

Sojitz is/had been a distributor of Hyundai cars in 4 countries (Venezuela, Puerto Rico, Argentina and Thailand). Sojitz has also sourced textile machinery and power equipment for Nishat Group and enjoys a relationship history of more than two decades.

It is engaged in a wide range of businesses globally, including buying, selling, importing, and exporting goods, manufacturing and selling products, providing services, and planning and coordinating projects, in Japan and overseas. Sojitz also invests in various sectors and conducts financing activities.

Sojitz (through its subsidiary Sojitz Aerospace Company) is the largest seller of commercial aircraft in Japan, as it acts as a sales agent for both Boeing and Bombardier Aerospace. It distributes Mitsubishi Motors and Hyundai Motors automobiles in various countries and also develops and operates power plants, industrial plants in various countries.

Millat Tractors (Pakistan)

Millat is a best-in-class & leading tractors manufacturer in Pakistan whose market share is more than 60%. One of their strength is to localize the parts required to manufacturer their products and the localized ratio is approx. 95%. By their experience and know-how for localization, Millat maintain its competitiveness in the market and have wide network with local parts supplier which is important for the Project to develop the localization to assemble cars in Pakistan.

Currently, critical components like the engine block, sump, transmission case, axle housing, hydraulic lift cover, front axle support and center housing are all being machined successfully in-house at Millat Tractors from locally sourced castings. Millat has the following product line:

- Agricultural Tractors
- Diesel Engines.

- Diesel Generating Sets and Prime Movers
- Forklift Trucks, under license from Anhui Heli Forklift Trucks China
- A wide range of Agricultural implements

Hyundai Motor Company (South Korea)

HNMPL has entered into a Technical License Agreement with Hyundai Motor Company (HMC) of South Korea. HMC will provide high end automotive technology through Technical License Agreement.

HMC is a South Korean multinational automotive manufacturer headquartered in Seoul, South Korea. The company was founded in 1967 and, along with its 32.8% owned subsidiary, Kia Motors, and its 100% owned luxury subsidiary Genesis Motors which together comprise the Hyundai Motor Group. It is the third largest vehicle manufacturer in the world.

Hyundai operates the world's largest integrated automobile manufacturing facility in Ulsan, South Korea, which has an annual production capacity of 1.6 million units. The company employs about 75,000 people worldwide. Hyundai vehicles are sold in 193 countries through some 5,000 dealerships and showrooms.

Year 2016 Global production of Hyundai vehicles exceeds 4.6 million. It has assembly plants in Korea, China, Malaysia, Taiwan, Indonesia, India, USA, Russia, Brazil, Czech Republic and Turkey.

Hyundai Motor Company manufactures a wide range of products from compact cars to heavy commercial vehicles as described in following table.

Models Manufactured by Hyundai Motor Company

Category	Segment	Model
Passenger	A	Eon, i10, Grand i10
	B	Xcent, i20, ix20, HB20
	C	i30, Accent , Elantra, Veloster, Ioniq (Hybrid)
	D	i40 (VF), Sonata, Grandeur
	F	Genesis, Equus
SUV	B	Creta
	C	Tucson
	D	Santa Fe, Veracruz
LCV	Van	H1 / Starex
	Pickup Truck	H100 / Porter
Truck & Bus	Truck	Mighty, HD 35, HD65, HD 78, HD 120, HD 170, Cargo, Dump, Special Purpose Vehicle
	Bus	Aero, Aero-Town, County, Green City (Global 900), Solati (H350), Super A/C, Unicity, Universe

The contemplated project scheme is presented in **Figure 1.1:**

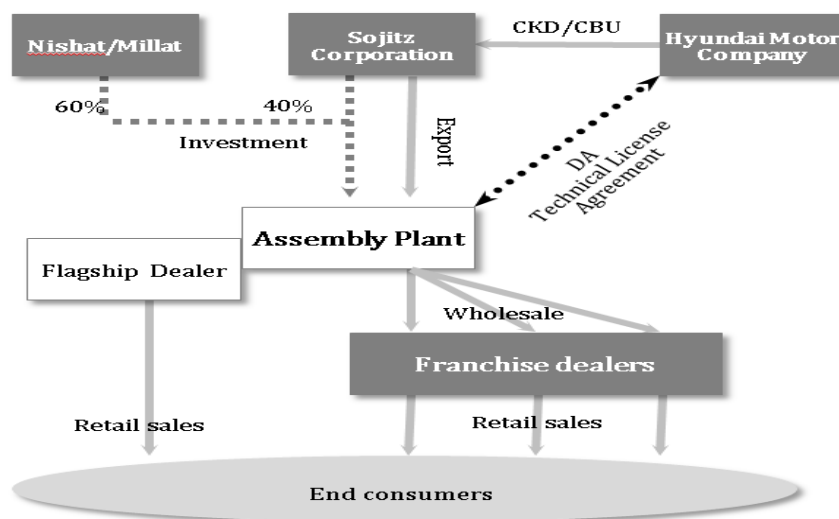


Figure -1.1: Contemplated Project Scheme

1.3. MARKET POTENTIAL IN AUTOMOBILE SECTOR IN PAKISTAN

Total market size of passenger vehicle in Pakistan during last 5 years has oscillated between 150,000 - 200,000 units per year, and only three brands (Suzuki, Toyota and Honda) enjoy the passenger / light commercial vehicle (LCV) car market segment with an oligopolistic dominance. **Figure – 1.2** presents the sale of passenger vehicles in Pakistan during Years 2012 to 2016.

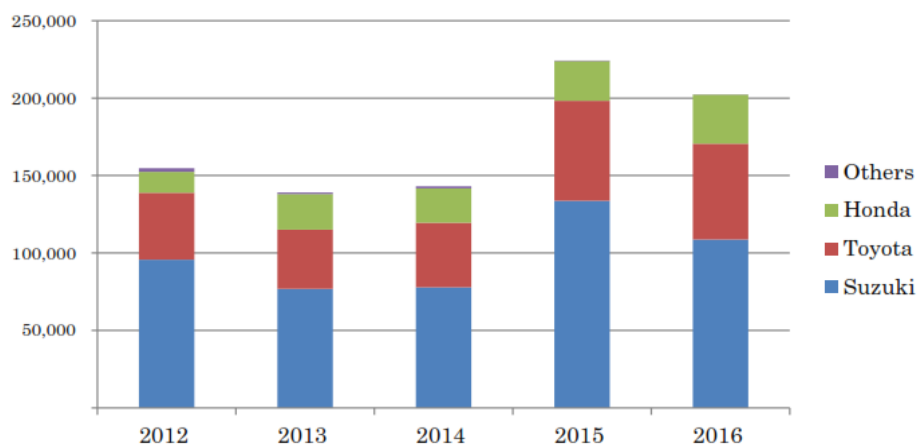


Figure – 1.2: Sale of Passenger Vehicles in Pakistan during Years 2012 to 2016

According to the Automotive Development Policy (ADP) 2016 – 2021 prepared by Engineering Development Board, it targets that the demand in 2021 should be 350,000 units for Cars/Van/Jeeps and 79,000 units for Light Commercial Vehicles, considering the expansion of Gross Domestic Products (GDP). This fiscal (2016-2017) year the demand for passenger and LCV segment is set to cross 200,000 for local manufactured vehicles and 60,000 vehicles in the imported segment.

On a macro level, the present penetration rate amongst the consumers in Pakistan is one of the lowest for emerging countries which provides another source of motivation for the sponsors. This implies a yawning headroom for market to grow which in turn creates space and expansion opportunities for the new entrants in line with the ADP (2016-2021) vision. The new policy incentivizes the new entrants with fiscal concessions to provide them an early and an economical break through.

Statistics for Pakistan's Car production per capita is given in **Figure 1.3**.

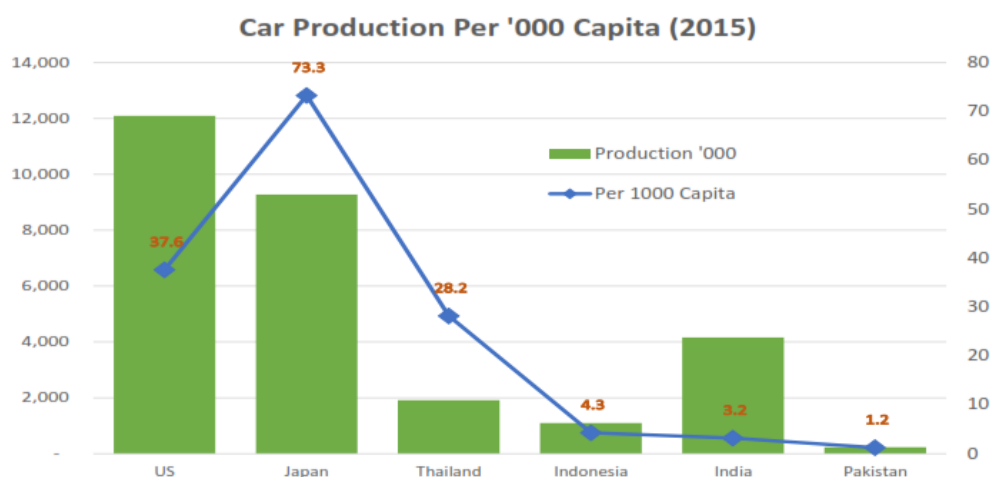


Figure – 1.3: Car Production per „000 capita (2015) sourced from Organisation Internationale des Constructeurs d'Automobiles (OICA) Automotive Development Policy (2016-21)

This new policy offers strong & attractive incentive in the form of concessional tariff structure which has been made available for an extended period of five (5) years compared to only three (3) years previously. Under the new policy greater incentives are given in the early years to enable the entrant to introduce its brand, develop a market, create a distribution and after sales service network and develop a part-manufacturer base locally.

The incentives offered to accredited green filed project are:

- a. Duty free import of assembly Plant & Machinery;
- b. Import of 100 vehicles of to-be-introduced variant in CBU form @ 50% of the prevailing duty for test marketing;
- c. Concessional rate of custom duty @ 10% on non-localized parts @ 25% on localized parts for a period of 5 years. (vs 32.5% and 50% for est. players resp.)

Besides M-3 Industrial City is a declared Special Economic Zone (SEZ) by the Federal Government and the project shall be an applicant for tax exemptions as an SEZ enterprise for the next 10 years after SOP as well. Project has all the merits to fulfill the pre-conditions and qualify for income tax exemption (e.g const. time, Greenfield category, industrial undertaking, SEZ location etc).

1.4. SCOPE OF ESIA STUDY

The purpose of this ESIA study is identification of key environmental and social issues which will likely arise during construction and operation phases of the proposed Project, along with the assessment of the significant negative impacts and mitigation measures to be adopted for their minimization.

The ultimate goal of this ESIA report, among others, is to produce an Social & Environmental Management Plan (SEMP) and Environmental Monitoring Plan (EMtP) for the Construction and Operation Stages of the Project. Compliance of SEMP together with the provisions for mitigation measures for the significant negative impacts will ensure the implementation of this project in an environmentally sustainable manner both at Construction as well as Operation stages of the project.

The ESIA report ensures compliance to all national and local regulations enforced in Punjab, Province of Pakistan, as well as the World Bank Group Guidelines for such report. However, taking into consideration the international requirements due attention has also been given to Equator Principles (EPs) and the MIGA Performance Standards on Social and Environmental Sustainability (effective October 1, 2013). While taking into consideration the EPs, it was further sought to ensure that the project to be financed under reference of this ESIA report, is to be developed in a manner that is socially responsible and reflects sound environmental management practices.

This ESIA report also discusses the legal and administrative framework within which the ESIA is prepared. Project description is included in the ESIA report together with a description of the baseline environmental conditions and the actual environmental situation at the proposed site for the project.

The technical section of the report and the environmental baseline situation form the basis for the detailed impact assessment during construction and operation phases of the project. Based on the findings of this report, an environmental management system has been devised, outlining necessary mitigation and compensation measures together with monitoring practices.

1.5. APPROACH AND METHODOLOGY

This ESIA report regarding the proposed Project in Pakistan has been accomplished after on site carrying out exhaustive reconnaissance to identify the following Environmental and Social areas of concern:

- To achieve the desired environmental compliance standards under the World Bank Group Guidelines (discussed in detail in Section-3 of this ESIA Report) as applicable to the project.
- Plans and activities to remedy/mitigate any potential adverse impacts and the gaps that could probably remain after implementation.
- Any other points/steps to be taken which could be beneficial to mitigate environmental adverse impacts that may accrue both during construction and regular operation of the proposed project.

The format/contents of this ESIA report are listed as below:

1. Executive Summary
2. Introduction
3. Policy, Legal and Administrative Framework
4. Description of the Project
5. Analysis of Alternatives
6. Baseline Conditions in Area Potentially Affected by Project
7. Potential (Unmitigated) Environmental, Health & Safety Impacts
8. Proposed Environmental Prevention Mitigation Measures
9. Environmental Management and Monitoring Plan
10. Stakeholder Engagements (Public Involvement & Disclosures)

11. MIGA “Performance Standards, 1 to 8, on Social & Environmental Sustainability”.
12. Grievance Redress Mechanism
13. Social Management Plan.

In addition to the evaluation and review of the available records, data and the facts for the project feasibility study, detailed discussions were held with the concerned members of the project management as well as other project stakeholders during visit to the Project site study and Project’s Corporate Office.

Notes and proposals for measures to be taken to mitigate and compensate for any determined/detrimental environmental impacts are contained in the Environmental Management Plan (EMP) as well as a Monitoring Plan, including all parameters that need to be measured, and the frequency of monitoring actions.

A comprehensive qualitative and semi-quantitative methodology was adopted to conduct this study inter-alia in due compliance with the ESIA requirements. The study included collection of both primary and secondary data regarding environmental status and other relevant factors.

1.6. METHODOLOGY FOR EVALUATING IMPACTS

Baseline data and conditions will form the basis for evaluation of the environmental impacts of the proposed Project.

A tabulated evaluation procedure has been used for purpose of presentation. The severity of the impact is presented on point scale. The evaluation scale, that is used for the ESIA Study is given below:-

Scale: Extent of Impact

▲ ▲ ▲	=	High
▲ ▲	=	Medium
▲	=	Low
O	=	No impact
▼ ▼	=	locally favorable
▼	=	regionally favorable.

For evaluation rating, the National, the World Bank Group and WHO Standards are used as guidelines. Various parameters of extent of environmental impacts described below:

Table 2.1: Evaluation of Impacts

Extent of Environmental Impact	Description
- High	International and National Standards are exceeded.
- Medium	Between International and National Standards.
- Low	International and National Standards are met.

1.7. METHODOLOGY FOR EVALUATION OF SOCIO-ECONOMIC AND CULTURAL CONDITIONS; AESTHETIC VALUES; POPULATION AND COMMUNITIES

1.7.1. Objective

Following are the objectives of Socio-Economic study of the Project area:

- To furnish appropriate information about the baseline socio-economic conditions.
- To identify and assess the significant social impacts, of the Project activities on the surrounding area and people.
- To propose suitable means for probable mitigation of the significant adverse social impacts.

1.7.2. Data Sources and Collection Methodology

The information collected for this part of study is as under:

- General information about the nearby villages
- Basic facilities available in the nearby villages
- Educational, Medical & Recreational facilities
- Sources of income
- Major Conflicts
- Types of community
- Major Castes

- Ethnic and Sectarian Status
- Perception about the Project
- Perceived positive impacts during construction
- Perceived negative impacts during construction
- Perceived positive impacts during operation
- Perceived negative impacts during operation
- Gender Role and Status

A qualitative and semi quantitative research methodology was adopted to conduct this study. The study included the collection of both primary and secondary data through the following steps:

- **Focus group discussion/ public consultations**

A structured moderator guideline was formed to steer the discussions. Focus groups were organized in each village of the Study Area. Detailed group discussion was organized. These were held in the open space available in the village. During the discussion, the relevant responses, opinions, beliefs and attitudes were observed and recorded.

- **Interview**

The target respondents including local authorities and leaders were interviewed. A semi-structured interview schedule was used as a tool for data collection. Personal observations were also included in the methodology in order to collect relevant information about village and people of the community.

- **Secondary data**

Secondary data was also used to collect important information regarding village, the people and the project. For this purpose published data provided by the Project Proponent and from other relevant sources were used.

1.7.3. Study area

The Study Area included villages/settlements within the 5 km area of the project.

1.7.4. Universe

Universe of the project area included the adult male/female population living in the nearest villages/towns of the project area.

1.8. DETAILS OF RESTORATION AND REHABILITATION AT THE END OF THE PROJECT LIFE

At the end of the present life of the project, adequate repair and maintenance of the plant will be done. Attached basic infrastructure will be updated. Even, wherever required, new machinery will be installed and old one to be sold in the market. This will provide a new life for the plant to be run for its new lifetime.

All activities will be carried out in accordance with strict environmental management and controls so as to avoid any damage to any segment of environment or human health.

2

POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. APPLICABLE HOST COUNTRY ENVIRONMENTAL AND OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS

Comprehensive environmental framework is available in the country covering environmental management to control environmental degradation.

After the 18th Amendment to the Constitution of The Islamic Republic of Pakistan-1973, the regulation & management of environment has largely been delegated to the Provinces. The Federal Ministry of Climate Change has been created which shall be controlling: Pakistan Environmental Protection Council; Pakistan Environmental Protection Agency; Pakistan Environmental Planning and Architectural Consultants Limited; Global Environmental Impact Study Centre; and federal policy, legislation, plans, strategies and programmes with regard to environmental protection and preservation, coordination, monitoring and implementation of environmental agreements with other countries, international agencies and forums.

The Pakistan Environmental Protection Agency (Pak EPA) looks after the environment related issues for the federally controlled areas and territories. Lacking laws at the provincial levels; the laws, rules, regulations etc., those already available at the federal level and operational at the provincial levels will continue as such.

2.2. NATIONAL ENVIRONMENTAL REGULATORY/LEGAL REQUIREMENTS

Hereunder, the major national applicable laws applicable for the project are given in table 2.1:

Table - 2.1: Key Environmental Laws in Punjab Province

LEGAL INSTRUMENT	SCOPE AND APPLICABILITY	RELEVANCE
Pakistan Penal Code, 1860	In the context of the environment, the Penal Code empowers local authorities to control noise, toxic emissions and disposal of effluents.	The project activities will have to be carried out in spirit of this ordinance.
Land Acquisition Act 1894	Empowers the government to acquire private land for projects of national importance and lays down the acquisition procedure.	If the land for the project is acquired through the government, the acquisition process shall comply with this law.
Forest Act 1927	Regulates forest resources. Empowers the government to declare any forest area reserved or protected.	Not relevance as there is no reserve or protected forest in the Project area.
National Conservation Strategy (NCS)	The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources	For a sustainable development the project must follow the spirit of NCS.
Pakistan Environmental Protection Act, 1997	PEPA, 1997 is a fairly comprehensive legislation and provides protection, conservation, rehabilitation and improvement of the environment. It contains concrete action plans and programs for the prevention of pollution and promotes sustainable development	The Apex Environmental law for the protection of environment whole project cycle shall follow this law.

LEGAL INSTRUMENT	SCOPE AND APPLICABILITY	RELEVANCE
Punjab Environmental Protection (Amended) Act 2012 ¹	<p>After the 18th amendments in the Constitution of Islamic Republic of Pakistan the Environmental subject is now in provincial hold and Provincial EPA is now an autonomous body for the implementation of Environmental Laws.</p> <p>The salient features of the law are:</p> <ul style="list-style-type: none"> ▪ It covers the air, water, soil, marine and noise pollution including pollution caused by motor vehicles. ▪ The Act provides Environmental Quality Standards for wastewater, air emissions and noise, etc. ▪ Law provides clear cut guidelines for IEE/EIA for various projects as per their magnitude and anticipated impacts. ▪ Law also empowers Government to issue notices and to enforce them for the protection of the environment. 	The Apex Environmental law for the protection of environment whole project cycle shall follow this law.

¹ http://epd.punjab.gov.pk/system/files/pepa_2012_0.pdf

LEGAL INSTRUMENT	SCOPE AND APPLICABILITY	RELEVANCE
Punjab Environmental Quality Standards (PEQS) for Drinking Water ²	The Punjab EPA has published a set of standards for drinking water quality for the protection of public health and for sustainable development.	The project is required to show the compliance with the PEQS for drinking water at site and during the whole project cycle.
Punjab Environmental Quality Standards (PEQS) for Liquid Waste Water ³	The Punjab EPA has published a set of standards 35 various parameters for waste water quality for the protection of natural drainage and for sustainable development.	The project is required to show the compliance with the PEQS for waste water before the final discharge of effluent from the site and during the whole project cycle.
PEQS for Ambient Air ⁴	The EPA has published the standards for ambient air applicable for the whole province.	The project has to show the compliance with the Ambient Air Quality Standards during its whole project life
PEQS for Noise ⁵	The EPA has published the set of standards related with the noise levels of the area in respect to the various zones like Silence Zone, Commercial Zone, Industrial Zone.	The project falls in Industrial Zone hence shall follow the standards of noise related with the Industrial Zone.

²<http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Drinking%20Water.pdf>

³<http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Municipal%20And%20Liquid%20Industrial%20Effluents%20final.pdf>

⁴<http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Ambient%20Air.pdf>

⁵<http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Noise.pdf>

LEGAL INSTRUMENT	SCOPE AND APPLICABILITY	RELEVANCE
Local Government Ordinance, 2001	This Act empowers the Government of Pakistan and provincial governments to enforce laws for land use; conservation of natural vegetation; air, water, and land pollution; disposal of solid waste and wastewater effluents; and public health and safety, including some provisions for environmental protection. Section 93 of this Ordinance pertains to environmental pollution.	The project activities will have to be conceded out in accordance with this Ordinance and Rules
Canal and Drainage Act 1873	This act prohibits corruption or fouling of water in canals (defined to include channels, tube wells, reservoirs and watercourses), or obstruction of drainage.	The project activities will have to be carried out in accordance with this Act.

2.3. GUIDELINES FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS (NOVEMBER 1997/2000)

These guidelines are descriptive documents regarding the format and content of IEE/EIA reports to be submitted to EPA for “No-Objection Certificate (NOC)/Environmental Approval (EA)”. Following are the major areas, which are covered by these guidelines:

- The IEE report (scope, alternatives, site selection, format of IEE report)
- Assessing impacts (identification, analysis and production, baseline data, significance)
- Mitigation and impact management (and preparing an environmental management plan)
- Reporting (drafting style, main features, shortcomings, other forms of presentation)

- Review and decision making (role, steps, remedial options, checks and balances)
- Monitoring and auditing (systematic follow up, purpose, effective data management)
- Project Management (inter-disciplinary teams, programming and budgeting)

2.3.1. Guidelines for Public Consultations

These guidelines deal with possible approaches to public consultation (PC) and techniques for designing an effective program of consultation that reaches out to all major stakeholders and ensures the incorporation of their legitimate concerns in any impact assessment study. These guidelines cover:

- Consultation, involvement and participation of Stakeholders
- Techniques for public consultation (principles, levels of involvements, tools, building trust)
- Effective public consultation (planning, stages of EIA where consultation is appropriate)
- Consensus building and dispute resolution
- Facilitation involvement (including the poor, women, building community and NGO capacity)

2.3.2. National Environmental Quality Standards (NEQS)-1993, Amended August 2000

The National Environmental Quality Standards (NEQS) were first promulgated in 1993 and have been amended in August, 2000.

The following standards are specified therein:

- Maximum allowable concentrations of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers)
- Maximum allowable concentrations of pollutants (16 parameters) in gaseous emissions from the industrial sources

The Guidelines for “Self-Monitoring and Reporting” (SMART) for the industry as approved by the Pakistan Environmental Protection Council (PEPC).

A copy of the Government of Pakistan, Gazette Notification dated August 10, 2000 regarding NEQS is attached as.

2.3.3. National Environmental Quality Standards for Ambient Air - November- 2010

The Ministry of Environment, Government of Pakistan vide its Notification, Islamabad, the 18th October, 2010 under S.R.O. 102 (1)/2010 established standards which provide the maximum allowable limits, in the ambient air, of Sulphur Dioxide (SO₂), Oxides of Nitrogen as (NO_x) and as (NO), Suspended Particulate Matter- (SPM), Respirable Particulate Matter - PM₁₀, Respirable Particulate Matter-PM_{2.5}, Lead and Carbon Monoxide (CO).

2.3.4. National Standards for Drinking Water Quality - November, 2010

The Ministry of Climate Change (formally Ministry of Environment) , Government of Pakistan vide its Notification, Islamabad, the 18th October, 2010 under S.R.O. 102(1)/2010 established standards for Drinking Water Quality. The major quality parameters fixed depend upon Bacterial, Physical and Chemical ones.

2.3.5. National Environmental Quality Standards for Noise - November, 2010

The Ministry of Climate Change (formally Ministry of Environment), Government of Pakistan vide its Notification, Islamabad, the 18th October, 2010 under S.R.O. 102(1)/2010 established standards for Noise [Appendix – 3.8]. These standards are based on Category/zone i.e. residential area, Commercial area, Industrial area and Silence zone. The limiting values for day and night have also been fixed for all categories/zones.

2.3.6. Sectorial Guidelines for Environmental Reports

These guidelines identify the key environmental issues that need to be assessed as well as mitigation measures and project alternatives to be considered in the actual EIA. These guidelines include:

Sector overview of the industry and the processes

- Potential impacts on the environment
- Mitigation measures
- Monitoring and reporting
- Management and training
- Checklist of likely environmental impacts and mitigation measures

2.3.7. Guidelines for Sensitive and Critical Areas

These guidelines identify sensitive and critical areas in Pakistan, in relation both to the natural environment and the cultural aspects.

2.3.8. National Resettlement Policy and Ordinance

At this point, the only legislation relating to land acquisition and compensation is the Land Acquisition Act (LAA) of 1894. Following a national consultative process, a national resettlement policy and a related ordinance were drafted. The draft policy and the ordinance are presently being reviewed by the provinces, and have yet to be approved and notified by the government. The salient applicable features of the Draft Resettlement Policy are given below:

- The Pak-EPA will be responsible for both environment-related as well as resettlement-related matters,
- The responsibilities for implementation at a provincial level are to be delegated to the concerned provincial EPAs with overall control of the provincial Planning and Development (P&D) Departments.
- All categories of ‘loss’ arising from development projects that entail resettlement, need to be addressed: these include not only loss of land, built-up property, other infrastructure, and crops and trees, but also loss of income, job opportunities, and access to natural resources, etc.
- Vulnerable groups whose issues need to be addressed in particular include: women, children, destitute persons, tribal communities, squatters, those with usurper rights, and landless groups.
- There should be a special emphasis on consultation with affected groups when preparing a Resettlement Action Plan (RAP).

The provisions of the Draft Resettlement Policy are consistent with the requirements of the World Bank OD 4.30 on involuntary resettlement.

2.3.9. The National Forest Policy 2001 of Pakistan

This policy covers the Renewable Natural Resources (RNR) of Pakistan i.e. Forests, Watersheds, Rangelands, Wildlife, Biodiversity and their habitats. The policy seeks to launch a process for eliminating the fundamental causes of the depletion of RNR through the active participation of all the concerned agencies and stakeholders, to realize the sustainable development of the resources. It is an umbrella policy providing guidelines to the Federal Government, Provincial Governments and territories for the management of their RNR. In consonance with it, the Provincial

and District Governments may devise their own policies in accordance with their circumstances.

The goal of this policy is to foster the sustainable development of RNR of Pakistan, for the maintenance and rehabilitation of its environment and the enhancement of the sustainable livelihoods of its rural masses especially women, children and other deprived groups.

The elements of the policy are as follow:

- Population planning in critical eco-systems.
- Providing substitutes to firewood in the wooded mountains.
- Reducing the impact of socio-economic causes.
- Reducing poverty, poverty of opportunity, and powerlessness.
- Reducing political interference in the Forestry and Wildlife Departments.
- Renovating and invigorating the institutions of RNR.
- Supporting Local Governments in the sustainable development of their RNR.
- Policies for fragile natural Eco-systems.
- Riverine forests.
- Irrigated Plantations.
- Preservation of relict and unique forests.
- Wildlife.
- Rangelands and desert eco-systems.
- Planting of trees and fodders on farmlands.

2.3.10. Forest Act, 1927

All India Forest Act, 1927 was adopted by the Government of Pakistan, which was subsequently implemented by the respective provinces. Basically, the law was enacted to conserve and protect the forest resources of the country for sustainable development. It lays down Rules and Regulations for exploitation of various categories of forests such as reserved, protected or unclassified. Further, the Act spells out the licensing method for timber cutting, grazing, hunting etc. It also gives the details of magisterial powers of Forest Department officers and penalties for offences committed with regard to forest resources and products.

2.3.11. Industrial Relation Ordinance, 2002

The ordinance has been promulgated to amend, consolidate and rationalize the law relating to formation of trade unions, regulation and improvement of relations between employers and workmen and avoidance and settlement of any differences or disputes arising between them. Pakistan's labour laws trace their origination to legislation inherited from India at the time of partition of the Indo-Pak subcontinent. The laws have evolved through a continuous process of trial to meet the socio-economic conditions, state of industrial development, population and labour force explosion, growth of trade unions, level of literacy, Government's commitment to development and social welfare. To meet the above named objectives, the government of the Islamic Republic of Pakistan has introduced a number of labour policies, since its independence to mirror the shifts in governance from martial law to democratic governance.

While Article 18 of the Constitution affords every citizen with the right to enter upon any lawful profession or occupation, and to conduct any lawful trade or business, the Industrial and Commercial Employment (Standing Orders) Ordinance was enacted in 1968 to address the relationship between employer and employee and the contract of employment. The Ordinance applies to all industrial and commercial establishments throughout the country employing 20 or more workers and provides for security of employment. In the case of workers in other establishments, domestic servants, farm workers or casual labour engaged by contractors, their labour contracts are generally unwritten and can be enforced through the courts on the basis of oral evidence or past practice.

The Constitution of Pakistan contains a range of provisions with regards to labour rights found in Part II: Fundamental Rights and Principles of Policy.

- **Article 11** of the Constitution prohibits all forms of slavery, forced labour and child labour;
- **Article 17** provides for a fundamental right to exercise the freedom of association and the right to form unions;
- **Article 18** proscribes the right of its citizens to enter upon any lawful profession or occupation and to conduct any lawful trade or business;
- **Article 25** lays down the right to equality before the law and prohibition of discrimination on the grounds of sex alone;
- **Article 37(e)** makes provision for securing just and humane conditions of work, ensuring that children and women are not employed in vocations

unsuited to their age or sex, and for maternity benefits for women in employment.

2.3.12. Pakistan Explosive Act, 1884 [updated December 6, 2014]

Under the Explosives Act, the project contractors are bound by regulations on handling, transportation and using explosives during quarrying, blasting, and other purposes.

2.3.13. Provincial Local Government Ordinances, 2001

These ordinances, issued following the devolution process, establish regulations for land use, the conservation of natural vegetation, air, water, and land pollution, the disposal of solid waste and wastewater effluents, as well as matters related to public health and safety.

2.3.14. Factories Act, 1934

There is no independent legislation on occupational safety and health issues in Pakistan. The main law, which governs these issues, is the Chapter 3 of Factories Act, 1934. All the provinces, under this act, have devised Factories Rules. The Hazardous Occupations Rules, 1963 under the authority of Factories Act is another relevant legislation. These rules not only specify some hazardous occupations but also authorize the Chief Inspector of Factories to declare any other process as hazardous.

The other related laws are:

- Workmen Compensation Act, 1923
- Provincial Employees Social Security Ordinance, 1965
- West Pakistan Shops and Establishments Ordinance, 1969
- Boilers and Pressure Vessels Ordinance, 2002

Chapter 3 of the Act has general provisions on health and safety at the workplace. Provincial governments are allowed to make rules under this Act and inspectors under this Act also have discretion in defining the rules. Chapter 3 talks about various safety arrangements. This list is being provided just to show how meticulously labor law covers these issues.

- Cleanliness
- Disposal of wastes and effluents

- Ventilation and temperature
- Dust and fume
- Artificial humidification.
- Overcrowding
- Lighting
- Drinking water
- Latrines and urinals
- Spittoons
- Precautions against contagious or infectious disease
- Compulsory vaccination and inoculation
- Power to make rules for the provision of canteens
- Welfare officer
- Precautions in case of fire
- Fencing of machinery
- Work on or near machinery in motion
- Employment of young persons on dangerous machines
- Striking gear and devices for cutting off power
- Self-acting machines
- Casing of new machinery
- Prohibition of employment of women and children near cotton openers
- Cranes and other lifting machinery
- Hoists and lifts
- Revolving machinery
- Pressure plant
- Floors, stairs and means of access
- Pits, sumps, opening in floors, etc.
- Excessive weights
- Protection of eyes

- Power to require specifications of defective parts or tests of stability
- Safety of building, machinery and manufacturing process
- Precautions against dangerous fumes
- Explosive or inflammable dust, gas, etc.
- Notice of certain accidents

2.3.15. Land Use

The proposed site falls within the boundaries of M-3 Industrial City, which before acquisition was under agricultural cultivation. Villagers around the site area carry out their agricultural activities.

2.3.16. Regulatory Framework

Governments of Pakistan is facilitating investment, both local and foreign, in industrial and renewable energy sectors. Energy development and energy related projects are among the Government's top priorities. Liberalization and industrialization in the country, as a policy of the Government are well reflected from her following initiatives.

2.3.17. Deregulation of the Economy

Deregulation is the prioritized policy of the Government of Pakistan. Under same policy there is a systematic movement towards deregulation of the economy and privatization of the state owned companies.

2.3.18. Import Policy

Import policy has been largely liberalized to a great extent through the provision of various incentives. And it is being further liberalized at a quicker pace. There is an increased reliance on development of the industrial sector and enhancement of international trade.

2.3.19. Infrastructure Facilities

In order to facilitate fast industrialization basic infrastructure facilities like roads network, fuel, water and power supply, means of transportation and communications etc. are being improved/developed speedily.

2.3.20. Incentives

In order to maintain Pakistan's competitiveness in international markets and support viability of local and foreign investments in the country, the following incentives are available equally to both the foreign and the local investors:

- a. Initial depreciation allowance (IDA),
- b. Amortization and
- c. Normal tax rates.

2.3.21. International and National Non-Governmental Organizations

International and national Non-Government Organizations (NGOs), such as the International Union for Conservation of Nature and Natural Resources (IUCN) and the World Wide Fund for Nature (WWF), have been active in Pakistan for some time. Both of these NGOs have worked closely with the governments at the federal as well as provincial levels and have positively contributed to the cause of environment. They have played significant role with regard to the formulation of environmental and conservation policies. And last but not the least, another the most prominent NGO namely "Sustainable Development Policy Institute (SDPI)" has also played very significant role in upholding the cause of environmental protection in Pakistan.

Environmental NGOs have been particularly active in the advocacy for promoting sustainable development approaches. Most of the government's environmental and conservation policies, even at the provincial and federal levels, has been formulated in consultation with these leading NGOs, who have also been involved in drafting new legislation on conservation.

2.4. INTERNATIONAL FRAMEWORK – (APPLICABLE INTERNATIONAL ENVIRONMENTAL AND OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS)

In the context of Applicable International Environmental and Occupational Safety and Health Laws and Regulations, this report has also taken into consideration the IFC "Environmental, Health, and Safety Guidelines, General EHS Guidelines (April 30, 2007), MIGA & International Finance Corporation's Performance Standards on Environmental and Social Sustainability; MIGA & International Finance Corporation, Access to Information Policy, January 1, 2012; IFC Environmental, Health, and Safety Guidelines, General EHS Guidelines; Environmental Air Emissions And Ambient Air Quality (April 30, 2007): IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission And Distribution, (April 30,

2007); International Organization for Standardization (ISO) 14000 Standards; ILO Labour Standards (Core Labour Standards and Basic Terms and Conditions of Employment for all Workers, including subcontractors) and OHSAS 18001 for Occupational Health and Safety and the "Pollution Prevention and Abatement Handbook" by the World Bank Group- effective July 1998. Within this handbook, different guidelines are mentioned for the purpose of assessing industrial facilities with respect to their environmental compliance.

2.4.1. The Equator Principles (June 2013)

The Equator Principles provide a framework for financial institutions seeking to manage environmental and social risks, and to promote best practice in this context. The Principles were recently revised. The signatories are predominantly private banks which provide project financing in developing countries. The signatories require borrowers to demonstrate that they have substantially met these principles or will do so in the development and management process. These undertakings are aligned with the IFC/World Bank policies, safeguards, performance standards and guidelines.

2.4.2. Multilateral Investment Guarantee Agency (MIGA) - Policy on Environmental and Social Sustainability, Effective October 1, 2013

MIGA is a multilateral organization established in 1988 by its member countries. Its mission is to promote foreign direct investment into developing countries to support economic growth and reduce poverty, with a view to improving people's lives. MIGA is a member of the World Bank Group ("WBG") and is headquartered in Washington, D.C., United States of America.

As a multilateral development agency, MIGA only supports investments that are developmentally sound and meet high social and environmental standards. MIGA applies a comprehensive set of social and environmental performance standards to all projects and offers extensive expertise in working with investors to ensure compliance to these standards.

MIGA encourages its clients to be more transparent about their businesses to help broaden understanding of their specific projects and of foreign direct investment and private sector development in general. In addition, MIGA believes that when clients are committed to transparency and accountability they help promote the long-term profitability of their investments. Accordingly, as part of the process of managing the risks and impacts of their projects, MIGA requires its clients to engage with communities affected by their projects, including through the disclosure of information, in a manner that is consistent with MIGA's Policy on Environmental

and Social Sustainability (the Sustainability Policy) and MIGA's Performance Standards on Environmental and Social Sustainability (the Performance Standards). MIGA "Performance Standards on Environmental and Social Sustainability" consist of the followings:

Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts

Performance Standard 2: Labor and Working Conditions

Performance Standard 3: Resource Efficiency and Pollution Prevention

Performance Standard 4: Community Health, Safety, and Security

Performance Standard 5: Land Acquisition and Involuntary Resettlement

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard 7: Indigenous Peoples

Performance Standard 8: Cultural Heritage

These Performance Standards help MIGA investment and advisory clients manage and improve their environmental and social performance through a risk and outcomes based approach. While managing environmental and social risks and impacts in a manner consistent with the Performance Standards is the responsibility of the client, MIGA seeks to ensure, through its due diligence, monitoring, and supervision efforts, that the business activities it guarantees/finances are implemented in accordance with the requirements of the Performance Standards. As a result, the outcome of MIGA's environmental and social due diligence of a proposed business activity is an important factor in its approval process, and will determine the scope of the environmental and social conditions of MIGA guarantee/financing.

MIGA's development mission are its efforts to carry out investment and advisory activities with the intent to "do no harm" to people and the environment, to enhance the sustainability of private sector operations and the markets they work in, and to achieve positive development outcomes. MIGA is committed to ensuring that the costs of economic development do not fall disproportionately on those who are poor or vulnerable, that the environment is not degraded in the process, and that renewable natural resources are managed sustainably.

MIGA recognizes that climate change is a serious global challenge and that climate-related impacts may impede economic and social well-being and development efforts. Working with the private sector and other parties to address climate change

is therefore a strategic priority for MIGA. MIGA will engage in innovative investments and advisory services to support climate-friendly solutions and opportunities for business.

MIGA support for low-carbon economic development is one dimension of a balanced approach to development, including supporting access to modern, clean, and reliable energy services. MIGA pursues this objective through the use and development of relevant products, instruments, markets, and advisory services as well as through the adoption of appropriate technologies, processes, and practices in the activities it supports.

The desired outcomes are very briefly described in the objectives of each Performance Standard as below:

Performance Standard 1 - Assessment and Management of Environmental and Social Risks and Impacts

Performance Standard 1, underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the clients, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders. Drawing on the elements of the established business management process of “plan, do, check, and act,” the ESMS entails a methodological approach to managing environmental and social risks and impacts³ in a structured way on an ongoing basis.

Business should respect human rights, which means to avoid infringing on the human rights of others and address adverse human rights impacts business may cause or contribute to. This Performance Standard applies to business activities with environmental and/or social risks and/or impacts.

Performance Standard 2 - Labor and Working Conditions Introduction

Performance Standard 2, recognizes that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers through a constructive worker-management relationship, and by treating the workers fairly and providing them with safe and healthy working conditions, clients may create tangible benefits, such as enhancement of the efficiency and productivity of their operations.

Performance Standard 3 - Resource Efficiency and Pollution Prevention Introduction

Where on the one hand increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels; there on the other hand the current and projected atmospheric concentration of Green House Gases (GHG) threatens the public health and welfare of current and future generations.

This Performance Standard outlines a project-level approach to resource efficiency and pollution prevention and control in line with internationally disseminated technologies and practices.

Performance Standard 4 - Community Health, Safety, and Security Introduction

Performance Standard 4, recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Performance Standard addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups.

This Performance Standard addresses potential risks and impacts to the Affected Communities from project activities.

Performance Standard 5 - Land Acquisition and Involuntary Resettlement Introduction

Performance Standard 5, recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.

Unless properly managed, involuntary resettlement may result in long-term hardship and impoverishment for the Affected Communities and persons, as well as environmental damage and adverse socio-economic impacts in areas to which they

have been displaced. For these reasons, involuntary resettlement should be avoided and where unavoidable, it should be minimized and appropriate measures to mitigate adverse impacts should be carefully planned and implemented.

Performance Standard 6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard 6, recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.”

This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project’s lifecycle.

Performance Standard 7 - Indigenous Peoples Introduction

Performance Standard 7, recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also come under threat. As a consequence, Indigenous Peoples may be more vulnerable to the adverse impacts associated with project development than non-indigenous communities. This vulnerability may include loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and diseases.

Private sector projects can create opportunities for Indigenous Peoples to participate in, and benefit from project-related activities that may help them fulfill their aspiration for economic and social development. Furthermore, Indigenous Peoples may play a role in sustainable development by promoting and managing activities and enterprises as partners in development. Government often plays a central role in

the management of Indigenous Peoples' issues, and clients should collaborate with the responsible authorities in managing the risks and impacts of their activities.

Performance Standard 8 - Cultural Heritage Introduction

Performance Standard 8, recognizes the importance of cultural heritage for current and future generations. Consistent with the Convention Concerning the Protection of the World Cultural and Natural Heritage, this Performance Standard aims to ensure that clients protect cultural heritage in the course of their project activities. In addition, the requirements of this Performance Standard on a project's use of cultural heritage are based in part on standards set by the Convention on Biological Diversity.

2.4.3. International Finance Corporation's (IFC) Policy on Environmental and Social Sustainability, Effective January 1, 2012

International Finance Corporation (IFC) is the private sector arm of the World Bank Group. Summarily, it aims at fighting poverty with passion and professionalism for lasting results and to help people help themselves and their environment by providing resources, sharing knowledge, building capacity, and forging partnerships in the public and private sectors.

International Finance Corporation's (IFC) Policy on Environmental and Social Sustainability, Effective January 1, 2012 supersedes the IFC Disclosure of Information Policy (April 2006) in its entirety. This Policy is not an express or implied waiver of IFC's privileges and immunities under its Articles of Agreement, international conventions, or any applicable law, nor does it provide any contractual or other rights to any party.

At IFC while transparency and accountability are fundamental to fulfilling its development mandate, IFC encourages its clients to be more transparent about their businesses and believes that when clients are committed to transparency and accountability they help promote the long-term profitability of their investments.

IFC strives for positive development outcomes in the activities it supports in developing countries including: (i) investments financed directly by IFC; (ii) investments implemented through financial intermediaries (FIs) or managed by IFC's Asset Management Company or any other IFC subsidiary, as well as investments funded in part or in whole by donors; and (iii) advisory services.

IFC believes that an important component of achieving positive development outcomes is the environmental and social sustainability of these activities, which

IFC pursues and expects to achieve through the application of this Policy on Environmental and Social Sustainability (the Sustainability Policy or the Policy), and a comprehensive set of environmental and social Performance Standards. Through this Policy, IFC puts into practice its commitments to environmental and social sustainability. Activities supported and financed by IFC include a wide range of investment and advisory products including technical, financial and/or regulatory advice, project structuring as well as training to companies, industries, and governments.

2.4.4. The World Bank Environmental Assessment Process

The principal international guidance utilized in assessing the significance of impacts from the proposed development, and for determining content and form of reporting from the World Bank was also utilized.

World Bank Operational Policies OP4.01 Environmental Assessment (January 1999):

This sets out the World Bank's policy on projects requiring an EIA and defines what the assessment is designed to achieve and what issues must be considered. It also sets out guidance for screening projects and identifies other World Bank guidance and policies that may be relevant.

World Bank – Pollution Prevention and Abatement Handbook (1998):

This handbook sets out the basic principles that are considered appropriate to evaluating and controlling pollution from any defined project. The handbook provides guidance on pollution management and sets out generic environmental standards for air, water and soil pollution. This handbook also provides sector guidance. Of most significance to this project is the guidance for Thermal Power: Guidelines for new plant (July 1998).

The environmental assessment undertaken in this report also utilizes, as a precautionary measure only, The World Bank guidelines presented in the "Pollution Prevention and Abatement Handbook" effective July 1998.

2.4.5. IFC Environmental, Health and Safety – General Guidelines (April 30, 2007)

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. These **General EHS Guidelines** are designed to

be used together with the relevant **Industry Sector EHS Guidelines** which provide guidance to users on EHS issues in specific industry sectors. For complex projects, use of multiple industry-sector guidelines may be necessary.

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site-specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. The applicability of specific technical recommendations should be based on the professional opinion of qualified and experienced persons. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHS Guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

2.4.6. IFC Environmental, Health and Safety – Metal, Plastic, and Rubber Products Manufacturing (April 30, 2007)

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, these EHS Guidelines are applied as required by their respective policies and standards. These industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors. For complex projects, use of multiple industry-sector guidelines may be necessary.

The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them.

The applicability of the EHS Guidelines should be tailored to the hazards and risks established for each project on the basis of the results of an environmental assessment in which site specific variables, such as host country context, assimilative capacity of the environment, and other project factors, are taken into account. The applicability of specific technical recommendations should be based on the professional opinion of qualified and experienced persons.

When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHS Guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

The EHS Guidelines for Metal, Plastic, and Rubber Products Manufacturing address material processing operations common to multiple industries engaged in the manufacture of metal, plastic, and rubber products. It does not include extraction or production of raw materials (metals, plastics, and rubber), metal casting, or synthesis of thermoplastic polymers or additives.

2.4.7. ILO - Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)

In 2001, the **International Labor Organization** (ILO) published ILO-OSH 2001, also titled "Guidelines on Occupational Safety and Health Management Systems" to assist organizations with introducing OSH management systems. These guidelines encourage continual improvement in employee health and safety, achieved via a constant process of policy, organization, planning & implementation, evaluation, and action for improvement, all supported by constant auditing to determine the success of OSH actions.

The ILO management system was created to assist employers to keep pace with rapidly shifting and competitive industrial environments. The ILO recognizes that national legislation is essential, but sometimes insufficient on its own to address the challenges faced by industry, and therefore elected to ensure free and open distribution of administrative tools in the form of occupational health and safety management system guidance for everyone. This open access forum is intended to provide the tools for industry to create safe and healthy working environments and foster positive safety cultures within the organizations.

The requirements set out in the MIGA Performance Standard have been in part guided by a number of international conventions and instruments, including those of the International Labour Organization (ILO) and the United Nations (UN). These Conventions are:

- ILO Convention 87 on Freedom of Association and Protection of the Right to Organize
- ILO Convention 98 on the Right to Organize and Collective Bargaining
- ILO Convention 29 on Forced Labor
- ILO Convention 105 on the Abolition of Forced Labor
- ILO Convention 138 on Minimum Age (of Employment)
- ILO Convention 182 on the Worst Forms of Child Labor
- ILO Convention 100 on Equal Remuneration
- ILO Convention 111 on Discrimination (Employment and Occupation)
- UN Convention on the Rights of the Child, Article 32.1
- UN Convention on the Protection of the Rights of all Migrant Workers and Members of their Families.

2.4.8. OHSAS 18000

OHSAS 18000 is an international occupational health and safety management system specification. OHSAS 18000 comprises two parts, **OHSAS 18001** and **18002** and embraces a number of other publications. OHSAS 18000 is the internationally recognized assessment specification for occupational health and safety management systems. This internationally recognized specification for occupational health and safety management system operates on the basis of policy, planning, implementation and operation, checking and corrective action, management review, and continual improvement.

2.4.9. ISO 14001

ISO 14001: sets out the criteria for an environmental management system. It does not state requirements for environmental performance, but maps out a framework that a company or organization can follow to set up an effective environmental management system. It can be used by any organization that wants to improve resource efficiency, reduce waste and drive down costs. Using ISO 14001 can provide assurance to company management and employees as well as external stakeholders that environmental impact is being measured and improved. ISO 14001

can also be integrated with other management functions and assists companies in meeting their environmental and economic goals.

ISO 14001, as with other ISO 14000 standards, is voluntary, with its main aim to assist companies in continually improving their environmental performance, whilst complying with any applicable legislation. Organizations are responsible for setting their own targets and performance measures, with the standard serving to assist them in meeting objectives and goals and the subsequent monitoring and measurement of these.

ISO 9001 Quality Management Systems and ISO 14001 Environmental Management System can work in tandem with OHSAS 18001/18002 to complement each other and form a better overall system. Each component of the system is specific, auditable, and accreditable by a third party after review.

2.4.10. ISO 26000

In 2005, ISO launched the development of an International Standard providing guidelines for Social Responsibility. It was adopted in November 2010. **ISO 26000 in contrast with most ISO standards does not aim at certification.**

The objective of ISO 26000 is to “provide harmonized, globally relevant guidance based on international consensus among expert representatives of the main stakeholder groups and so encourage the implementation of social responsibility worldwide. The guidance in ISO 26000 draws on best practice developed by existing public and private sector initiatives and is intended to be useful to organizations large and small in both these sectors”.

ISO 26000 defines social responsibility as the “responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that contributes to sustainable development, including health and the welfare of society; takes into account the expectations of stakeholders, is in compliance with applicable law and consistent with international norms of behaviour and is integrated throughout the organization and practised in its relationships”

ISO 26000 deals with a wide range of issues and has identified seven “core subjects”: **organizational governance; human rights; labour practices; the environment; fair operating practices; consumer issues; and community involvement and development.**

Although it **is not meant to become a certification standard** nor to be used as a standard-setting document, nothing in the text prevents countries from adopting national standards based on ISO 26000 that could become certifiable.

2.4.11. IFC - Good Practice Note Addressing Grievances from Project-Affected Communities

Companies across sectors and through all stages of project development can benefit from understanding community concerns and complaints and addressing them. This Good Practice Note provides guidance on basic principles and process steps that organizations should take into account when creating and implementing grievance mechanisms. Together, these principles and steps constitute a baseline set of considerations and good strategies for designing and implementing procedures appropriate to the project scale and impact.

2.4.12. The UN Global Compact

Officially launched on 6 July 2000 by the United Nations, the Global Compact (UNGC or GC) is a voluntary initiative which “seeks to align business operations and strategies everywhere with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption”. With over 6066 corporate participants and other stakeholders from over 132 countries, the UN Global Compact has become the largest corporate responsibility initiative. The ten principles of the Global Compact are:

Human Rights

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights.

Principle 2: Make sure that they are not complicit in human rights abuses.

Labour Standards

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.

Principle 4: The elimination of all forms of forced and compulsory labour.

Principle 5: The effective abolition of child labour.

Principle 6: The elimination of discrimination with regard to employment and occupation.

Environment

Principle 7: Businesses should support a precautionary approach to environmental challenges.

Principle 8: Undertake initiatives to promote greater environmental responsibility.

Principle 9: Encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

The participants in the Global Compact can include the following:

- **Companies from any industry sector**, except those companies involved in the manufacture, sale etc. of anti-personnel land mines or cluster bombs, companies that are the subject of a UN sanction or that have been blacklisted by UN Procurement for ethical reasons. Private military companies and tobacco companies, often excluded by other initiatives or ethical funds, are allowed to become participants. To participate, a company simply sends a letter signed by their CEO to the UN Secretary General in which it expresses its commitment to:
 - (i) the UN Global Compact and its ten principles;
 - (ii) engagement in partnerships to advance broad UN goals; and
 - (iii) the annual submission of a Communication on Progress (COP).
- Companies joining the United Nations Global Compact commit to implement the ten principles within their “sphere of influence”. They are expected to make continuous and comprehensive efforts to advance the principles wherever they operate, and integrate the principles into their business strategy, day-to-day operations and organizational culture.
- Other **stakeholders** can also participate in the Global Compact, including civil society organizations, labour, etc.

2.5. CATEGORIZATION OF THE HNMP PROJECT

Categorization of the project is based on environmental and social screening criteria of the IFC/World Bank:

Category A: Projects with potential significant adverse social or environmental impacts those are diverse, irreversible, or unprecedented;

Category B: Projects with potential limited adverse social or environmental impacts that are few in number, generally site specific, largely reversible and readily addressed through mitigation measures, and;

Category C: Projects with minimal or no social or environmental impacts.

Equator Principles - Category A and B Requirements

The *Category A* principle classification criteria refer to significant adverse environmental impacts affecting sensitive sites, or diverse impacts, or they are unprecedented.

A *Category B* project is defined as those where the potential adverse environmental impacts on human populations, or environmentally important areas, are less adverse than those of *Category A* projects.

The HNMPL proposed project's impacts are generally site specific (*Category C*) and few of them are irreversible while mitigation can be more readily designed than *Category A* projects.

The HNMPL proposed project will result in few, if any, "Sensitive Impacts" (i.e. "The Equator Principles" *Category B* criteria) because the project impacts are largely reversible and:

- do not affect vulnerable groups;
- do not affect ethnic minorities; and
- do not affect significant cultural heritage sites.

A review of the broad "Equator Principles" criteria and requirements for the classification of *Category A and B* projects has indicated that the HNMPL proposed project is more closely aligned to *Category B* due to the relatively few "sensitive impacts", as described under Equator Principles *Category A*, the reversibility of most effects and the ability to mitigate more readily those impacts which can be predicted.

Despite the classification aligning more closely with *Category B*, the preparation and presentation of the ESIA has been extended beyond the requirements of a *Category B* and will broadly meet the full assessment and reporting standards required for *Category A* projects.

In accordance with *Category A* requirements, there are recommendations, in the ESIA Report, to prevent, minimize, mitigate or compensate for adverse impacts identified. Whilst the project is more closely aligned to *Category B* classification, the following *Category A* requirements will be incorporated within the ESIA process through the full assessment of potential impacts as follows:

- Identification of opportunities to improve environmental performance;
- Preparation of a full social and environmental assessment i.e. a full ESIA;
- Preparation of an Environmental Management Plan (EMP);
- Provided an EMP with mitigation, and monitoring; and
- Carried out consultations in a structured and culturally sensitive way.

Taking into account the above criteria of the “Equator Principles” and IFC/World Bank for categorization of the project, The HNMPL Project can be categorized as a **Category B**.

3

Description of the Project

3. DESCRIPTION OF THE PROJECT

3.1. INTRODUCTION

HNMPL proposes to install and operate a new “Green Field” Vehicle Assembly Plant Punjab Province of Pakistan. The Project is estimated to cost about Pak Rupees 15,000 million.

The new plant will be built according to the Hyundai Motor Company latest and best available technologies as defined for the vehicle industry.

3.2. PROPOSED PROJECT LOCATION

The proposed Project will be located in M-3 Industry City located near Faisalabad City, Faisalabad District of Punjab Province. It is connected throughout Pakistan through M-3 Motorway to network of other Motorways, Expressways and National Highways. (Figures 3.1, 3.2 and 3.3).

The Assembly Plant is planned to be built within Plot # 172 to 208 (on an area of around 60 acres) in M-3 Industrial City, Faisalabad, developed by Faisalabad Industrial Estate Development and Management Company (FIEDMC). The land is presently under occupation and allotment to Nishat Mills Ltd sizing around 167 acres out of which ~ 90 acres is in excess of the mill’s requirement which will be later transferred to the Project Company after applicable approvals. Utilities provision for gas, water, electricity and effluent treatment falls under the domain of FIEDMC.

Land topography of the HNMPL site and M-3 Industrial City are presented in the **Figure – 3.4**, above.

3.3. HNMPL PLANT CAPACITY

Annual Production capacity of the proposed HNMPL Plant is as below:

Table – 3.1: Annual Installed Capacity (units)

Item	2019	2020	2021	2022	2023	2024
Installed Capacity	6,500	11,000	25,000	25,000	25,000	30,000

Expected capacity utilization during the next five years (%).

Table – 3.2: Expected Capacity Utilization

Item	2019	2020	2021	2022	2023	2024
Capacity Utilization	59%	100%	60%	100%	83%	100%

Models to be Assembled

Hyundai Nishat Motor (Private) Limited is planning to start assembly operation with H-100 as the first CKD model. This model has been huge success in the history when it was sold under the brand name of Hyundai Shehzore where it captured >90% of the porter car market. This is anticipated to be the volume leader again in the light commercial transport segment with the introduction of 3rd generation engine technology by Hyundai.

Subsequent models to follow under CKD condition are (subject to mutual discussion and approval by Hyundai Motor Company, Korea) Tucson and Kona.

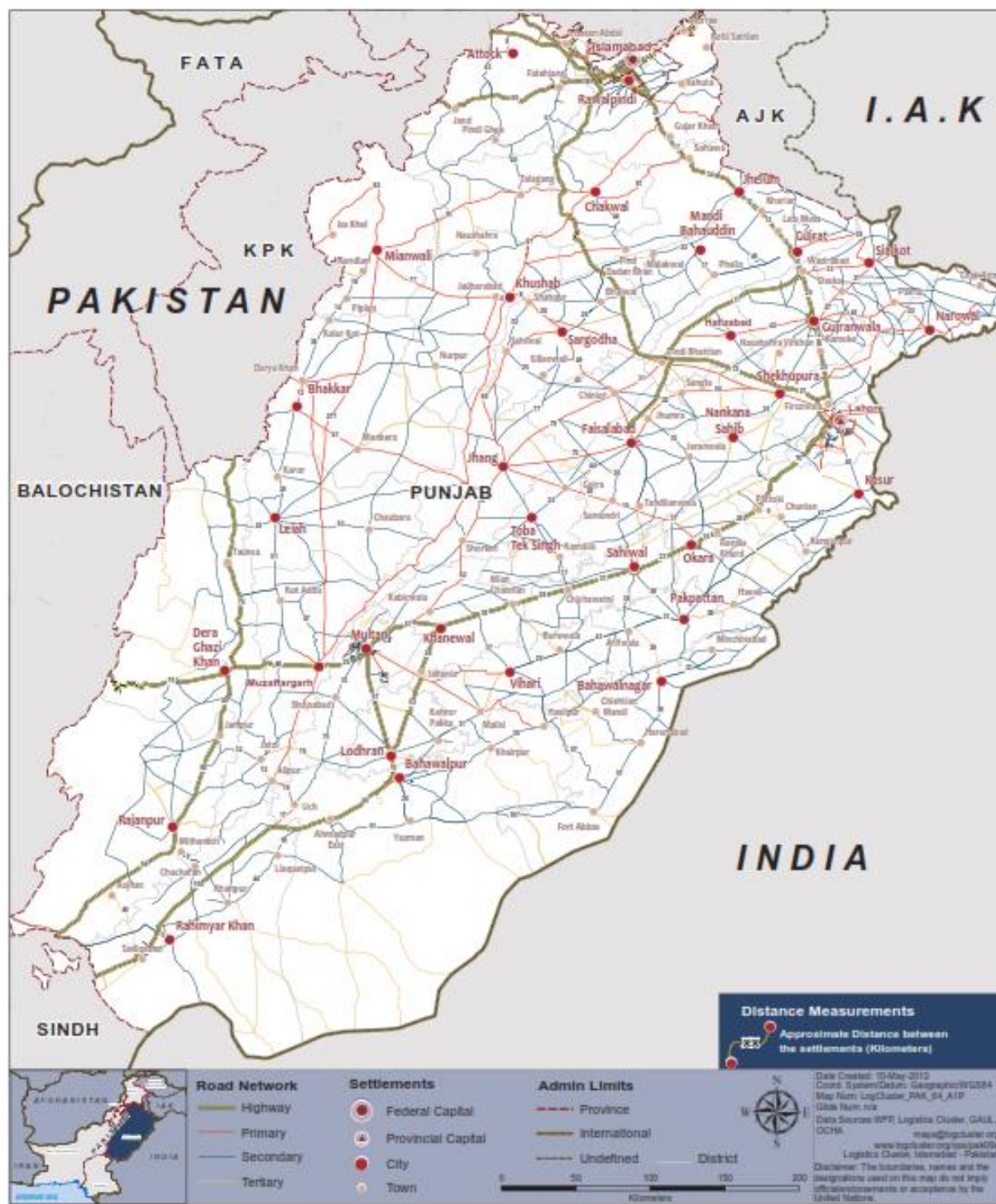


Figure – 3.1: Map of Punjab Province

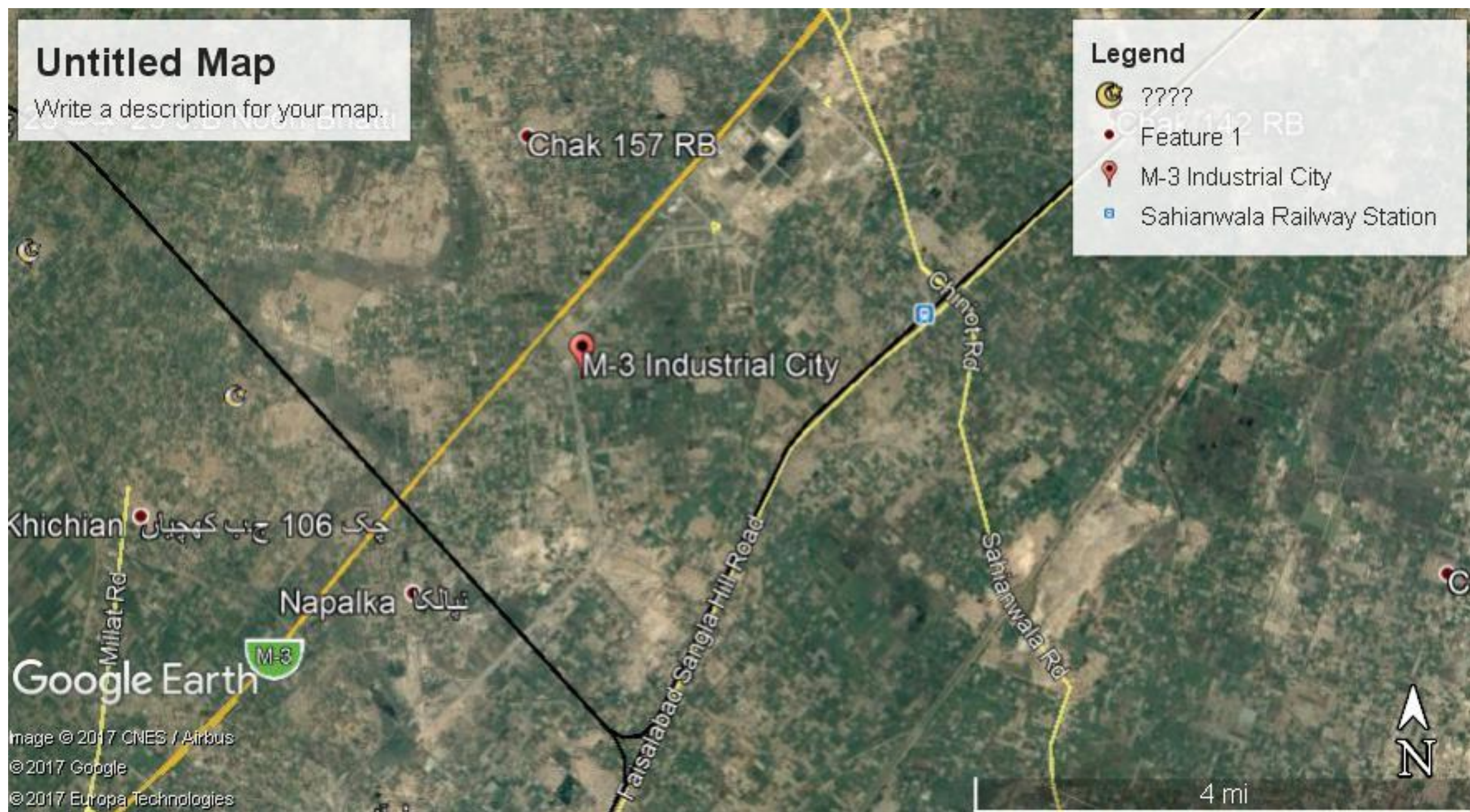


Figure – 3.2: M-3 Industrial City (Courtesy of Google Earth)



Figure – 3.3: Master Plan of M-3 Industrial City Showing HNMPL Plant

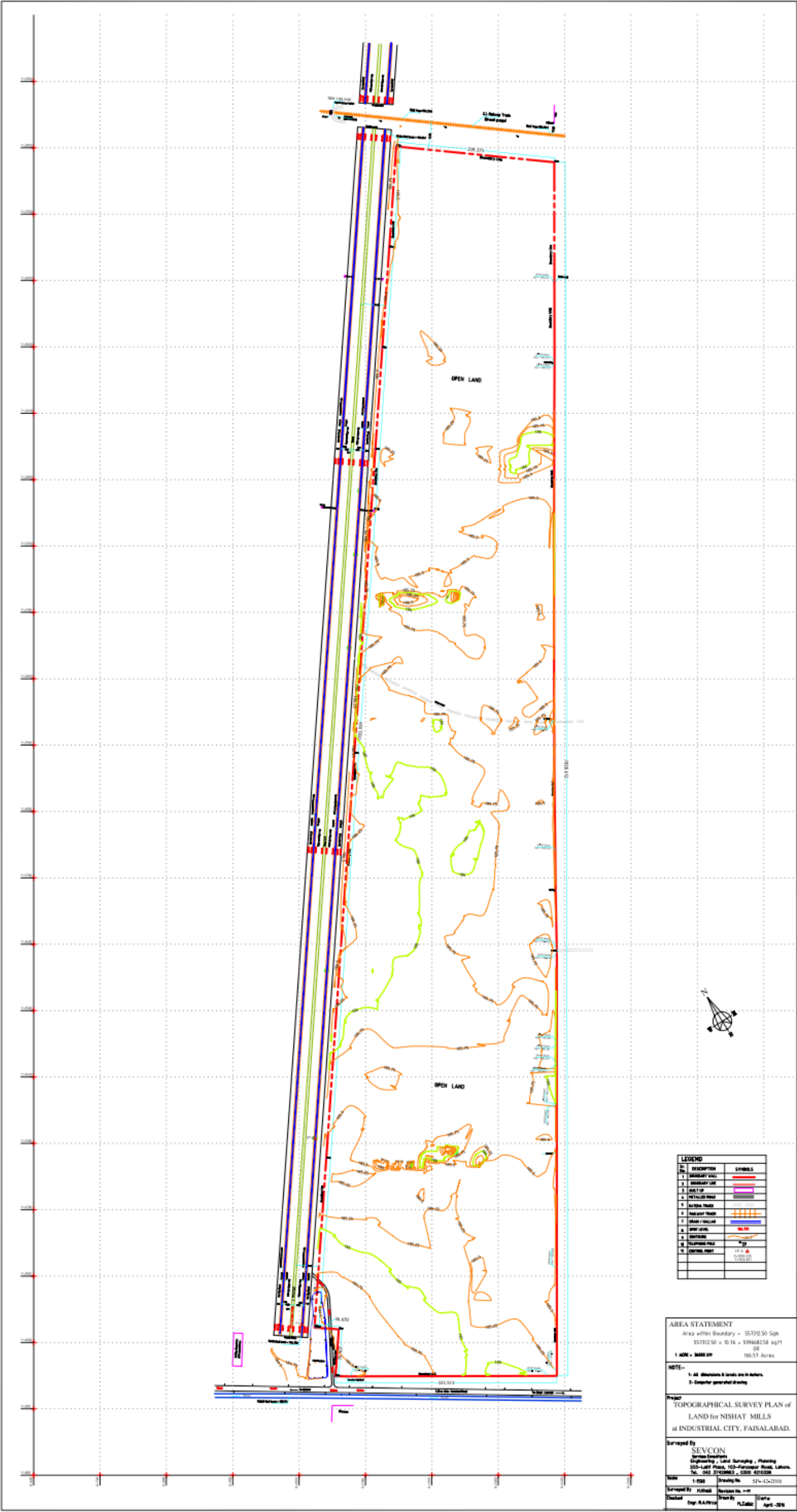


Figure – 3.4: Land Topography of HNMPL Site & M-3 Industrial City

The Assembly Plant is to be completed by the end of 2019 and operation will be started in early 2020. Furthermore, two to three flagship dealers will be established by the companies own investment in Karachi, Lahore and Islamabad which shall be operational in 2018. By 2023, the Company targets to have 20-23 franchised dealerships apart from above flagship dealers.

Details of the models to be assembled at HNMPL plant are:





Launching		Year 2019		Year 2020	
Model Name		H100	Tucson	Kona	Elantra
Model Image					
Dimension (mm)	Length	4,850	4,475	4,270	4,569
	Width	1,740	1,850	1,780	1,801
	Height	1,970	1,660	1,630	1,435
Curb Weight (kg)		1,671	1,559	1,200	1,350
Engine Displacement (l)		2.6	2.0	1.6	1.6
Transmission		5MT	6MT / 6AT	6MT / 6AT	6MT / 6AT
ABS		×	○	○	○
Power Steering		○	○	○	○
Immobilizer		×	○	○	○

Figure – 3.5

The project also contemplates import of CBU units during and after construction for items which can be imported under concessionary import duty structure H-1 vans (10 seater +) and Hyundai Hybrid vehicles for brand imaging and introduce a new line of products without further capital investment.



H1 Van (2.5L 6 speed AT)	Ioniq Hybrid (1.6L 6 speed AT)
	

Figure – 3.6

Total volume of production (model wise) is as below:

Table – 3.3: Production Plan (units)

Model	2019	2020	2021	2022	2023	2024
H100	4,500	6,000	7,000	8,000	10,000	15,000
Tucson	2,000	2,000	3,000	5,000	5,000	5,000
Kona	-	1,000	2,000	4,000	4,000	4,000
Elantra	-	2,000	3,000	6,000	6,000	6,000
Total	6,500	11,000	15,000	23,000	25,000	30,000

The Company is contemplating to introduce Elantra Model by 2020, as market justifies.

Description of auto parts to be developed in-house or purchased locally;

The Company will develop localization to assure competitiveness against the existing car manufacturers even after 5 years of concession granted by Automotive Development Plan, ADP (2016-2021).

Table – 3.4: Parts Localization Plan

Model	2019	2020	2021	2022	2023	Accumulative
H-100	15.10%	7.50%	5.56%	5.98%	6.04%	40.18%
Tucson	11.48%	8.11%	8.53%	9.20%	6.09%	43.41%
Kona	-	11.60%	12.45%	5.25%	3.11%	32.41%
Elantra	-	15.00%	12.45%	9.50%	8.50%	45.45%

Initially, the Plant will operate in one shift of 8 hours per day, working for 5 full working days and 1 half day. Subsequently, production capacity will be increased by work for 2 shifts of 8 hours each.

3.4. ASSEMBLY PLANT DETAILS

The Company intends to bring the latest available technology developed by Hyundai Motor Company and compatible with the local conditions for higher safety and lower environmental impact.

Vehicle manufacturing facilities are more accurately described as assembly plants as they now confine themselves to producing body parts, installing the engine, final assembly and painting. All other parts are typically bought in on a “just-in- time” basis, e.g. castings/forgings, electrical/electronic equipment, wheels/tyres, instruments etc. Approximately 8,000 to 10,000 parts are assembled into approximately 100 major vehicle components. Assembly plants are highly automated computer controlled assembly line operations.

The unpainted vehicle body (also known as the “body-in-white”) is assembled from formed body panels joined by welding, glue and riveting. The vehicle passes by conveyor to the paint shop for:

- Pre-treatment (degreasing and anti-corrosion inhibitor);
- Priming;
- Seam sealing and underbody preparation;
- Application of filler and finishing paint coats;
- Polishing, inspection and rectification;
- Undersealing and wax injection.

The Hard Trim is the fitting of items such as instrument panels, steering columns and body glass. The Soft Trim is the fitting of seats, door pads and upholstery.

The vehicle is then fitted with the petrol tank, exhaust, and bumpers. At the same time, the engine is assembled. The engine and tyres are then fitted and the vehicle is subjected to a rigorous inspection.

The Assembly Plant mainly consists of body shop, paint shop and assembly shop with inspection line, test course, motor pool, warehouses and utilities, etc.

List of major equipment to be installed in the manufacturing facilities of body, paint and assembly shops is detailed below.

Table – 3.5: Equipment List of Main Manufacturing Facilities

Manufacturing Facility	Equipment
Body Shop	(a) Welding Jigs (b) Welding Guns (c) Welding Transforme (d) Hoists (e) Necessary Tools with Mig Welder
Paint Shop	(a) Booth for (i) Pretreatment & ED Coat (ii) Primer Coat (iii) Top Coat (b) Baking Ovens
Assembly Shop	(a) Trim Line (i) Sealer Pumps (ii) Conveyors

Manufacturing Facility	Equipment
	<ul style="list-style-type: none"> (iii) Pneumatic Tools (iv) Torque Wrenches (b) Chassis Line <ul style="list-style-type: none"> (i) Central Lifter (ii) Engine Docking Machine (iii) Axle Lifting Machine (iv) Wheel Subassembly (v) Wheel Balancing (vi) Pneumatic Tools (c) Final Line <ul style="list-style-type: none"> (i) Coolant Feeder (ii) Brake Bleeding Machine
Performance & Inspection Testing Facilities	<ul style="list-style-type: none"> (a) Alignment Tester (b) Side Slip Tester (c) Brake Tester (d) Turning Radius (e) Headlight Aiming Tester (f) Shower Tester (g) Rolling Tester

3.5. ASSEMBLY PLANT LAYOUT

Proposed layout of the assembly plant is shown below:

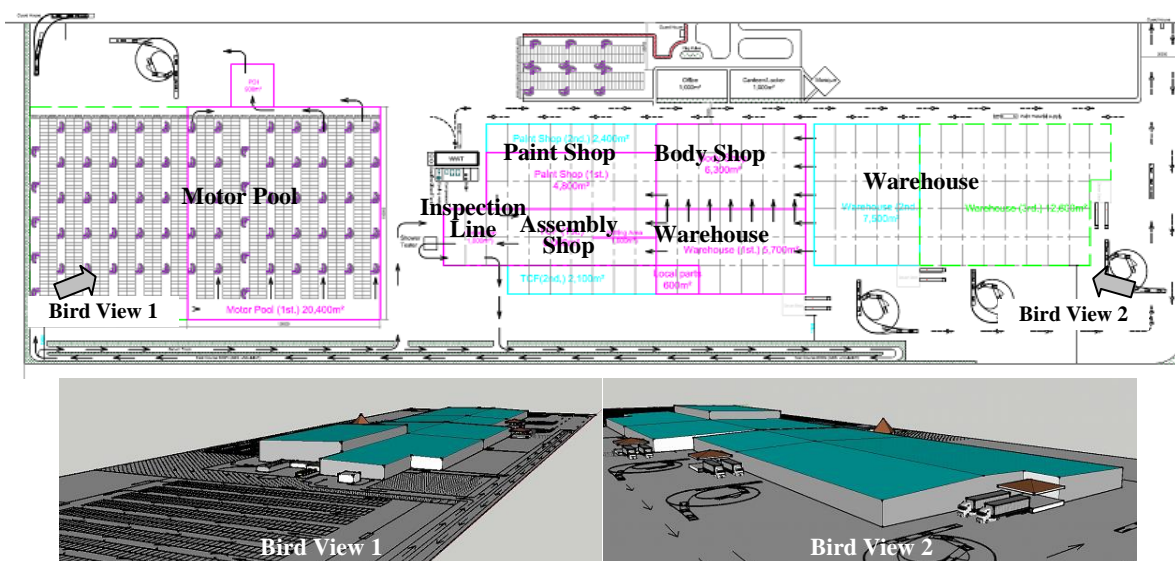


Figure – 3.7: Assembly Plant Layout

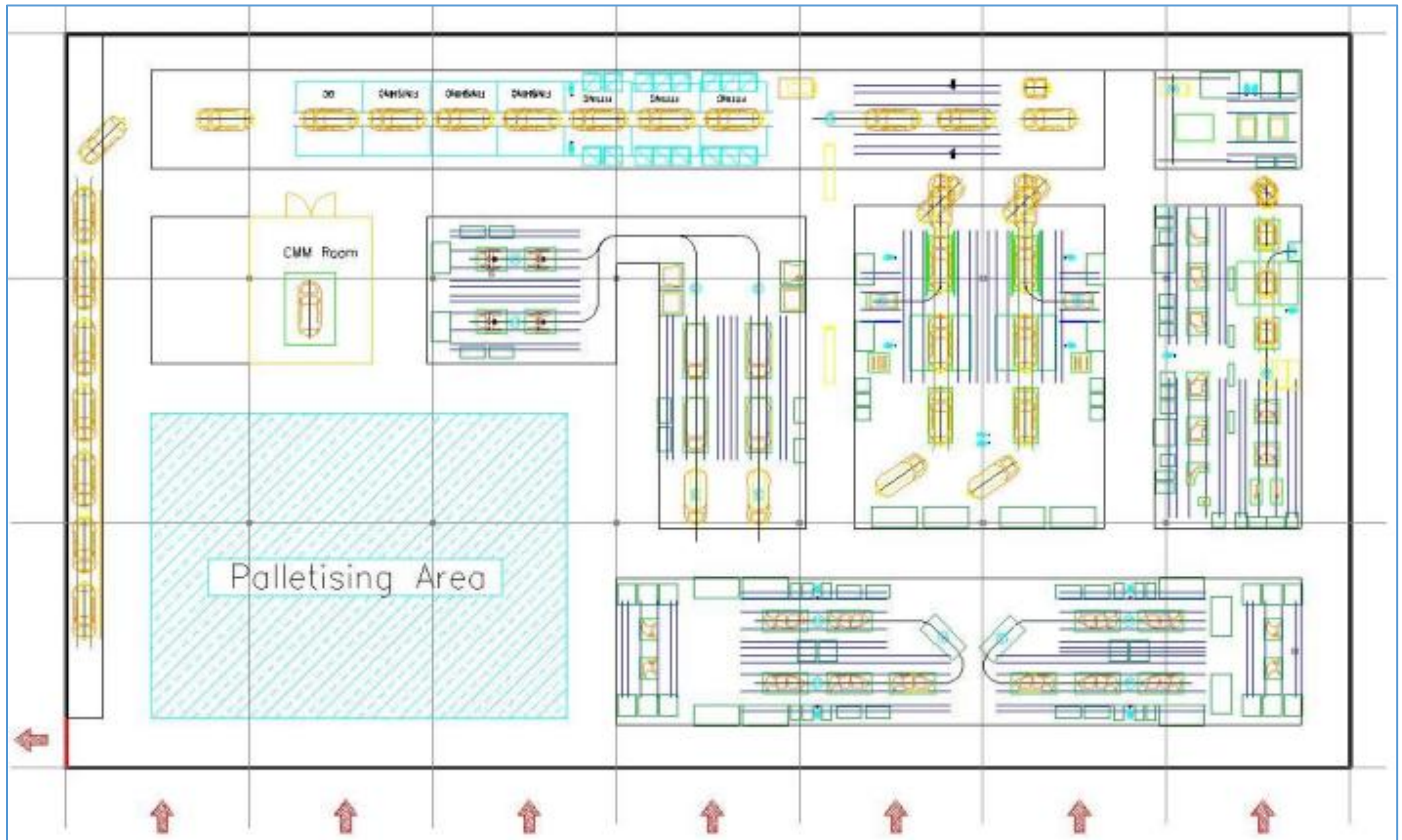


Figure – 3.8: Body Shop Layout

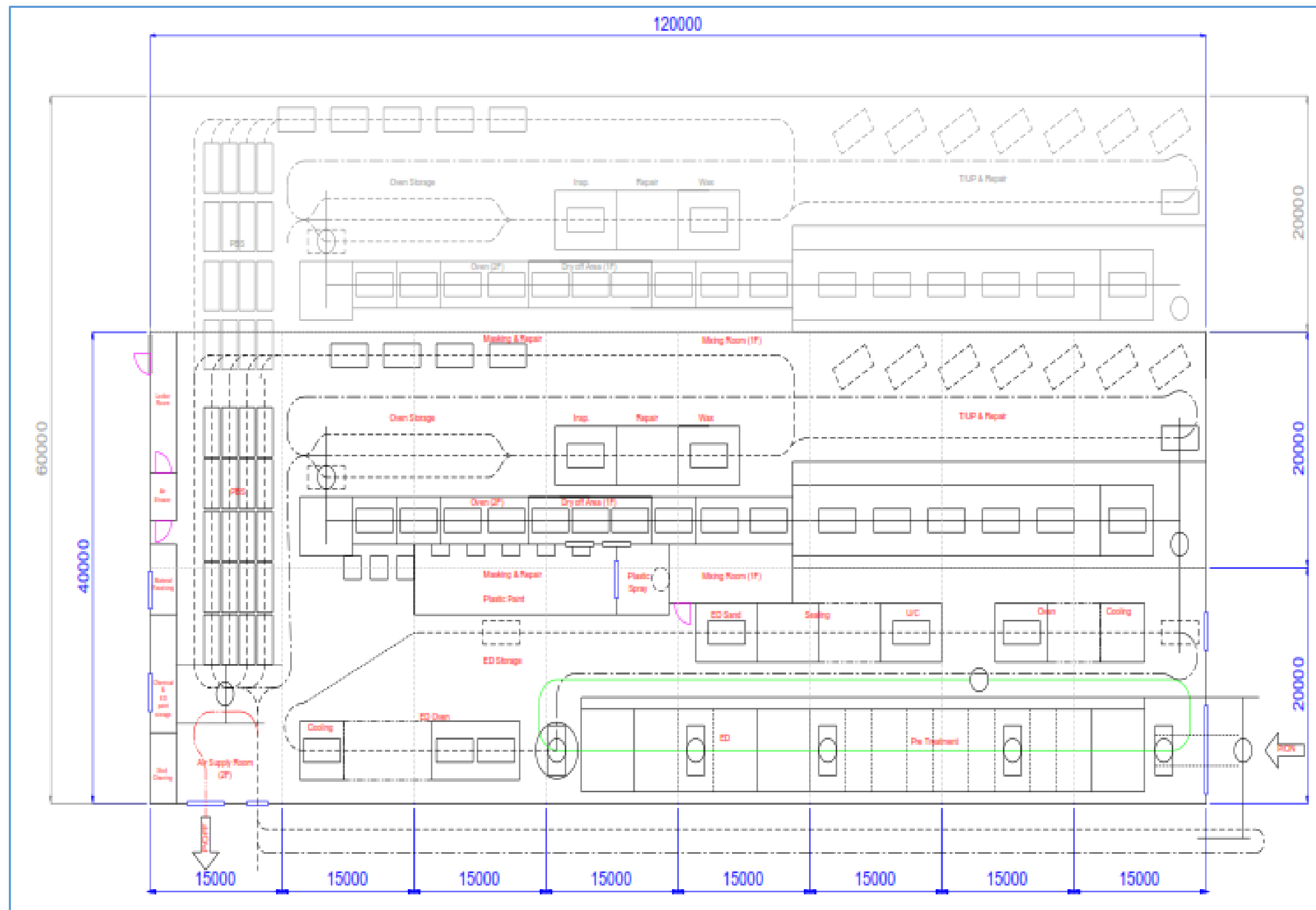


Figure – 3.9: Paint Shop Layout

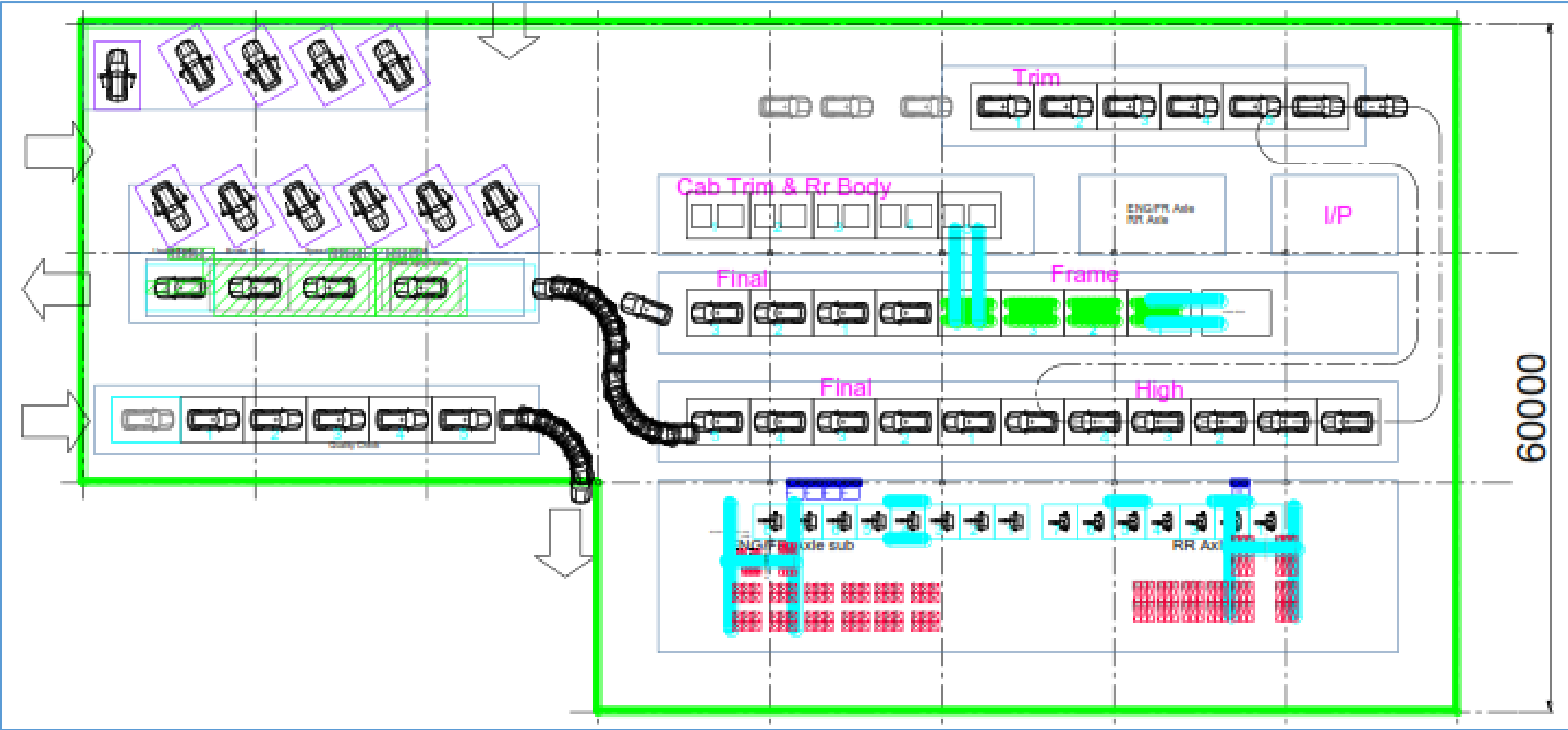


Figure – 3.10: TCF Shop Layout

3.6. FUEL, ENERGY & WATER REQUIREMENT

Detailed utilities consumption for various capacity utilization phases is presented in Table – 3.6.

Table – 3.6

Utility consumption list

	Phase-1			Phase-2			Phase-3		
	Elec.(kw/h)	Air(Nm3/min)	Water(m3/h)	Elec.(kw/h)	Air(Nm3/min)	Water(m3/h)	Elec.(kw/h)	Air(Nm3/min)	Water(m3/h)
Body Shop	365.7	0.7	*1) 1.1	174.3	0.9	0.0	0.0	0.0	0.0
				540.0	1.6	1.1	540.0	1.6	1.1
Paint Shop	573.6	8.0	25.0	516.0	8.0	18.0	0.0	0.0	0.0
				1,089.6	16.0	43.0	1,089.6	16.0	43.0
TCF Shop	744.9	14.4	1.0	41.0	0.0	0.0	0.0	0.0	0.0
				785.9	14.4	1.0	785.9	14.4	1.0
Warehouse	50.4			43.0			72.0		
				93.4			165.4		
Office and canteen	40.0		4.7	0.0		0.0	0.0		0.0
				40.0		4.7	40.0		4.7
Utility buildings	363.3			0.0			0.0		
				363.3			363.3		
Total	2,137.9	23.1	31.8	2,912.2	32.0	49.8	2,984.2	32.0	49.8

*1):Cooling water(Circulating water) capacity is 145m3/h

*Upper row:Increase

*Lower row:Total

	Phase-1	Phase-2	Phase-3
	Gas (m3/day)	Gas (m3/day)	Gas(m3/day)
Body Shop			
Paint Shop	675.0	675.0	1,350.0
		1,350.0	2,700.0
TCF Shop			
Warehouse			
Office			
Utility buildings	21.0	0.0	0.0
		21.0	21.0
Total	696.0	1,371.0	2,721.0

Electricity demand

	Phase-1	Phase-2	Phase-3
	Elec.(kw)	Elec.(kw)	Elec.(kw)
Body Shop	522.4	249.0	0.0
		771.4	771.4
Paint Shop	573.6	516.0	0.0
		1,089.6	1,089.6
TCF Shop	1,489.8	82.0	0.0
		1,571.8	1,571.8
Warehouse	50.4	43.2	72.0
		93.6	165.6
Office and canteen	40.0	0.0	0.0
		40.0	40.0
Utility buildings	519.0	0.0	0.0
		519.0	519.0
Total	3,195.2	4,085.4	4,157.4

*Upper row:Increase

*Lower row:Total

A) Fuel

Natural gas will be used as fuel and provided by Sui Northern Gas Pipe Line system.

B) Electric Power

The requirement of electricity will be met from the M-3 Industrial City system. In addition, for emergency, HNMPL plans to install in phases five (5) sets of diesel generators each with an installed capacity of 1,000 KVA.

C) Water Supply

HNMPL plans to install tube-well at a depth 30 meters. The ground water being brackish will be treated before its utilization in the plant. Drinking water will be provided by M-3 Industrial City and treated if deemed necessary. HNMPL is also considering importing raw water from nearby irrigation canal.

3.7. WASTEWATER

The plant is expected to generate 2.1 m³/hour of wastewater of following characteristic. In principle, water will be circulated for paint shop use.

ANTICIPATED CHARACTERISTICS OF WASTEWATER BEFORE TREATMENT

S. #.	PARAMETERS	ANTICIPATED VALUES
1	pH	4 – 6
2	BOD ₅ @20° C	650
3	COD	1100
4	OIL & GREASE	50
5	Zn	10
6	Ni	10
7	TSS	250
8	PO ₄	175
9	Cr total	1.5
10	Pb	0.5

Note: All values are in mg/liter except pH.

For treatment of such wastes which are varying in nature following approach will be adopted:

- Free oil is skimmed out and removed by “Oil Skimmer” equipped with rounding belt.
- By the dosage of FeCl₃, Ca (OH)₂, and anionic polymer the suspended substances, heavy metals, phosphate and so on are got flocculated and settled.
- The flocculated solids are settled down and thickened, and the clarified water is transferred to next stage.
- The clarified water is neutralized by the dosage of H₂SO₄ for bio-treatment.
- BOD component (organic) is decomposed with microbes. At this stage, aeration is done continuously and nutrient (Nitrogen & Phosphate) is fed.
- MLSS (Mix Liquid Suspended Solid) produced by bio-reaction is settled down and the clarified water are transferred to next stage of filtration. On the other hand, the settled sludge is returned to aeration tank, a part of that is sucked out for dehydration process.

- Few amount of suspended solid (SS) included in clarified water (from No. 2 sedimentation) is removed with sand filter to get proper quality for discharge. Then SS that removed in filtering media is back washed automatically.

The wastewater after treatment is expected to meet the IFC EHS Guidelines for Metal, Plastic and Rubber Products Manufacturing (Table – 6 of Guideline).

Table 6: Effluent Levels for Metal, Plastic, and Rubber Products Manufacturing		
Pollutants	Units	Guideline Value
pH	S.U.	6 – 9
COD	mg/L	250
TSS	mg/L	50 25 (electroplating)
Oil and Grease	mg/L	10
Aluminum	mg/L	3
Arsenic	mg/L	0.1
Cadmium	mg/L	0.1
Chromium (total)	mg/L	0.5
Chromium (hexavalent)	mg/L	0.1
Copper	mg/L	0.5
Iron	mg/L	3
Lead	mg/L	0.2
Mercury	mg/L	0.01
Nickel	mg/L	0.5
Silver	mg/L	0.2
Tin	mg/L	2
Zinc	mg/L	2
Cyanides (total)	mg/L	1
Cyanides (free)	mg/L	0.2
Ammonia	mg/L	10 20 (electroplating)
Fluorides	mg/L	20
Phenols	mg/L	0.5
Total Nitrogen	mg/L	15
Total Phosphorus	mg/L	5
Sulfide	mg/L	1
Volatile Organic Halogens (VOX)	mg/L	0.1
Toxicity	To be determined on a case specific basis	
Temperature increase	°C	<3 ^a
^a At the edge of a scientifically established mixing zone which takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity.		

3.8. TRANSPORTATION AND LOGISTICS

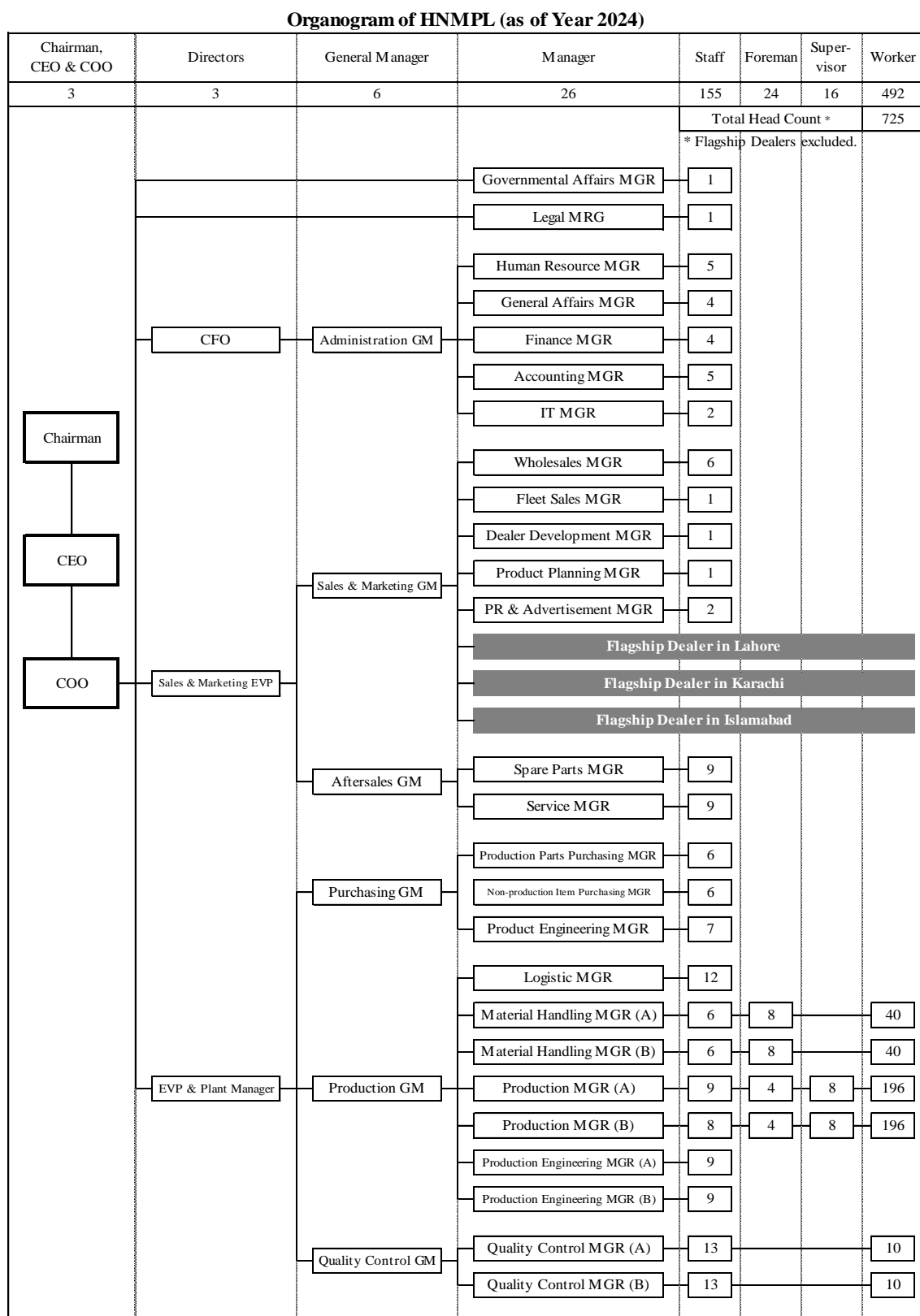
3.8.1. Truck Traffic

Following truck traffic is visualized for the Project:

- Vehicles Transporters for finished vehicles – inward and outward bound.
- Trucks for inward transportation of assembly plant input materials, oils, lubricants, etc.
- Trucks for outward transportation of waste and scrap materials.
- Vehicles & cars for transportation of HNMPL personnel.

3.9. ORGANIZATION STRUCTURE

HNMPL organization structure is presented below:



3.10. MANPOWER REQUIREMENT

Requirement of manpower up to Year 2024 is presented below. The Company will need more human resources for assembly and distribution according to launching of new products and expected sales increasing, and the second shift production from 2024 will require additional employment.

In addition, flagship dealers are supposed to increase number of employees especially due to increasing of service units.

Human Resource Plan (Head Count)

Type	Level		2019	2020	2021	2022	2023	2024
Management & Office Staff	Chairman, CEO & COO		3	3	3	3	3	3
	Director		3	3	3	3	3	3
	General Manager		6	6	6	6	6	6
	Manager		16	19	22	22	22	26
	Staff		85	101	116	119	119	155
	Management & Office Staff Total		113	132	150	153	153	193
Production Staff	Foreman		7	10	12	12	12	24
	Supervisor		5	7	8	8	8	16
	Worker		129	189	249	249	249	492
	Production Staff Total		141	206	269	269	269	532
Assembly & Distribution Total			254	338	419	422	422	725
Dealer Staff	Flagship Dealer	Lahore	27	36	39	44	47	48
		Karachi	27	36	39	44	47	48
		Islamabad	27	36	39	44	47	48
	Dealer Staff Total		81	108	117	132	141	144
Grand Total			335	446	536	554	563	869

3.11. PROPOSED PROJECT SCHEDULE

- Feasibility study - Finished
- Incentives granted for green field project - June 21, 2017.
- Final investment decision - October 31, 2017
- Start of construction - Jan. 1, 2018
- Start of production - July 1, 2019

4

Analysis of Alternatives

4. ANALYSIS OF ALTERNATIVES

4.1. GENERAL

This section presents a systematic comparison of feasible project alternatives, in terms of both the project (i.e., technology, design, operation, etc.) and site selection. The assessment of project alternatives and site selection includes environmental and social factors and include a no action (i.e., without the project) scenario.

The assessment must clearly state and justify the selected alternative. Alternatives include location as well as approach to design, process, and construction technology as well as the country chosen.

The main alternatives for the establishment of a green field vehicle assembly facility can be summarized as follows:

4.2. DO NOTHING ALTERNATIVE

The ‘Do Nothing’ alternative means that Pakistan will continue to import vehicles to meet its future needs and will be mostly dependent on world market & exchange rate fluctuations.

In consonance with the Vision of the Automotive Development Policy (ADP) 2016-2021, the following goals reflect future demand by recognizing the need to restructure and modernize the Auto Industry to meet the increasing demand for quality product in future:

- To increase automotive production gradually by 2021 to:
 - Cars /Van/Jeeps: 350,000
 - Light Commercial Vehicles (LCVs): 79,000
 - Trucks: 12,000
 - Buses: 2,200
 - Tractors: 88,000
 - Motorcycles: 2,500,000
- To increase contribution to the Gross Domestic Product from 2.3 percent to 3.8 percent;
- To increase contribution to manufacturing from 22 percent to 30 percent, and
- To increase direct and indirect employment from 2.4 million presently to 4 million.

“Do Nothing” alternative will place Pakistan to further dependency on automobile import or slow down its economic growth. The ‘Do Nothing’ alternative does not seem plausible given the legitimacy of the proposed project rationale and the benefits to be derived. Pakistan’s trade deficit would not improve and the country will remain susceptible to high automobile products prices.

Though it has minor social and environmental impacts, the proposed Plant is expected to provide about 335 job opportunities in Year 2019 increasing to 869 in 2024, during its operation phase and additional job and economic opportunities through development of supply/distribution chain and trucking. In addition, there will be a transfer of technology associated with installation, operation of the equipment and maintenance and savings on foreign exchange, hence this alternative was chosen.

The investment potential of Pak Rupee 15,100 million by Year 2024, as proposed by the Project Proponents, will not be utilized with “Do Nothing” option.

4.3. PROJECT SITE OPTION

The Project is located in Special Economic Zone (SEZ), M-3 Industrial Park, near Faisalabad, developed by Faisalabad Industrial Estate Development & Management Company (“FIEDMC”). The Project will be subjected to all incentives applicable to a SEZ.

The proposed plant site is to be located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area. There are no scientific institutions anywhere in the project jurisdiction. Agriculture and labour is the major source of income for the people of nearby villages.

Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site.

The proposed location was determined to be the most convenient location in proximity to the market and domestic supply chain. The proposed site has least environmental & social impacts.

The site has proximity to Motorway, M-3, which connects major market centers in north and south regions of the country. These factors are also very much supportive of the project at the proposed site.

4.4. TECHNOLOGY OPTIONS

The technology being offered by Hyundai Motor Company is considered to be ‘state of the art’ in terms of being environment friendly, energy efficiency and modern plant & process design for similar capacity vehicle assembly plants.

The new plant will be built according to the applicable Best Available Technologies (BAT) defined for similar industry.

4.5. CONSTRUCTION TECHNOLOGY OPTIONS

The proposed project site is not exposed to any natural hazards. In this respect, concrete construction will be applied in the foundation.

A thorough investigation of construction technology options will therefore depend on sound engineering design as well as field investigations (such as weather, climate, soil bearing capacity, the availability of construction materials locally and local labor skills). During the design phase, the Project Contractor will choose the construction technology which best meets HNMPL’s project schedule, safety, and quality as well as the economic benefit to the local community.

5

Baseline Conditions in The Area Potentially Affected By Project

5. BASELINE CONDITIONS IN THE AREA POTENTIALLY AFFECTED BY PROJECT

This chapter defines the prevailing environmental and socio-economic settings within the proposed project area, and details the importance of these resources. The project area in this document is defined as the area where the project related activities to be carried out which include the proposed project site and surroundings, and the area that can interact with the project's positive and negative externalities in the long run. The environmental impact of any activity or process will be assessed on the basis of a deviation from the baseline or normal situation. Followings are the main components of the baseline:

- Physical Environment
- Biological Environment
- Socioeconomic Environment

The description provided in this section is based on followings:

- Desktop study and literature review
- Baseline data gathered from field activities
- Baseline data from relevant departments
- Government released publications such as Provincial and Federal census reports.
- Meetings and data collection from the proponent.

The main components of environment as mentioned above is broadly covers following environmental features;

- Surface water resources
- Ground water quality
- Ambient Air quality
- Soil Characteristic
- Noise
- Flora and Fauna
- Local communities and their concerns

5.1. PHYSICAL ENVIRONMENT

Physical environment essentially illustrates baseline conditions of topography, geology/ soils, climate, surface water and groundwater of the project area, where necessary, of proposed project regardless of an ESIA study.

5.2. ENVIRONMENTAL AND SOCIAL BASELINE5-2

5.2.1. Physical Features & Topography

The proposed project lies in M3 Industrial City, FIEDMC, Faisalabad where proponent “First aims to install car assembling unit. There are different industrial units within the M3 industrial city in operational, constructional and planning phase. These units include Maham Engineering, Zahid Textile, Multan Chemicals, Ayan Engineering, Brighto Chemicals, ZKBI (PVC Piping), Ghani Feed, Match Industry, Al-Hafiz Crystoplast, Chemtech, Noor Fatima, Power Plant and different warehouses etc. The following major industrial and commercial units are located in the vicinity of proposed project location. The project lies in district Faisalabad and it has detail background history. Faisalabad previously known as Lyallpur was established as a Mandi Town in 1895 as a part of the program of colonization of West Punjab. It was formerly a part of Tehsil Jhang of Multan Division. Because of the fact that most of the area was un-cultivated and there were no regular crops, it served the purpose of only a meadow for the cattle of the indigence. The opening of Lower Chenab Canal in 1892 and its extension to the area in the form of Rakh Branch, Jhang Branch and Gogerah Branch coupled with the introduction of a Canal Irrigation system, brought the whole area under regular cultivation. The city was named in honor of Sir James Lyall, the then lieutenant Governor of the Punjab. The design of the Town was prepared by Mr. Young and it was further improved by Sir Gunga Ram, a renowned Town Planner of the time. It was laid down on a parcel of land measuring 110 acres in a square from with eight bazaars radiating from the central Clock Tower.

The district of Faisalabad is situated in the center of the lower Rachana Doab, the area between Chenab and Ravi rivers, which has a mild slope from North-East to South-West with an average of about 0.2 to 0.3 meter drop per kilometer or about 1 to 1.5 feet per mile. The city is situated at an elevation of about 183.35 meters above the Sea level. The topography is however marked by valleys, local depression and relatively high ground.

5.2.2. Seismicity

Pakistan lies on an active seismic belt of earth. Seismic observations indicate that hundred of shocks originate every year. Mostly, these seismic waves are of low intensity and do not have significant effect. According to seismic zones of UN-Habitat the project area falls under Zone 2A. The seismic zoning is shown in the **Figure - 5.1.**

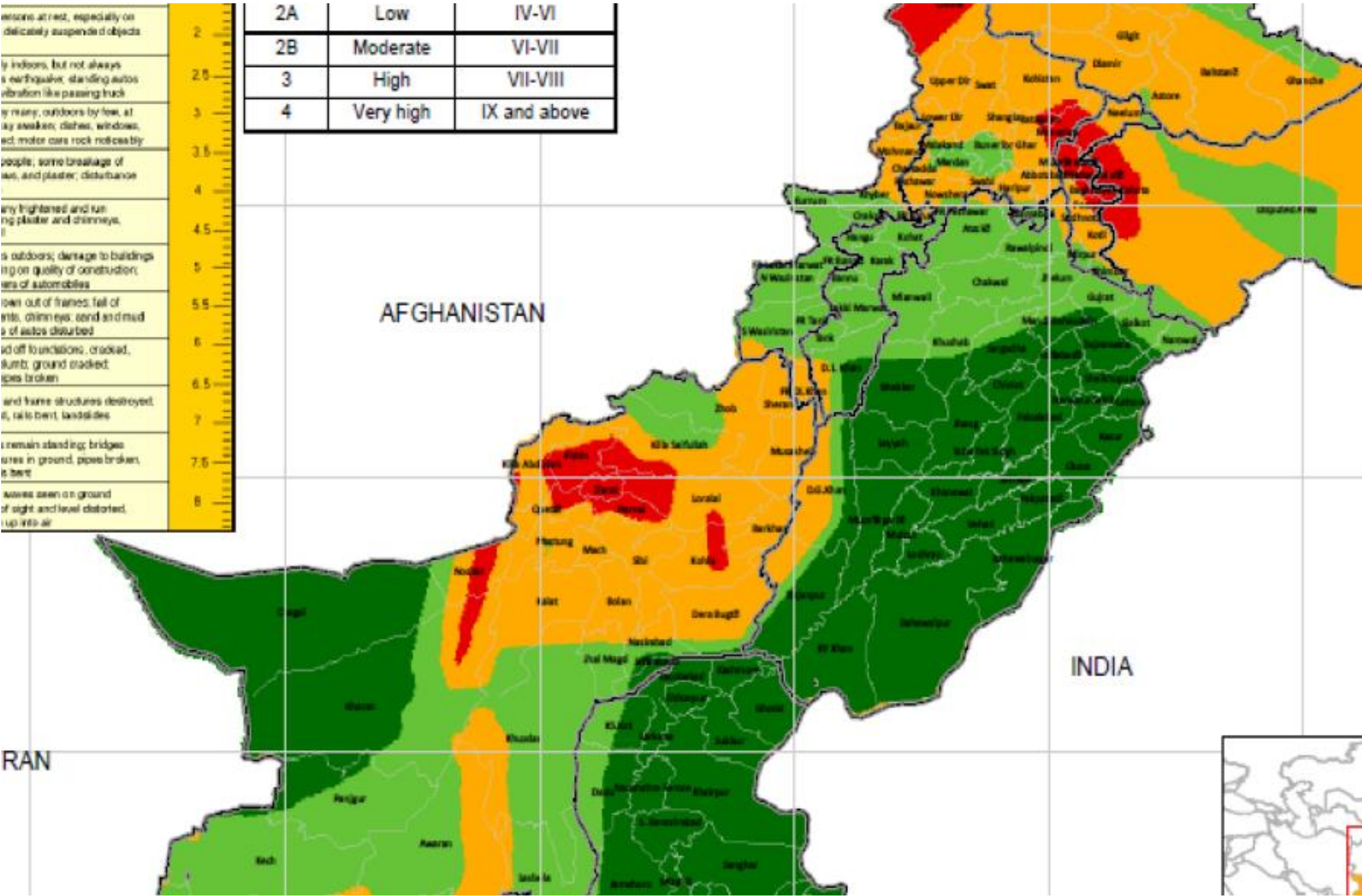


Figure - 5.1: Seismic Zone Map

5.2.3. Geology and Soil

The city is located on the “Bar Upland” which is relatively older alluvium deposit as found in the central part of the Doad. Because of its elevation above the bordering flood plains, the upland is generally beyond the reach of flood spills, which is the significant physiographic feature of the alluvial plan. Like other Punjab plains, the alluvium is quaternary and has been deposited on semi-consolidated tertiary rocks or on a basement of metamorphic and igneous rocks of Precambrian age. It emanates from the mountain ranges of the north and has been deposited by the present and ancestral streams. The deposition is predominantly fluvial sediments.

5.2.4. Climate

Climatic Zone

The meteorological data from Faisalabad has been used to identify the baseline climatic condition of the project area and surroundings. The proposed project lies in arid climate region. The last five years data was obtained from Pakistan Meteorology Department, meteorological station at Faisalabad to have an overview of the area’s climatic regime. The meteorology data of the site is briefly described below:

Seasons and Rainfall

The proposed project is situated in district Faisalabad which has hot summers and moderately cold in winter. It is located in the region that encounters four seasons, the hot summer starts from May and continues till July, monsoon starts from July and continues to

September while winter season end in February starting from November and spring season lasts for two months from March and April. The last five years annual rain fall data from 2009 to 2013 shows variation between -1 – 243.1 mm. The rain fall data has been used from nearest weather station residing in Faisalabad district is summarized in **Figure - 5.2**.

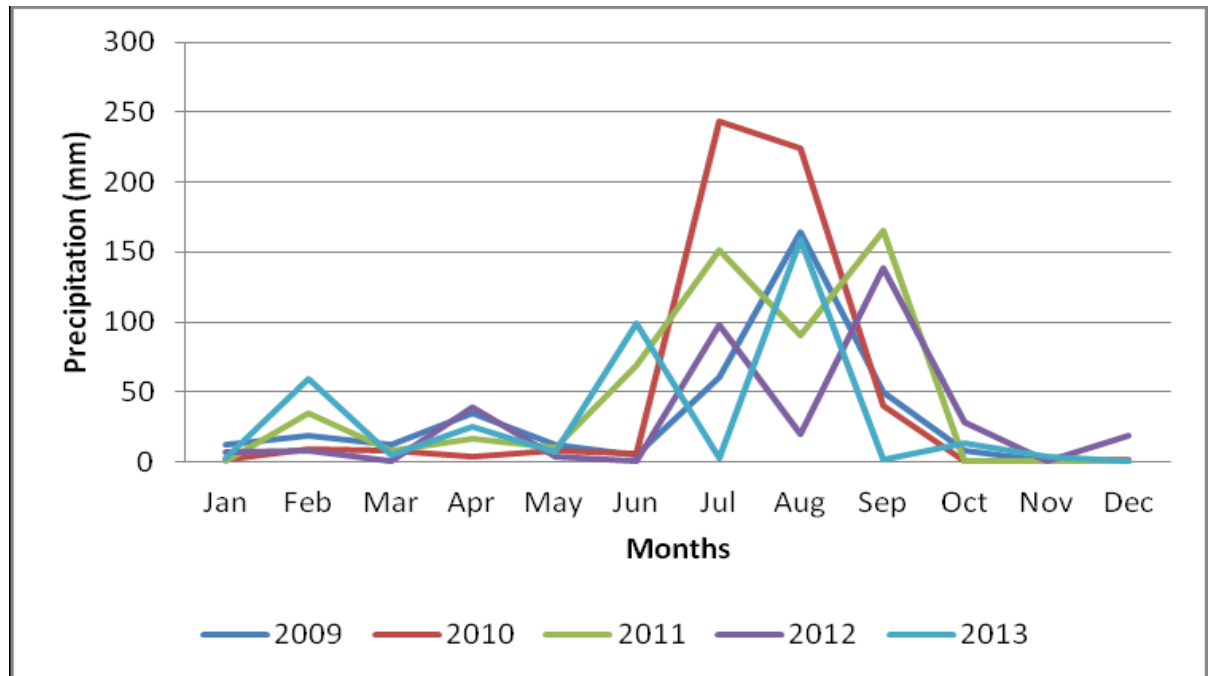


Figure - 5.2: Mean Monthly Precipitation (mm)

Temperature

The ambient temperature of proposed project region varies from summer to winter. The change in temperature has a direct influence on the environment of the project area. Hot and dry conditions during summer season changes the air quality by increase in particulate matters due to drying of road pavements and open soil. According to last five years data, mean monthly minimum temperature in the area varies from 3.5 to 28.6 C° and mean monthly minimum temperature were found 16.6 – 41.9 C°. The mean monthly minimum and maximum temperature from Faisalabad weather station at Lahore and its surrounding areas for last five years are given in **Figure - 5.3** and **Figure - 5.4** respectively.

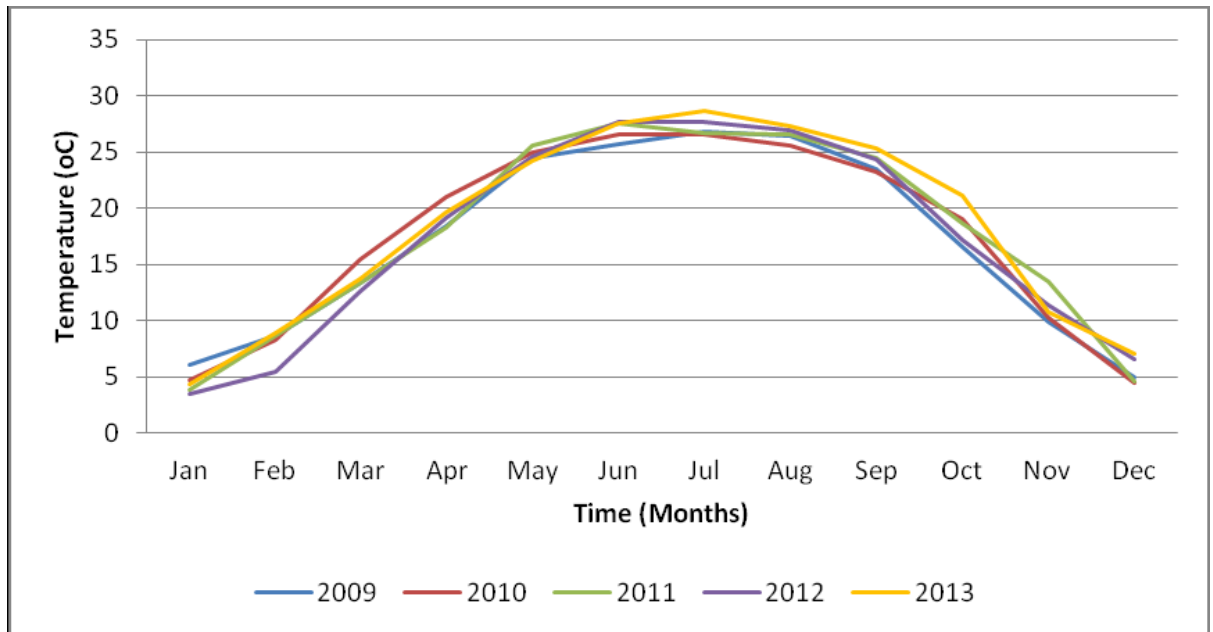


Figure - 5.3: Mean Monthly Minimum Temperature (°C)

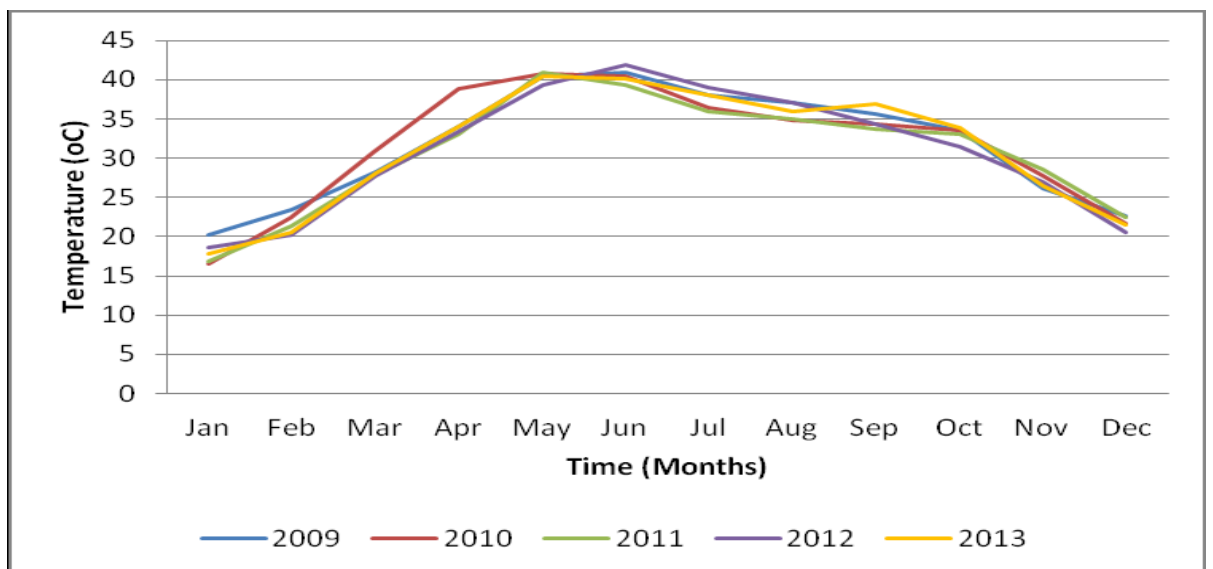


Figure - 5.4: Mean Monthly Maximum Temperature (°C)

Relative Humidity

The relative humidity in project region varies from 19 to 70 %. The highest humidity in the area was recorded 70 %, which was in the month of August 2010. The humidity data from 2009 to 2013 is summarized in the following **Figure - 5.5**.

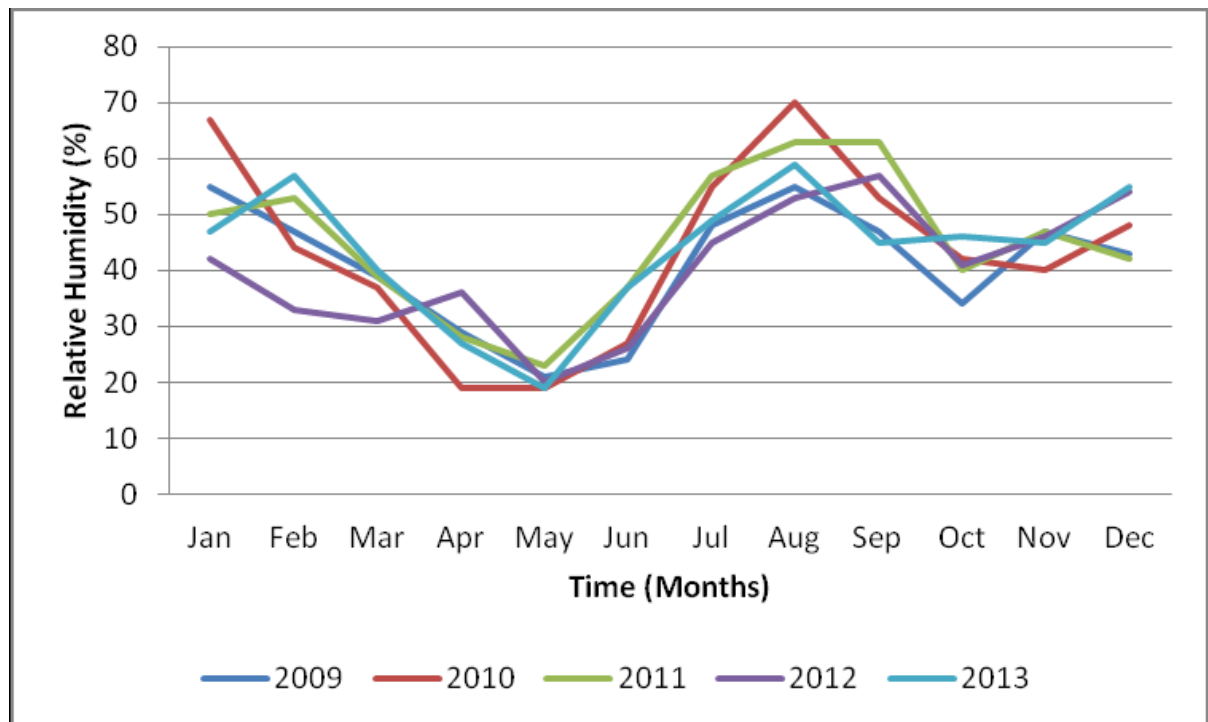


Figure - 5.5: Mean Monthly Relative Humidity at 1200 UTC (%)

Wind Speed

The dust storms and hot winds blow continuously during the months of March to August. Wind speeds and seasonal patterns vary considerably in the project area. The monthly average of wind speed is ranging from 0.4 to 7.6 Knots. The data for the wind speed from 2009 to 2013 is summarized as **Figure - 5.6**.

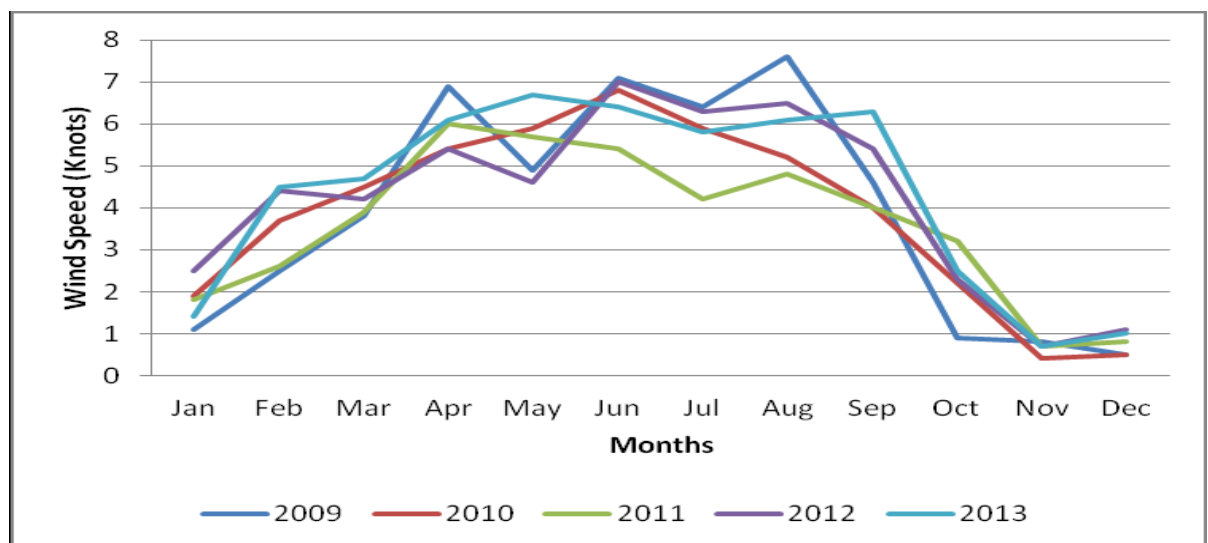


Figure - 5.6: Mean Monthly Wind Speed at 1200 UTC (%)

5.2.5. Water Resources

Water resources of the area are discussed under two broad headings, surface water resources and groundwater resources.

Surface Water

Surface waters resources are usually exposed to the surface of earth in the form of mobile and immobile situation which includes snow-clad mountains, rivers, non-river streams, rain, sleet, wetlands and oceans. Surface resourced waters are highly susceptible to natural and anthropogenic derived contamination in terms of Chemical and Biological contamination and thus are not used for sensitive applications such as drinking directly, unless it is pre-treated.

Among surface waters, district & near the project extremities there is a distributor canal of Rakh Branch, which is used for the irrigation purpose and etc.

Ground Water

Ground water resources are found hidden and camouflaged into the surface of earth in the form of mobile and immobile state and exist as shallow and deep wells, confined and unconfined aquifers, springs and watersheds. Ground resourced waters are not easily susceptible to natural and anthropogenic derived contamination caused by Chemical/Biological pollution and thus is directly used for sensitive applications such as drinking even it is un-treated. Main visible pollutants such as turbidity, color and odor usually remain absent in ground extracted waters. Invisible biological contaminants such as Bacteria, Protozoa and Viruses are also not expected in sub-surface water regimes unless it is contaminated by un-expected upheaval.

Water constitutes an important section of Physical Environment of an ESIA Study to define its magnitude, quality and occurrence throughout the entire project corridor. On geo-sphereic earth water is amounting to 3% as fresh water resource of the total water reserve. Of this groundwater comprises 95%, surface water 3.5% and soil moisture 1.5%. Out of all the fresh water on the earth, only 0.36% is readily available for diversity uses and applications. The project area lies in the district of Faisalabad; the groundwater table normally exists 25 to 30 meter below the ground level and contains high level of salinity.

5.3. ENVIRONMENTAL BASELINE MONITORING

In order to assess the baseline conditions of the project area, following environmental components were monitored;

1. Ambient air quality monitoring,

2. Noise monitoring,
3. Soil sampling and analysis
4. Water sampling and analysis

Environmental baseline monitoring was conducted at different locations. The details of the sampling/ monitoring locations along with discussions on result are given subsequent sections. Pictorial over-view of environmental monitoring carried out in the project area is presented in **Figure – 5.7**.

5.3.1. Ambient Air Quality

Troposphere air is highly susceptible to hostile anthropogenic activities taking place at ground level or in vicinity of ground; which are mainly caused by fossil fuel combustion in industrial units and also caused by high density transportation through mobile & immobile vehicles. Degradation of fossil fuel under the impact of high temperature give rise to varying gaseous products composed mainly of CO₂ in association with small amounts of Particulates, CO, NO_x and SO_x etc. These pollutant gases changes the ambient concentration of air environment and could cause sufficient damage to ground level air ecology.

The proposed project is located in fairly open and clean air and is mostly surrounded by diverse agriculture lands and villages. The only sources of air pollutants are from few operational industries in M3 Industrial City and main roads in the vicinity. As such no viable air contaminants are expected in the air-shed of proposed project.

However, most common airborne contaminants that are likely to be emanated from aforementioned sources giving rise to very low magnitude of these contaminants include Smoke, CO, NO, NO₂, SO₂ and particulate matter.

In the absence of continuous and permanent air quality monitoring stations in the country, it is difficult to provide a concrete baseline on ambient air quality concentrations for criteria pollutant, such as, Carbon monoxide, Nitrogen dioxide, sulphur dioxide, and suspended particulate matter.

In order to collect the current baseline data for ambient air quality including SO₂, NO_x, CO & PM, were monitored at project area to determine the magnitude of these pollutant gases.

Ambient air quality is measured with monitoring devices that have the capability to capture & analyze criteria air borne pollutants including CO, NO₂ and SO₂ at micro levels.

The monitoring techniques of each of these pollutant gases based on USEPA defined standard methods depicted in **Table - 5.1**.

Table - 5.1: Ambient Air Monitoring Methodology

Air Pollutant Monitoring	Monitoring Technique	Reference Method	Measure ment Range	Lowest Detection Limit
Carbon Monoxide (CO)	Gas Filter Correlation CO Analyzer	US EPA Designated Method RFCA-0981-054	0 – 100 mg/m ³	0.01 mg/m ³
Sulfur Dioxide (SO₂)	Pulsed Fluorescent Analyzer	US EPA Designated Method EQSA-0486-060	0 – 50 µg/m ³ 0 – 100 mg/m ³	0.01 µg/m ³
Nitrogen Dioxide (NO₂)	Chemiluminescent Analyzer	US EPA Designated Method RFNA-1289-074	0 – 50 µg/m ³ 0 – 100 mg/m ³	0.01 µg/m ³
Particulate Matter (PM₁₀)	High Volume PM10 Sampler	40 CFR 50, Appendix J (US EPA)	2 – 750 µg/m ³	2 µg/m ³

PEQS for air quality standards have been introduced; therefore, the monitoring values of Carbon monoxide (CO), Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂), and Particulate Matter (PM₁₀) were compared with standards set by PEQS.

08 hours Air monitoring CO was found 0.99 mg/m³ inside the proposed project boundary and it was well complying NEQS guideline limit of 5.00 mg/m³ regulated at 8 hours monitoring. 24 hours Air monitoring pattern on NO₂ indicates that it was below the detection limit as per below mentioned table (**Table 5-2**) and comply with PEQS, 2010.

24 hours Air monitoring of SO₂ indicates that it was below the detection limit as per below mentioned table (**Table - 5.2**) and comply with PEQS, 2010.

Overall Air monitoring indicates that average 24 hours concentrations of CO, NO₂ and SO₂ were found below the permissible limits regulated by PEQS, 2010 for ambient air whereas

Particulate Matter (PM₁₀) was recorded 92.86 µg/m₃ inside the SCIL and the results were found well complying NEQS defined limit of 150 µg/m₃ during 24 hour of measurement. Summary of ambient air quality monitoring is presented in the **Table - 5.2.**

Table - 5.2: Ambient Air Monitored Data Parmeter Unit Duration

Parameter	Unit	Duration	Inside Proposed Project Boundary	NEQS Limits
Carbon Monoxide (CO)	mg/m ₃	8 Hours	0.99	5.0
Nitrogen Dioxide (NO₂)	mg/m ₃	24 Hours	<0.1	120
Sulfur Dioxide (SO₂)	mg/m ₃	24 Hours	<0.1	120
Particulate Matter (PM₁₀)	mg/m ₃	24 Hours	95.5	120

The meteorological conditions were also monitored with the help of meteorological station installed for 24 hrs to assess the trend of air movements. The average monitored data is presented in the **Table - 5.3.**

Table - 5.3: Meteorological Monitored Data

Monitoring Parameters (Avg 24 Hrs)				
Monitoring Locations	Ambient Temperature (C ₀)	Wind velocity	Humidity (%)	Atmospheric Pressure
Inside the SCIL	29.16	1.47	48.5	758.9

5.3.2. Noise Monitoring

Noise is an important environmental stressor and is essential part of baseline studies. Noise has become a very important "stress factor" in the environment of human. The term "noise pollution" has been recently used to signify the hazard of sounds which are consequence of modern day development, leading to health hazards of different type. In the absence of reliable noise data, noise monitoring was conducted during field survey at 8 locations by utilizing Mastech Noise Meter and the LAeq was

measured. The noise level was found in range of 45.6 –59.5 dBA at day time which comply the permissible limit of 75dBA for Industrial area. **Table - 5.4** shows the summarized results of noise levels.

Table - 5.4: Results of Noise Monitoring

SR.	Location	Noise Levels (dB)
1	West Boundary of Site	55.4
2	East Boundary of Site	59.5
3	South Boundary of Site	49.5
4	North Boundary of Site	51.5
5	Chak 161	48.5
6	Project site	45.6
7	Within Industrial City	50.1
8	Shyan Wala Interchange	57.8

5.3.3. Soil Quality of Project Area

In order to assess the quality of soil, two soil samples were collected from within the project area and near village and analysed according to the standard methods.

Table - 5.5: Results of Soil Analysis

Sr. #	Parameters	Method	Unit	LDL	Test Results	
					Project Site	Near Chiniot Road
1	pH @ 28.9 oC (1:1)	SW-846 Guidelines	-	0.1	8.34	8.37
2	Conductivity @ 28.9 oC (1:1)	SW-846 Guidelines	µS/cm	1.0	1056	154.0
3	Grease & Oil	SW-846 Guidelines	% by wt	-	BDL-	BDL-
4	Chloride	SW-846 Guidelines	mg/kg	0.50	15.86	10.
5	Chromium (Cr)	SW-846 Guidelines	mg/kg	0.50	8.70	11.49
6	Lead (Pb)	SW-846	mg/kg	0.50	<0.50	<0.50

Sr. #	Parameters	Method	Unit	LDL	Test Results	
					Project Site	Near Chiniot Road
		Guidelines				
7	Cadmium (Cd)	SW-846 Guidelines	mg/kg	0.50	<0.50	<0.50
8	Zinc (Zn)	SW-846 Guidelines	mg/kg	0.50	33.80	47.77
9	Silver (Ag)	SW-846 Guidelines	µg/L	00.50	1.90	2.489
10	Arsenic (As)	USEPA 3050B	mg/kg	00.50	02.85	03.19
11	Selenium (Se)	USEPA 3050B	mg/kg	00.50	<00.50	<00.50
12	Barium (Ba)	USEPA 3050B	mg/kg	00.50	1861.23	1466.53
13	Mercury (Hg)	USEPA 3050B	mg/kg	00.050	<0.050	<0.050

5.3.4. Water Quality Monitoring of Project Area

In order to assess the quality of ground water, the physical and chemical parameters were analyzed for the determination of quality of ground water and concentration of components. The analysis results of collected samples are tabulated below in **Table - 5.6** and **Table - 5.7**.

Table - 5.6: Chemical Results of Ground Water

Sr. #	Parameters	Method	Unit	LDL	Test Results		National Standards
					Project Site	Chak Jhumra pind	
1	pH 25 oC	APHA4500H+ B	-	0.1	8.19	8.06	6.5-8.5
2	Color	APHA 2120 C	Pt-Co	5.0	<5.0	<5.0	-
3	Turbidity	APHA 2130 B	mg/L	0.20	3.8	1.6	<5

Sr. #	Parameters	Method	Unit	LDL	Test Results		National Standards
					Project Site	Chak Jhumra pind	
4	Total Dissolved Solids (TDS)	APHA 2540 C	mg/L	5.0	519	295	<1000
5	Chloride (Cl)	APHA 4500Cl-B	mg/L	0.5	10.89	6.80	250
6	Total Hardness	APHA 2340 B & C	mg/L	0.050	273.6	83.6	-
7	Fluoride	APHA 2340 B & C	mg/L	0.003	0.312	0.170	≤ 1.5
8	Nitrate	APHA 4500NO3 B	mg/L	0.003	3.47	9.53	≤50
9	Nitrite	APHA 4500NO2 B	mg/L	0.05	<0.003	<0.003	≤3
10	Cyanide (CN)	4500CN F	mg/L	0.01	<0.05	<0.05	≤0.05
11	Phenols	APHA 5530D	mg/L	0.003	<0.01	<0.01	≤0.002
12	Cadmium (Cd)	APHA-3111 B	mg/L	0.005	<0.003	<0.003	0.01
13	Total Chromium (Cr)	APHA-3111 B	mg/L	0.005	<0.005	<0.005	≤ 0.05
14	Copper (Cu)	APHA-3111 B	mg/L	0.005	0.0062	0.0078	2
15	Lead (Pb)	APHA-3111 B	mg/L	0.005	<0.005	<0.005	≤ 0.05
16	Nickel (Ni)	APHA 3120 B	mg/L	0.005	<0.005	<0.005	≤ 0.02
17	Zinc (Zn)	APHA-3111 B	mg/L	0.005	0.0572		5.0
18	Manganese (Mn)	APHA-3111 B	mg/L	0.005	<0.005	<0.005	≤ 0.5
19	Aluminum	APHA-3111 B	mg/L	0.005	<0.005	<0.005	≤ 0.2

Sr. #	Parameters	Method	Unit	LDL	Test Results		National Standards
					Project Site	Chak Jhumra pind	
	(Al)						
20	Antimony (Sb)	APHA-3111 B	mg/L	0.005	<0.005	<0.005	≤ 0.005 (P)
21	Arsenic (As)	APHA 3120 B	mg/L	0.005	<0.005	<0.005	≤ 0.05 (P)
22	Boron (B)	APHA 3120 B	mg/L	0.005	0.099	<0.005	0.3
23	Mercury (Hg)	APHA 3112 B	mg/L	0.001	<0.001	<0.001	≤ 0.001
24	Selenium (Se)	APHA 3120 B	mg/L	0.005	<0.005	<0.005	0.01
25	Barium (Ba)	APHA 3120 B	mg/L	0.005	0.366	0.051	0.7
26	Chlorine	APHA-4500Cl B/C	mg/L	1.00	<1.00	<1.00	0.5-1.5

Table - 5.7: Microbiological Results of Ground Water

SR	Parameters	Procedure	National Standards	Results	
				Project Site	Chak Jhumra pind
1	Total Colony Count	APHA4500H+ B	-	8.0 X 10 ³	1.0X 10 ⁴
2	Total Coli Forms	APHA: 9222 B	0 cfu / 100ml	Absent	Absent
3	Faecal Coli Forms (E.Coli)	APHA: 9222 D	0 cfu / 100ml	Absent	Absent
4	Faecal Streptococci/ Enterococci	APHA: 9230 C	0 cfu / 100ml	Absent	Absent

Table - 5.8: Chemical Results of Surface Water

Sr. #	Parameters	Method	Unit	LDL	Test Results
1	pH 25 oC	APHA4500H+ B	-	0.1	8.26
2	Color	APHA 2120 C	Pt- Co	5.0	<5.0
3	Turbidity	APHA 2130 B	mg/L	0.20	120
4	Total Dissolved Solids (TDS)	APHA 2540 C	mg/L	5.0	140
5	Chloride (Cl)	APHA 4500Cl- B	mg/L	0.5	67.0
6	Total Hardness	APHA 2340 B & C	mg/L	0.050	117.8
7	Fluoride	APHA 2340 B & C	mg/L	0.003	0.127
8	Nitrate	APHA 4500NO3 B	mg/L	0.003	4.56
9	Nitrite	APHA 4500NO2 B	mg/L	0.05	<0.003
10	Cyanide (CN)	4500CN F	mg/L	0.01	<0.05
11	Phenols	APHA 5530D	mg/L	0.003	<0.01
12	Cadmium (Cd)	APHA-3111 B	mg/L	0.005	<0.003
13	Total Chromium (Cr)	APHA-3111 B	mg/L	0.005	<0.005
14	Copper (Cu)	APHA-3111 B	mg/L	0.005	0.0084
15	Lead (Pb)	APHA-3111 B	mg/L	0.005	<0.005
16	Nickel (Ni)	APHA 3120 B	mg/L	0.005	<0.005
17	Zinc (Zn)	APHA-3111 B	mg/L	0.005	<0.0442

Sr. #	Parameters	Method	Unit	LDL	Test Results
18	Manganese (Mn)	APHA-3111 B	mg/L	0.005	0.1104
19	Aluminum (Al)	APHA-3111 B	mg/L	0.005	<0.005
20	Antimony (Sb)	APHA-3111 B	mg/L	0.005	<0.005
21	Arsenic (As)	APHA 3120 B	mg/L	0.005	<0.005
22	Boron (B)	APHA 3120 B	mg/L	0.005	<0.005
23	Mercury (Hg)	APHA 3112 B	mg/L	0.001	<0.001
24	Selenium (Se)	APHA 3120 B	mg/L	0.005	<0.005
25	Barium (Ba)	APHA 3120 B	mg/L	0.005	0.174
26	Chlorine	APHA-4500Cl B/C	mg/L	1.00	<1.00

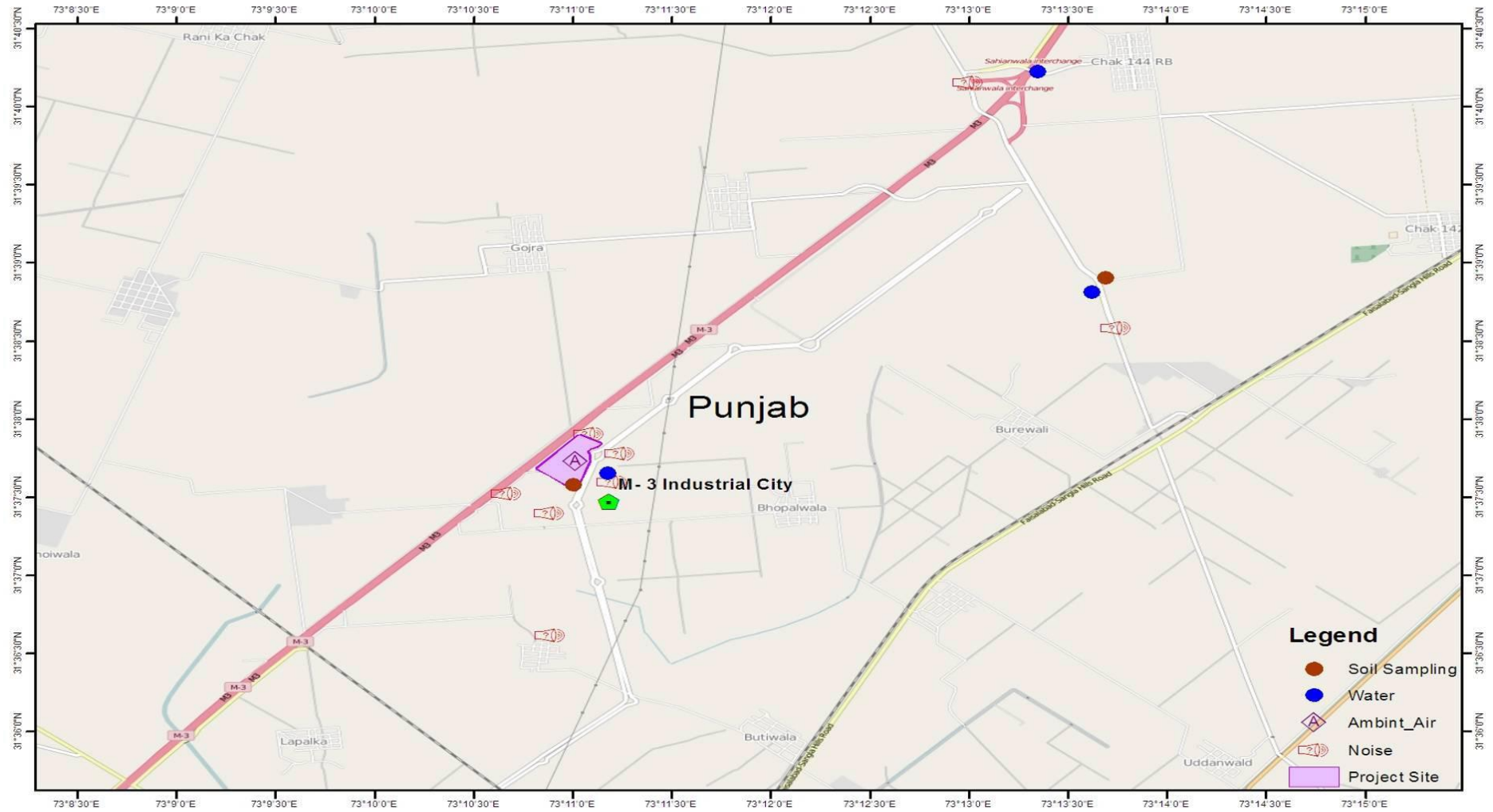


Figure - 5.7: Monitoring Location



Figure - 5.8: Photographs of Environmental Monitoring

5.4. BIOLOGICAL ENVIRONMENT

In this section, the baseline environmental conditions pertaining to biological environment are described. These conditions have subsequently been used to identify the potential impacts on the biological environment that are likely to arise from the project activities.

5.4.1. Flora

Based upon observations during the field visit many species of plants were directly observed in the project area. List of the floral species in the project area are given in the following **Table - 5.9**.

Table - 5.9: List of Floral Species

SR..	Plant Species	Family	Local Name	Life-Span
1	<i>Acacia nilotica</i>	Mimosaceae	Kikar	Perennial
2	<i>Alhaji maurorum</i>	Fabaceae	Talhi	Perennial
3	<i>Dalbergia sissoo</i> Roxb.	Fabaceae	Sharin	Perennial
4	<i>Albizia lebbek</i>	Fabaceae	Ak	Perennial
5	<i>Calotropis procera</i>	Asclepiadaceae	Neem	Perennial
6	<i>Azadirachta indica</i> (L.) Adelb.	Meliaceae	Gaah	Perennial
7	<i>Aeluropus lagopoides</i> (Linn.) Trin. ex. Thw	Poaceae	Nar	Perennial
8	<i>Phragmites karka</i> (Retz.) Trin. ex Steud.	Poaceae	Jawar	Perennial
9	<i>Sorghum bicolor</i>	Poaceae	Gandum	Annual
10	<i>Triticum aestivum</i>	Poaceae	Makae	Annual
11	<i>Veazea nays</i>	Poaceae	Kahi	Annual
12	<i>Tamarix indica</i>	Tamaricaceae	Lawo	Perennial
13	<i>Tamarix aphylla</i>	Tamaricaceae	Jhangoori Ber	Perennial
14	<i>Zizyphus nummularia</i>	Rhamnaceae	Beri	Perennial
15	<i>Zizyphus jajaba</i>	Rhamnaceae	Moniah Gaah	Perennial
16	<i>Cyperus difformis</i> L.	Cyperaceae	Gaah	Perennial
17	<i>Cyperus rotundus</i> Linn	Cyperaceae	Kahjoor	Perennial
18	<i>Phoenix sylvestris</i>	Araceae	Boti	Perennial

SR..	Plant Species	Family	Local Name	Life-Span
	<i>Roxb.</i>			
19	<i>Conyza canadensis</i>	Asteraceae	Daryi Boti	Annual
20	<i>Eclipta alba</i>	Asteraceae	Soorag mukhi	Annual
21	<i>Helianthus annuus</i>	Asteraceae	Lesuro	Perennial
22	<i>Cordia myxa</i>	Boraginaceae	Peyaz	Perennial
23	<i>Allium cepa</i>	Liliaceae	Lani	Annual
24	<i>Salsola imbricata</i> <i>Forssk..</i>	Chenopodiaceae	Tamator	Semi perennial
25	<i>Lycopersicom</i> <i>sesculeupum</i>	Solanaceae	Lani	Annual
26	<i>Saueda fruticosa</i> (Linn.) <i>Forsk.</i>	Chenopodiaceae		Semi perennial
27	<i>Cressa cretica</i> Linn.	Convolvulaceae		Perennial
28	<i>Ipomoea aquatica</i> <i>Forssk.</i>	Convolvulaceae	Naar	Perennial
29	<i>Euphorbia</i> <i>thymifolia</i> Linn.	Euphorbiaceae	Kheera Wal	Annual

5.4.2. Fauna

The main fauna of the project comprises of mammals, birds and reptiles.

Mammals

Although most of the study area comprises agricultural lands, but due to presence of shrubs of grass, shrubs and several agricultural crops like wheat in the surroundings 10 mammalian species have been recorded. Dense vegetation provide living shelter to the mammals like Asiatic Jackal, Five Stripped Palm Squirrel, Indian Crested Porcupine, Indian Desert Jird, Indian Gerbil, Cape Hare, Small Indian Mongoose, House Mouse, House Rat, and Jungli Cat. All the 10 species are commonly found in the project areas as well as in country and no any significant threat can be expected from any activity.

Reptiles

During the study several types of burros and droppings were found which indicate the presence of respected reptiles.

None of the reptiles and mammalian species found here are listed under any category of the IUCN Red List. Ten species of reptiles were also recorded including snakes, lizards and agamas. Only one species i.e. Indian cobra is listed as Data Deficient in the IUCN Red List.

Table - 5.10: List of Mammals/Reptiles

SR.	English Name	Scientific Name
Mammals		
1	Asiatic Jackal	<i>Canis auris</i>
2	Five Stripped Palm Squirrel	<i>Funambulus pennanti</i>
3	Indian Crested Porcupine	<i>Hystrix indica</i>
4	Indian Desert Jird	<i>Meriones hurrionae</i>
5	Indian Gerbil	<i>Tatera indica</i>
6	Cape Hare	<i>Lepus capensis</i>
7	Small Indian Mongoose	<i>Herpestes javanicus</i>
8	House Mouse	<i>Mus musculus</i>
9	House Rat	<i>Rattus rattus</i>
10	Jungli Cat	<i>Felis silvestris ornate</i>
Reptiles		
1	Brilliant Agama	<i>Trapelus (Agama) agilis isolepis</i>
2	Indian Cobra	<i>Naja naja naja</i>
3	Indian Monitor	<i>Varanus bengalensis</i>
4	Indian Sand Swimmer	<i>Ophiomorus tridactylus</i>
5	Pakistan Ribbon Snake	<i>Psammophis leithii</i>
6	Garden Lizard	<i>Calotes versicolor</i>
7	Saw scaled Viper	<i>Echis carinatus</i>
8	Fat tailed Gecko	<i>Eublepharis macularius</i>
9	Sand Gecko	<i>Crossobamon orientalis</i>
10	Indian Krait	<i>Bungarus caeruleus</i>

Birds

Based upon observations during the field visit many species of birds were directly observed in the project area. The most favourite habitat of the Avian Fauna were found in the surroundings of the study area especially trees in agricultural fields and

Tamarix shrubs. These areas are composed of larger as well as smaller patches vegetation.

Most common species includes House sparrow, House crow, Red vented Bulbul, Myna and Chiffchaff. All these species are also commonly found in other ecological zones of the country.

Table - 5.11: List of Birds

Sr. No.	English Name	Scientific Name	Status		Occurrence			
			Migratory	Resident	Common	Abundant	Less Common	Rare
1	Bank Myna	Acridotheres Ginginianus		x		x		
2	Bay-backed Shrike	Lanius vittatus		x	x			
3	King Crow	Dicrurus macrocerus		x	x			
4	Black-winged stilt	Himantopus Himantopus		x	x			
5	Blue Rock Pigeon	Columba livia		x	x			
6	Chiffchaff	Phylloscopus collybita						
7	Common Babbler	Turdoides caudatus		x		x		
8	Common Myna/Indian Myna	Acridotheres tristis		x	x			
9	Common Redstart	Phoenicurus phoenicurus		X	x			
10	Common Rosefinch	Carpodacus erythrinus	x	x				

Sr. No.	English Name	Scientific Name	Status		Occurrence			
			Migratory	Resident	Common	Abundant	Less Common	Rare
11	Crested Lark	Galerida cristata		X	X			
12	Golden backed Woodpecker	Dinopium benghalense		X	X			
13	Hoopoe	Upupa epops		X	X			
14	House Crow	Corvus Splendens		X	X			

5.5. SOCIO-ECONOMIC ENVIRONMENT

5.5.1. Methodology

This section describes the key socio-economic features of the study area, including the administrative setup, population, education, health, infrastructure, occupations, and other cultural resources. Primary and secondary data sources were used to develop the socioeconomic baseline of the area.

The basic aim of the study is to update local communities about project activities and obtain their views and concerns. Moreover an in-depth socio-economic analysis to develop socio-economic baseline of project area as one of prime objective of this study.

5.5.2. Geographical Location and Surrounding Settlement

The proposed project lies in tehsil Chak Jhumra, district Faisalabad. The proposed Battery Unit of FTMM has Chak 157 RB in the North, Chak 106 JB in the South, Chak 103 JB in the west while Chak 148 RB lies in the eastern side of the proposed project.

The proposed project site is approximately 25 Km away from the Faisalabad city. The city of Faisalabad with latitude 31°-24' N and longitude 73°-05'E, lies on the Western side of Lahore, the Provincial Capital of Punjab. It is situated in the middle of the lower part of the Doab with the Chenab river flowing at a distance of about 32.18 kilometers (20 miles) to its west and the Ravi river at a distance of about 138.4 kilometers (86 miles) to its East. The Faisalabad Urban area covers nearly

90.65 square kilometers or 35 square miles. The city is linked with major urban centers by Roads, Rail and Airway.

5.5.3. Demography

The Demographic Studies are the major source of any city's Socio-Economic profile. Demographic Studies relate to population. Population studies are extremely important from Town Planning point of view. Until and unless we know about population in detail we cannot do successful planning. All aspects of population, such as sex-age composition, trend of migration, social, cultural, political, economical and administrative have to be related to planning considerations and decisions. Individuals are the raw material of society, therefore, society is directly affected by size, growth, composition and distribution of its population. The term population refers to the number of individuals living within a geographical area at a given time. The estimated population in the nearest Chaks of the project area is expected to be more than 50 thousands individuals.

5.5.4. Culture Customs and Traditions

There is no specific tradition on specific occasion and are same as other cities of Punjab. There are no clashes found in the area, people live peacefully however there is a combination of different cast and creeds and religions because district Faisalabad is industrial city and people from different cities live for the jobs and different business. Major casts dwelling there, are Sheikh, Araeen and Rajput.

5.5.5. Economy

Occupation

District Faisalabad is an industrial and commercial city having multi-occupations. The main occupation of the people is business and jobs in different industries. The remaining small portion of the population is having different occupation including government and private services as well as agriculture. The women also assist their men in the economic activity in different fields of business, service, education and other institutions. Women mostly serve in schools, colleges and hospitals. Faisalabad is generating large number of employment opportunities for its locals and outsiders. Industrial areas are using manpower, while nearby towns are providing business opportunities to the residents. In this semi urban area, people are involved in daily wages jobs, while some are involved in small business. They normally travel to adjacent areas for work. Some work in the industrial area and in the surrounding universities and colleges. People are also involved in agriculture. Area having access to irrigation water is another source of income. Similarly, live stock is

a secondary source of income. It is safe to assume that livestock farming is practiced uniformly in both types of areas.

Livestock

Livestock owner ship is also developed in the project area; especially among poor families who sell animals during emergency days as mostly unemployed people depend on livestock and sometimes agriculture. The people have livestock which include cows, goats, sheep and donkeys. All the animals are of native breed and thus they can survive the local harsh environment and drought. Milk and butter from the livestock are consumed by the household and are not sold in the market. Good breeds of buffaloes and cows are found in the project area. Sheep, goats, camels, horses, asses and mules are also part of the livestock in the district.

Agriculture

The source of irrigation in the areas is the Canal (Rakh Branch) which is near (7.45 Km) to the project area. Agriculture is one of the most important economic activities in the project area.

5.5.6. Social and Physical Infrastructure

Overall the social and physical infrastructure is not up to the mark in the project area. However the project area is better as compared to the other rural areas of the province. A brief account of the education, health, infrastructure and markets of the area is as follows:

Education and Literacy

In the 1998 census Literacy was defined as the “ability of a person to read a news paper or write a simple letter in any language”. The Literacy is also measured in terms of literacy ratio and computed as percentage of literate persons among the population aged 10 years and above. The literacy ratio of the district Faisalabad is 60%, with a split of 60% for males and 56% for females. There are sharp differences in the literacy ratios by sex and areas. There are different government and private sector school near the vicinity of project area. People go to Faisalabad and other cities of Pakistan for university education.

Health Facility

Hospitals exist in the project area. There is a government hospital or Basic Health Unit (BHU) available in Chak Jhumra. People also access to private hospitals in city and sometimes to nearby private dispensaries. Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed.

Transportation

The project area is rich in the means of transportation. The nearest main road is Lahore- -Faisalabd M3 is situated on the confluence of the Industrial estate at Sahinawala interchange which connects the locals with other major urban areas like, Shahkot, Kharrianwala and Faisalabad. Chiniot road is present at the tail end of the site which connects the area with Kharrianwala and Sanghlla. Chinch (four seated vehicle supported by bike), Rikshaw, bikes and some buses are the means of transport for the residents of the area.

Communication

PTCL telephone facility is available in all parts of the project area. Similarly mobile service is also available and is being used efficiently as mode of communication in the project area. Internet, post office service and Police Stations also exist in the project area.

Energy

Power supply line goes all along the project area, and approximately 90% of the community is able to acquire electricity. Gas supply has been provided to the area, but few of the houses cannot afford to avail the service, so these houses depend upon fuel wood. But majority of the people belong to business communities, government sectors and having small jobs in district Faisalabad.



a) Power Supply Line in the Area



b) Gas Supply Line in the Area

5.5.7. Archeological and Cultural Sites

There is no archaeological site in the vicinity of the project area although nearest chaks do have mosques and graveyards.

6

Potential (Unmitigated) Environmental, Health & Safety Impacts

6. POTENTIAL (UNMITIGATED) ENVIRONMENTAL, HEALTH & SAFETY IMPACTS

6.1. METHODOLOGY FOR ANTICIPATING ENVIRONMENTAL IMPACTS

An impact is any change to the existing condition of the environment caused by human activity or an external influence. Impacts therefore may be positive (beneficial) or negative (adverse). They may also be direct or indirect, long-term or short-term, and extensive or local in effect. Impacts are termed cumulative when they add incrementally to existing impacts. Both positive and adverse environmental impacts could arise during the site preparation, construction and the operations phases of the cement plant and limestone and clay quarry.

Baseline data and conditions form the basis for evaluation of the environmental impacts of the proposed power project. While this chapter exclusively deals with potential (unmitigated) environmental, health & safety impacts, mitigation measures are dealt with in Section-8.

A tabulated evaluation procedure has been used for purpose of presentation. The severity of the impact is presented on point scale. The evaluation scale, that is used for the ESIA Study is given below:-

Scale: Extent of Impact

▲▲▲	=	High
▲▲	=	Medium
▲	=	Low
O	=	No impact
▼▼	=	locally favorable
▼	=	regionally favorable.

Various parameters of extent of environmental impacts are described below:

Table - 6.1: Evaluation of Impacts

Extent of Environmental Impact	Description
- High	International and National Standards are exceeded.
- Medium	Between International and National Standards.
- Low	International and National Standards are met.

6.2. ENVIRONMENTAL IMPACTS ASSESSMENT DURING CONSTRUCTION PHASE

The construction contractors for will be selected from among contractors who have significant experience in similar construction developments. It is expected that a maximum of 700 workers will be on site at any one time and it is planned that they will live in a specially constructed camp. The camp will be located adjacent to the construction site and will have all the necessary facilities to make the camp self-contained. The construction camp may consist of several pre-fabricated units & tents and necessary infrastructure.

The construction activities will include:

- Site clearance, ground modeling and landscaping;
- Utilities and services connections to site;
- Foundation excavations and installation of concrete footings;
- Erection of building steel frames and cladding;
- Installation of equipment;
- Ancillary facilities erection;
- Services and utilities connections;
- Building fitting-out.

Supervision for the construction activities will be provided by HNMPL.

The main direct ecological impact resulting from the construction phase of the project will be the loss of vegetation associated with the “clearance” at the plant site. With soil and vegetation removed, some minor habitat for fauna will also be affected along with any fauna that cannot readily move away when site clearance takes place.

Vegetation loss at the plant sites cannot be avoided, but successful restoration, improvement and long term management of the surrounding areas for conservation and productive uses will provide significant compensation.

With regards to emissions to air, construction activities can generate dust that can cause nuisance to local residents and cause health risk to construction workers. As the nearest residential receptors are approximately 4-kilometer from the main development site it is considered unlikely that there will be an impact on local people. The main risk is considered to be the exposure of workers on site.

Dust control measures, together with the use of appropriate personal protective equipment and appropriate maintenance of vehicles will be used to mitigate this impact. The impact of emissions of vehicle exhaust gases on air quality is considered negligible.

In order to manage the domestic effluent (especially sewage) produced at the site which will be an issue particularly during construction with the large numbers of workers present at the site, construction type portable toilets or septic tanks will be constructed. The wastewater plant which will be designed to take into account the load placed upon it during operational phase of the project. The treated effluents is to be discharged to the M-3 Industrial City wastewater collection system for addition central treatment plant.

Due to the natural rural character of the proposed site, the transitory visual impacts of construction works are expected to be moderately adverse due to the introduction of prominent structures and construction equipment. However, the topography of the area will provide a natural level of screening of the works and the layout of the site will be sensitively planned to use this to minimize negative visual impacts.

The effects of the traffic to be generated during construction phase are likely to be moderately adverse..

Finally, noise levels are likely to be fairly high and any noise associated with construction activities is likely to have negligible impact. Measures to reduce construction noise levels will be included in the Environmental Management & Monitoring Plan (EMMP).

Overall, with the exception of the impacts on ecology within the boundary of the development area, the construction activities are transitory, and are considered likely to have a minor adverse impact on dust levels and a moderate adverse visual impact.

6.2.1. Land Acquisition

The land requirement for the proposed project will be met from the land already acquired by M-3 Industrial City. No resettlement activities and no expropriation measures are necessary for realization of the proposed project.

The land required for the proposed project does not represent land of specific ecological importance. The area was assessed as being without any features that are out of the ordinary. No specific mitigation or compensation measures are required.

Extent of Impact of land acquisition = ▲(Low)

6.2.2. Erosion/Sedimentation

The proposed project requires land clearing and site preparation for the installation of the assembly plant.

No wetlands are present within the project boundaries. The proposed construction area is not anticipated to impact the entire hectares available. Large scale trees and bushes removal from the entire property is not anticipated, but only where required for the needs of the project.

General site preparation and construction activities associated with the overall development of the Project site include the following:

- Clearing/grubbing of all un-cleared portions of the construction area and lay-down area;
- Stabilizing, grading, filling, and contouring the area for plant facilities;
- Construction of permanent storm water management system;
- Performing groundwork as necessary for construction of facility footings, foundations and underground utilities including electrical, water, wastewater, and other piping systems;
- Assembly plant facilities construction; and
- Earthmoving, grading, re-contouring and landscaping.

Site preparation will consist of clearing and grubbing, followed by grading and leveling.

Vegetative debris from site clearing will have to be disposed and topsoil that is suitable for reuse will have to be stockpiled for landscaping and for establishing vegetation after construction has been completed. During early site preparation activities, temporary storm water management structures and soil erosion and sedimentation control devices (e.g., ditches, retention basins, berms, and siltation fencing) will have to be used to minimize runoff during the construction phase.

Assembly plant site preparation and construction activities will not require any explosives. The plant site will required to be cleared of all vegetation and organic matter in conflict with the proposed construction. Rough grading, excavation, and backfill activities will have to be performed to prepare the site for underground utilities, concrete foundations, and surface drainage.

Structural backfill materials may have to be imported to the site for constructing concrete foundations and to raise grade site elevation to achieve proper drainage.

After construction of the plant, project is essentially complete, any remaining areas that do not have an impervious surface will have to be re-vegetated with native plant materials.

The plant site will be altered to construct new facilities. Structural and general fill will be added to elevate the site to design elevations. Soils excavated for the major equipment foundations may be used as general fill or structural fill, if appropriate. Fill may be required to raise portions of the site to grade.

Since the site is in mostly a flat area, the fill should not cause adverse impacts to site topographic conditions. Very little, if any, runoff flows on to the proposed site. Therefore, the fill will not impede existing drainage patterns. Added fill, with compaction, will shift areas of percolation within the site. Runoff will have to be managed with the storm water management system to mimic pre-construction conditions. During construction, erosion at the site will have to be managed with the erosion control plan. After construction, pervious areas will have to be planted predominantly with native vegetation to control erosion.

Extent of Impact on Erosion/Sedimentation = ▲(Low)

6.2.3. Contaminated Soil

Soil excavation is required for the installation of the plant facilities. During these activities, it is possible that soil or water suspected of contamination from known or unknown sources may be encountered. Some standard definitions for Suspect and Contaminated Soil are as follows:

Suspect Soil: A soil suspected of being contaminated, based on either sight, smell, past or present land use, or a combination thereof.

Contaminated Soil: A soil containing a substance or material whose concentration exceeds regulated limits, or may:

- a. pose a threat to worker health or safety;
- b. pose a threat to the environment; or
- c. pose a threat to public safety.

Suspect soil can usually be identified by sight and smell observations (dependent upon the contaminant present). Some obvious signs of contamination include, but are not limited to:

- a. Soil discoloration
- b. Unusual or different soil texture

- c. Unusual odor
- d. Vegetation distress
- e. Standing water or trench with a hydrocarbon sheen
- f. Abandoned industrial waste (storage tanks and/or infrastructure)

Extent of Impact Contaminated Soil = ▲(Low) [with adoption of mitigation]

6.2.4. Petroleum, Oils, and Lubricants (POL) Storage, Handling and Disposal

POL spillage during storage, handling and disposal can contaminate the soil, and surface & ground water. Spillage and improper storage, handling and disposal of POL can also be a fire and human hazard. By implementing proper handling storage and disposal of POLs during construction, the likelihood of accidental events that result in impacts to the environment are greatly reduced.

Extent of Impact of POL = ▲(Low) [with adoption of mitigation measures]

6.2.5. Construction Site/Camps Layout and Establishment

During construction phase the Contractor establishes construction camps, offices, workshops, testing facilities, stockpiling areas, staff accommodation etc., that can adversely affect the environment – like kitchen/canteen wastes, sewerage, liquid effluents, wastes from workshops and maintenance areas, communicable diseases (sexually transmitted diseases) etc.

Extent of Impact due to Construction Site = ▲(Low) [with adoption of mitigation measures]

6.2.6. Construction Material Transportation, Handling, Use and Storage

The potential environmental impact of transportation, handling, use, storage and disposal of materials used during construction can be minimized with proper use of mitigation measures.

Extent of Impact due to Construction Materials = ▲(Low) [with adoption of mitigation measures]

6.2.7. Air Quality

Expected impacts on air quality during the construction phase of the proposed project are:

- dust generated during construction activities; and
- emissions from vehicles and machines.

Dust generation from construction activities is an important concern during construction phase. Dust particles generally less than 10 µm will be thrown up, resulting in visible deposition close to the construction activities.

The quantity of any emissions released during the construction process will generally be very low, but will vary on an hourly and daily basis as construction progresses. Fugitive dust emissions will be greater during land clearing and site preparation phases, especially during dry season. Fugitive dust emissions will also be greater during the more active construction periods as a result of increased vehicle traffic on the site.

The dust generated during construction activities will be mostly inorganic and of a non-toxic nature. Quantum of dust generation will depend on weather conditions, wind velocity, precipitation rate, and type of construction activities. Expected main sources of dust emissions during construction are:

- land clearing
- excavation
- earthwork
- ground leveling
- vehicles movement.

Dust and grit are expected to be present during the construction phase in dry months. This will end when the major civil works finish. Some dampening of the exposed areas, by employing dust control methods, may therefore be necessary during periods of dry weather in order to reduce the risk of dust entrainment in the ambient air. Peak dust generation, if construction activities coincide, will be during the drier months and this dust will tend to become dispersed within the ambient air as a result of vehicle movements. It will therefore be necessary to ensure that loads are covered to prevent fine dust blowing from open-top trucks. In dry periods, it may also be necessary to employ dust control measures, like: regular sprinkling of water.

There will be an overall increase in traffic and heavy machinery movement during construction phase for limited period leading to a rise in emission level. These emissions together with exhaust emissions from equipment deployed during the construction phase are likely to result in marginal increases in the levels of sulphur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), and unburnt hydrocarbons. However, due to limited duration of the construction period, the impact on air quality can be considered as low.

Fugitive dust emissions from the construction site will have to be minimized using appropriate dust suppression control methods. These standard control methods will include paving or placement of gravel on roads, applying dust suppressing chemicals or water to roads and other exposed surfaces, or other methods, as needed.

The background levels of these pollutants are considered to be non-existent based upon the low frequency of traffic use proximal to the site. However, even with the predicted increase in construction related traffic and associated site activities, any increase in these pollutants is considered to be insignificant.

Spilled and tracked dirt (or other materials) will have to be removed from the adjacent road in a timely manner. Of course, all construction related fugitive dust emissions will be temporary and will stop once construction is completed. Emissions from open burning will have to be limited by removing materials whose burning would produce excessive smoke e.g., green vegetative materials.

Potential minor sources of volatile organic compounds include evaporative losses from onsite painting, refueling of construction equipment and the application of adhesives and waterproofing chemicals.

During construction there will be some impacts on air quality. However, the proposed mitigation measures will reduce the impacts to an acceptable level, especially as they are limited to the construction phase. The overall construction period is expected to have duration of 28 months.

Extent of Impact on Air Quality = ▲(Low) [with adoption of mitigation measures]

6.2.8. Surface Water

The project area has no surface water sources. The construction activities are not directly expected to affect any surface water bodies. By avoiding uncontrolled discharges of liquids and waste, implementing adequate waste management and instigating appropriate organizational measures and mitigation actions, impacts on surface water can be reduced to a low level and will be limited to the construction period.

Extent of Impact on Surface Water = ▲(Low) [with adoption of mitigation measures]

6.2.9. Groundwater

HNMPL does not plan to utilize any ground water during the construction phase. Hydrological and Soil Investigation reports indicated that the water table in the project is shallow (some of the area is water logged). Based on good construction

practices, all precautions necessary will be required to reduce the potential for site impacts to a minimum on ground water.

While the proposed site preparation and facility construction activities for the project are not anticipated to cause any short-term or long-term groundwater impacts, Best Management Practices (BMP) will need to be employed during construction to ensure impacts (if any) are minimal and are properly mitigated.

Fluctuations in groundwater levels are expected to occur throughout the year due to rainfall, by surface percolation and infiltration through the rivers system. Dewatering systems may be required and maintained during certain phases of construction (e.g., during equipment foundation installation). After excavation, backfill, compaction, construction of the permanent plant drainage system and certain concrete construction activities are complete, the dewatering system, if required, will be removed. Any restoration needed for affected areas will require to be followed after the dewatering equipment is removed. The implementation of appropriate erosion and sedimentation controls will also minimize adverse water quality impacts during site preparation.

Spills of fuel oil can have a potential adverse impact on soil, groundwater and particularly surface water during both the construction and operational phases of the project. During construction, all fueling will have to be conducted in a manner consistent with the spill prevention and response plan to be prepared by the construction contractors. During construction, fuel oil will required to be dispensed from tanks/drums located onsite. Fuel for construction activities will be delivered to the site by fuel truck drivers, who will be required to receive spill plan training prior to beginning work. The trucks will have to be equipped with oil spill response materials. Each transfer will need to be documented. Implementing management controls should minimize the potential for adverse impacts due to spills during site construction.

During construction all contractors, technicians and laborers will be required to implement practices to minimize the potential for spills of fuels or chemicals. Vehicle and machinery maintenance needs to be performed only in designated areas. In the unlikely event that spills do occur, they will have to be managed in accordance with the project's Environmental Management & Monitoring Plan (EMMP).

To further minimize potential environmental impacts it is recommended that full-time environmental monitoring is conducted during construction, particularly during all refueling operations to minimize potential concern. The environmental monitoring could be under the environmental, health & safety department, or a

member of the safety department with the authority of “stopping the job” in the event that noncompliance of environmental regulation is being observed.

Extent of Impact on Ground Water = ▲(Low) [with adoption of mitigation measures]

6.2.10. Solid Waste

The major solid wastes to be generated during construction activities are:

- Bricks waste
- Waste from Quality Control
- Paper bags
- Used oil/lubricants
- Metal/wooden waste
- Medical waste
- Empty drums or containers
- Cotton rags
- Miscellaneous waste: Miscellaneous solid wastes include batteries, tires, tubes, filters, belts, nylon strips, bag filters, scrap wood, steel scrap, house hold articles etc., which will be sold in the market through scrap dealers.

During the site clearance stage, it is anticipated that relatively large quantities of solid waste would be generated consisting of top-soil and sub-soil. The generation and disposal of site wastes is not considered to be a problem. Part of the excavated material would be used for leveling and grading and the balance would be stockpiled at designated locations on the site. Other solid wastes including, cooking waste and general solid waste are often associated with a relatively large workforces. Cooking wastes and general garbage will have to be collected at regular intervals and land filled at an approved disposal site. Sewage waste treatment (construction type portable toilets or soaking pits) should be used, and waste properly disposed.

Any construction waste not utilized as fill material during trenching activities should be removed from the route and properly disposed. The trenching route should be restored to its original condition, prior to alteration by the project. In addition, all solid waste and surplus materials should be removed from the project site and properly disposed.

However, while disposing any waste material, all environmental aspects/impacts of such wastes should be communicated clearly to the concerned contractor. Record of all such sales should be maintained for later use if and when required.

Extent of Impact Due Solid Waste = ▲(Low) [with adoption of mitigation measures]

6.2.11. Noise Impact

Plant construction of the proposed project is expected to take place for about 28 months, with varying degrees of activity occurring during different phases of construction. Construction phases are expected to include excavation, concrete pouring, steel erection, mechanical/electrical installation and cleanup.

Noise is generated by operation of heavy equipment and increased frequency of vehicular traffic in the area during construction activities. Vibration levels will also increase due to these activities. However, these impacts are short term, intermittent and temporary in nature and are not likely to be felt outside the boundary of the proposed project.

The exact noise levels are a complex function of variables such as the actual noise levels emitted from each major noise-emitting equipment, their location and orientation within the construction area, and their operation and load.

The adjoining localities are outside the range of impact of noise emissions due to construction activities. It is expected that the relevant IFC/ World Bank Emission Standards will be met.

Overall, the impact of noise generated during construction on the environment is temporary and mainly confined to daylight hours. It is anticipated that it will be possible to reduce noise impacts during construction to an acceptable minimum.

Extent of Impact on Noise = ▲(Low) [with adoption of mitigation measures]

6.2.12. Fire Risk

Fire and explosion hazard impacts are not expected during the construction phase due to the limited quantities of flammable and combustible materials to be imported to the site. The availability and use of portable extinguishing systems would limit the impacts of small fires, and personnel will be required to receive training on the proper use and locations of this equipment. During construction, any waste disposal burning will have to be conducted in a cleared and dedicated area under controlled

conditions, on those days when ambient air conditions will not permit embers to drift into the surroundings.

6.2.13. Ecological Impacts

6.2.13.1. Terrestrial Systems

During construction activities, land clearing is a necessary component of the proposed development activity. Land clearing, as proposed, will be limited to that required for the needs of the project, and will have to be conducted in such a manner that is protective of the environment.

6.2.13.2. Fauna and Flora

Site preparation for the plant does not require clearing of major vegetation but ground excavation will be necessary.

The construction area is not perceived as including sensitive habitats. Under normal dry weather conditions, a significant amount of dust will be thrown up by excavating activities. Hence, vegetation and animal habitats in the vicinity of the site and roads will be affected by wind-blown dust and its deposition. The contribution to the natural dust concentration in the air will only be of relevance at the beginning of the construction phase, during the main excavation activities. During this period, dust can be expected to settle on plant leaves and aerial roots, which could hinder air exchange and assimilation by the plants.

The temporarily increased vehicular traffic coupled with high noise levels due to various construction activities may also have some negative impacts on animals, especially birds and other acoustically orientated animals living in the vicinity of the site and the roads used can be disturbed by noise. Disturbances during the period of construction could drive noise sensitive bird species from their habitats, but these are expected to return after construction has finished. No endangered species were found in the construction area.

During the visual inspections of the site no nests or nesting was observed. No birds or wild animals were discerned in the site vicinity. Accordingly, during the construction phase of the project, native birds in the site vicinity would likely relocate to undisturbed areas. The construction related impacts on fauna and flora may be considered to be low.

Extent of Impact on Fauna & Flora = ▲(Low) [with adoption of mitigation measures]

6.2.14. Impacts on Human Population

Construction related noise is not anticipated to be a concern to the nearest receptor, but to mitigate this potential concern, construction will normally occurs during daylight hours. In addition, any excessive noise generated by construction related activities will be short term and short duration.

However, there will be notable increase in noise levels due to increase in road traffic as freight is moving to the site, however, no significant direct impacts to the communities or neighborhoods are anticipated.

There are no residences either on the project site or near site vicinity. As a result, no relocation impacts are anticipated.

6.2.15. Traffic Impact

Based on the nature and size of the operation, it is anticipated that at peak activities a maximum of 50 vehicles per day will enter and leave the site during construction. This will have an impact on the traffic, however, because the entrance is located on the Motorway M-3 there should be minimum impact. The volume of vehicles using the motorway is moderate and the increased volume over time is not expected to result in any major negative impact.

Increase in traffic would occur directly as a consequence of the proposed construction. The temporary traffic impacts are not expected to affect significantly the local residents since residential development is sparse in the immediate site vicinity. No significant traffic problems are expected during the construction period, other than minimal delays for start and stop time for the workers commuting to their residences and due to occasional heavy equipment and materials moving to and from the site. Construction traffic generation should be viewed at the most as a temporary inconvenience.

6.2.16. Socio-economic Impacts

During the construction phase, the development will provide direct and indirect opportunity for employment of both skilled and unskilled personnel. An estimated maximal 700 people will be directly employed during construction. In addition, the small businesses in the area such as grocers, wholesalers, restaurant operators and transportation operators will experience positive spin-off as the development of the project will boast economic activities, resulting in greater disposable income among residence of the area. It is expected that 1,000 people will be indirectly employed assembly or related industries as a result of the development. This is considered to be a positive significant impact as the effect will be long term and directly or indirectly will impact a wide cross-section of persons all across the country.

Most of construction workers are anticipated to be hired from within the Faisalabad District and Punjab Province. In addition, general contractors/vendors, consultants and engineers from within the country and from HNMPL will provide technical and specialized services. The construction impacts on the local employment opportunities are beneficial, although relatively short term. Indirect employment in the local area will also occur primarily in retail, eating and drinking establishments.

During construction of the plant, employment opportunities will be created both for skilled and unskilled local workers.

Extent of Socio-Economic Impact = ▼ ▼ (locally favorable)

6.2.17. Public Services and Facilities

Construction related impacts to public services and facilities, such as police, fire, and medical services and water, wastewater and solid waste disposal are not expected. With minimal relocations to the project area expected, existing facilities and services will be adequate to meet the demands on these services. The selected contractor will be responsible for removing and disposing of construction related debris in accordance with international safe practices.

6.2.18. Cultural Resource Impacts

Fugitive dust emissions will have to be properly controlled so that no impact on visibility will occur. Also as discussed, due to attenuation with distance, construction noise will not affect the quality of life at the nearest habitats. Some minor inconvenience may occur through increased traffic and equipment creating conflicts on Motorway. However, during construction of the plant, no conflicts are anticipated with cultural resources in the area.

6.3. ENVIRONMENTAL IMPACTS ASSESSMENT DURING OPERATION PHASE

The potential effects of the proposed development during operation can be divided as follows:

- Impacts on air quality as a result of uncontrolled emissions from the production process. [It must be mentioned that all vehicle assembly activities are carried out in covered and totally enclosed buildings with adequate air pollution control measures as per IFC, WHO and ILO guidelines and conventions].
- Impacts associated with noise, particularly the impact of noise on nearby human receptors.

- Impacts of the plant to the landscape and visual impacts.
- Impacts on the local ecology by the loss of habitat taken by the development and impacts associated with the operations on the surrounding ecology.
- Impact on the underground water.
- Impacts of transport.

Each of these potential issues is addressed in the following sections:

6.3.1. Effects on Local Air Quality

As mentioned earlier all assembly activities will be carried out within enclosed atmosphere. It is recommended that an air quality monitoring and management programme be implemented as part of an EMP for the operations stage to identify any uncontrolled release of air pollutants. Diesel generators installed are to be operated only in emergency when electricity is not available from M-3 Industrial City.

The protection of human health and all other segments of environment will be ensured during operational phase.

The Environment Management & Monitoring Plan provides safeguards against any likely adverse environmental impacts from the uncontrolled project operation.

Extent of Impact of Air quality = ▲(Low) [with adoption of mitigation measures]

6.3.2. Noise

HNMPL has indicated that it will comply with the requirements of IFC, WHO and ILO.

Based on HNMPL commitment it can be estimated that noise levels generated from the assembly plant are unlikely to cause disturbance in any of the nearby communities during day, evening or night.

Changes in traffic on the local road network when the plant is operational would not give rise to perceptible changes in noise. There are no properties near the link road that may be affected by increases in noise from traffic using them.

Vibration is unlikely to be perceptible from any aspect of the project. The company has committed to implement appropriate noise management practices in all aspects of the design and operation of the plant and transport.

Extent of Impact on Noise Level = ▲(Low) [with adoption of mitigation measures presented in Chapter-8 and control measures.]

6.3.3. Landscape and Visual

The landscape and visual impacts will be:

- Change in land cover, use and character, including an increased intensity of activity;
- Visual impact of night time lighting, including the movement of any vehicles at night and the provision of above ground utilities;

- Visual impact of the movement of works vehicles and commuter traffic to, from and within the site.

At the completion of construction activities, landscaping should include the abundant use of native plant species.

After completion of construction phase, the site will be mostly dominated by buildings, plant & machinery, stacks and storage tanks. Within this area of low visual impact, the additional visual intrusion due to realization of the project may be assessed as low.

Extent of Impact of Landscape = ▲(Low)

6.3.4. Ecology

Impacts on Fauna and Flora

During the preparation of the ESIA, no nest or nesting birds were observed on or proximal to the project site. Recommendations for a monitoring program include review of areas immediately adjacent and proximal to the site. Since birds are generally mobile, it is anticipated they will relocate beyond the sphere of influence of the plant.

The effect of emissions on the adjacent areas is not anticipated to be a concern as the proposed plant is not likely to release any air pollutants, particularly since the annual air quality levels will be within those approved by WHO for human health. Air emissions are not likely to affect local vegetation.

Operation of the proposed project will result in air and noise emissions not exceeding the limits which could not give rise to impacts on the any surrounding fauna and flora. The site area is not considered to include sensitive habitats and nor are protected areas designated to conserve endangered species. Under consideration that the noise limit values and emission standards will not be exceeded, the impact on fauna and flora will be low.

Extent of Impact on Fauna & Flora = ▲(Low)

6.3.5. Soil, Ground Water and Surface Water Contamination

This section provides a description and assessment of potential impacts of the oil and chemicals storage and transfer operations to the local environment and ecosystem.

A major operational concern of any oil & chemicals transfer operation is the control, containment and efficient cleanup of any discharges or spills during transfer. To this

end, spill mitigation supplies including hoses, a boom of sufficient length, and absorbent materials should be located at the oil & chemicals unloading station. In addition, as part of the transfer operation policy, each transfer should only proceed in the presence of a plant operator, who has deemed the fitting between the transfer hose and pipe to be secure. The absence of any mitigation equipment in the immediate vicinity of the transfer operation can have a potentially disastrous environmental consequence to the ecosystem.

In the event of a spill/discharge, the spill should be contained and not permitted to discharge to the adjacent surface water body.

To this end, spill mitigation equipment should be located at the transfer station, to enable a rapid response to control the movement of any discharged chemical.

Design of drainage systems, both within and outside process buildings, should take account of the need to segregate spillages of hazardous materials. Drains systems to be considered may include sewers, storm water drains, process effluent systems and firewater drainage systems.

In many cases these functions are combined and often firewater and process effluents are drained into main sewerage systems. Where there is a possibility that hazardous substances could be discharged into a drainage system, interceptors or sumps should be provided of sufficient capacity to ensure that an offsite major accident does not occur.

For process effluents arising from leaks or plant wash down, good practice is to provide a local sump, which is sampled before emptying. Such sumps normally incorporate level indicators/alarms for monitoring. Discharge can be to drums via submersible or mobile pumps for onward disposal or via manual or manually operated automatic valves into main drainage systems, if the contents are non-hazardous. As for drainage following a storm event, consideration will need to be given for the possibility of valves being left open.

A particular concern is the discharge of non-water miscible flammable liquids, which form a top layer. These could ignite at considerable distances from the plant after discharge. More sophisticated interceptors can be provided to facilitate removal of floating flammable liquids. These tend to be designed to meet individual needs and may incorporate conductivity-based level sensors to distinguish between layers.

Impacts on the soil quality could be caused by deposition of NO_x in the soil. Normally, a distinction is made between wet and dry deposition, with wet deposition having considerably more impact, as air pollutants are effectively scrubbed out by

the precipitation. It is not anticipated that deposition of NO_x in the soil will have any significant negative impact.

Operation of the facility will incorporate measures to prevent releases to ground, and ground water. Present, indications are that these will be appropriate to the nature and scale of the installation and that significant impacts should not occur.

Extent of Impact = ▲ (Low) [with adoption of mitigation measures].

6.3.6. Transport

Access to the plant site will be achieved through a 2-Lane paved road within the M-3 Industrial City. This is clearly an easy connection especially for heavy vehicles both from the geometric and road safety point of view.

Some increase in the use of local roads should be anticipated as a direct consequence of the operation of the proposed plant. The increase in local road use is anticipated during peak hours and between changing operator shifts. However, based upon the remote location of the site, no concerns are anticipated with respect to increased traffic activity.

Extent of Transport Impact = ▲ (Low) [with adoption of mitigation and monitoring measures proposed.]

6.3.7. Solid Waste Management

The types, sources, and management of wastes anticipated to be generated during the operation of the proposed project facilities are as follows:

- Plant wastes such as metal cuttings, office wastes, packaging materials, ashes, garbage, refuse, redundant electric gadgets, various types of wastes of a large variety and rubbish/trash will be generated during the operational phase of the proposed project and general solid waste will be generated. Most of these will be sold in the market through an approved contractor while keeping all the records. The contractor will have to be fully informed/educated about the nature of the wastes. Other plant wastes, such as lead acid batteries will have to be segregated from other waste streams, collected and stored in suitable containers, and will have to be transported off-site and disposed at an approved location by an approved waste transporter and contractor.
- Special wastes such as hazardous waste, industrial solvents and other chemical wastes, and used oil, will be generated during the operational phases of the proposed project. Special wastes could also include items such as waste oils, waste lubricants, paints, maintenance-related wastes, used air and liquid filtration media, and empty or nearly empty chemical containers. Most, if not

all, of these materials will have to be disposed by incineration. While others will be sold in the market through a contractor, keeping record of them and informing the contractor of their hazards and rational use.

- Solid wastes from sewage and wastewater treatment will be disposed of as manure after due treatment.

While there are definite advantages of incineration such as the reduction in volume of the waste material as it is reduced to ash, incineration produces fly ash and bottom ash. Confirmation of the hazardous/non-hazardous status of the incinerator ash is confirmed through analytical testing prior to disposal.

Extent of Impact of Solid Waste = ▲(Low) [with adoption of mitigation measures]

6.3.8. Societal Impacts During Operations

6.3.8.1. Neighborhood and Communities

In the absence of any communities within the project area of influence, this concern is not applicable to the project.

Extent of Impact = ▲(Low)

6.3.8.2. Relocation Impact

As mentioned earlier, relocation is not an issue for the Project, No impacts are also anticipated in the project area of influence during operation phase. This concern is not applicable to the project.

Extent of Impact = ▲(Low)

6.3.9. Economic Impact

The establishment of the proposed project will provide new jobs at the plant site. At present most people of the area make their living directly or indirectly from agriculture.

Short-term economic benefit will be realized by providing janitorial services, horticultural services, canteen, and semi-skilled & some skilled activities, as well as by increased use of available rental property.

Long-term benefits will include indirect employment from domestic production and other economic benefits provided by increased and reliable supply of assembled vehicles. As a result, continued operation of the proposed plant will generate revenue into the Country's economy.

There are no negative or detrimental potential impacts on the socio-economic setting of the area arising as a result of the proposed project. As such no mitigation measures are required.

Extent of Socio-Economic Impact = ▼ ▼ (locally favorable)

6.4. IMPACTS DURING DECOMMISSIONING PHASE

No detailed assessment of environmental impacts associated with decommissioning can be made at present. The plant has an expected lifespan of over 50 years and so only general principles can be established at the present time.

In broad terms, the process of decommissioning is likely to give rise to impacts similar to those experienced in the construction phase. The methods and techniques selected are expected to be in accordance with national and international standards prevailing at the time of decommissioning.

Decommissioning will require the following activities:

Removal of all surface equipment and units;

Potential removal of hard standing and surface cover;

Abandonment of sub-surface utilities or filling and abandonment as appropriate;

Reinstatement of the site and all project areas to pre-construction and pre-development conditions.

For the proposed plant, HNMPL will develop a site closure plan during the later stages of project design and maintain the plan throughout the life of the development. The plan should include arrangements for decommissioning the plant in a manner which avoids any pollution and return the site to an acceptable state. In addition any decommissioning plan should take into account the social and economic impacts and include mitigation measures where necessary.

The opportunities the site provides for long term biodiversity conservation purposes should be investigated as part of the site closure plan. There are no identified sites of ecological significance outside the main development areas that should be affected by decommissioning activities. This will depend on their future use.

The site closure plan and preceding rehabilitation plans will need to be reviewed and updated in the light of experience with implementing the ecological mitigation and compensation measures – especially the “Habitat Restoration” proposals. These habitat restoration activities will need to be monitored, during the course of the

project, so that lessons can be learned and applied prior to and at the time of final site closure.

Overall, decommissioning activities are transitory, and are likely to be similar in magnitude to construction impacts.

6.5. HEALTH IMPACT ASSESSMENT

Health impacts associated with plant operations are known to be upper and lower respiratory disease, asthma, cardiopulmonary diseases and birth defects.

Nearly all communities are located at more than 0.5 km distance from project area. Most of these communities are low income settlements.

Continuous emission monitoring should be done and an appropriate system put in place to take action if and when parameters exceed permissible levels. A programme to monitor health impact of the project should also be developed and implemented.

Potential accidents may require the use of emergency services and hospital facilities nearby at Faisalabad or other cities.

It is recommended that:

- HNMPL should establish an understanding with local hospital to handle emergencies,
- Personnel on site should be trained in handling emergencies such as response to fire, accidents etc.
- A well-equipped ambulance with paramedical staff should be based at plant site.
- Qualified personnel should make regular trips to plant to give training updates and check emergency equipment, such as fire-fighting equipment.

6.6. POTENTIAL IMPACTS SUMMARY

In earlier sub-sections of this Section-7, Environmental and Social Impacts were discussed in detail for each of the three (3) phases of the project:

1. Construction Phase;
2. Operational Phase;
3. Decommissioning Phase.

A tabulated summary of the potential negative & positive, significant & insignificant, impacts is presented in **Table – 7.2**. Significant impacts are color highlighted as:

Negative 
Positive 

**Table – 6.2: Summary of Potential Impacts Potentially Negative Impacts
[Significant & Insignificant]**

No.	Aspects	Potential Negative Impacts
During Construction Phase		
1.	Noise	<ul style="list-style-type: none"> Nuisance to persons & hearing impairment (temporary, permanent) Habitat disturbance
2.	Fugitive Dust Emission	<ul style="list-style-type: none"> Air pollution Respiratory problems Increased sediment loads and degradation of natural receptors
3.	Vehicular Emissions	<ul style="list-style-type: none"> Air pollution Respiratory problems
4.	Solid Waste	<ul style="list-style-type: none"> Land and water pollution
5.	Human Waste	<ul style="list-style-type: none"> Land and water pollution
6.	Removal of Vegetation	<ul style="list-style-type: none"> Habitat destruction Disruption of ecosystems
7.	Soil Erosion	<ul style="list-style-type: none"> Movement of sediment and pollutants into water courses
8.	Increased Traffic Movement	<ul style="list-style-type: none"> Traffic congestion Motor vehicle accidents
9.	Water Use	<ul style="list-style-type: none"> Depletion of water resources Effluent
10.	Spills	<ul style="list-style-type: none"> Land and water pollution
11.	Construction Activities	<ul style="list-style-type: none"> Accidents causing death or injury
12.	Land Use	<ul style="list-style-type: none"> Displacement of people from Yuku Camp Village Construction worker's camp
13.	Non-Resident (non-local) Work Force	<ul style="list-style-type: none"> Temporary population increase Non-Resident worker health problems Non-Resident/Local interactions Camp disturbance Local community disturbance Transmitted diseases
No.	Aspects	Potential Negative Impacts
During Operation Phase		
1.	Noise	<ul style="list-style-type: none"> Nuisance to persons & hearing impairment (temporary, permanent) Habitat disturbance
2.	Fugitive Dust Emission	<ul style="list-style-type: none"> Air pollution Respiratory problems Increased sediment loads and degradation of natural receptors Foliage growth impedance
3.	Vehicular Emissions	<ul style="list-style-type: none"> Air pollution Respiratory problems
4.	Solid Waste	<ul style="list-style-type: none"> Land and water pollution
5.	Human Waste	<ul style="list-style-type: none"> Land and water pollution
6.	Use of Fuels & Lubricants	<ul style="list-style-type: none"> Greenhouse gas emissions (CO₂) Air emissions (NO_x, SO_x, CO, Particulate Matter)
7.	Removal of Vegetation at Quarry	<ul style="list-style-type: none"> Habitat destruction Disruption of ecosystems
8.	Soil Erosion	<ul style="list-style-type: none"> Movement of sediment and pollutants into water courses
9.	Increased Traffic	<ul style="list-style-type: none"> Traffic congestion Motor vehicle accidents
10.	Water Use	<ul style="list-style-type: none"> Depletion of water resources

No.	Aspects	Potential Negative Impacts
		• Effluent
11.	Spills of Fuels & Lubricants (oil spills & leaks)	• Land and water pollution
12.	Operation & Maintenance	• Accidents causing death or injury
13.	Vibration	• Nuisance to persons • Habitat disturbance
No.	Aspects	Potential Negative Impacts
During Decommissioning Phase		
1.	Noise	• Nuisance to persons & hearing impairment (temporary, permanent) • Habitat disturbance
2.	Fugitive Dust Emission	• Air pollution • Respiratory problems
3.	Vehicular Emissions	• Air pollution • Respiratory problems
4.	Solid Waste	• Land and water pollution
5.	Human Waste	• Land and water pollution
6.	Spills of Fuels & Lubricants (oil spills & leaks)	• Land and water pollution
7.	Decommissioning	• Accidents causing death or injury

Potentially Positive Impacts [Significant & Insignificant]

No.	Activity	Potential Positive Impacts
During Construction Phase		
1.	Creation of Construction Jobs	• Employment for locals • Increased commercial activities in the area
2.	Improved Infrastructure	• Accident prevention
3.	Increased Standard of Living	• Increased commercial activities in the area
4.	Non-Resident (non-local) Work Force	• Skills transfer • Technology transfer • Cultural diversity
No.	Activity	Potential Positive Impacts
During Operation Phase		
1.	Creation of Jobs	• Employment for locals • Increased commercial activities in the area • New skills development • Technology transfer
2.	Increased Standard of Living	• Increased commercial activities in the area
3.	Non-Resident (non-local) Work Force	• Skills transfer • Technology transfer • Cultural diversity
4..	Increased Tax Revenues	• All categories (corporate, personal, consumption, etc.)
No.	Activity	Potential Positive Impacts
During Decommissioning Phase		
1.	Creation of Decommissioning Jobs	• Employment for locals (job loss for others) • Increased commercial activities in the area
2.	Land Use	• Development of land for other purposes (ecological, social and commercial)

7

Proposed Environmental Prevention & Mitigation Measures

7. PROPOSED ENVIRONMENTAL PREVENTION & MITIGATION MEASURES

7.1. MITIGATION MEASURES DURING CONSTRUCTION PHASE

When all impacts are considered, the impacts of highest significance are those that will affect the natural environment. Although there will be a number of social impacts of high significance, the majority of the impacts on social conditions are of moderate significance. Furthermore, it is clear from the description of the existing environment in the HNMPL Plant Area that the disruption to social conditions and the existing social impacts are already of very moderate, and the project will not add any substantially new negative impacts to those that are already present.

The positive economic impact of the project is highly significant, and the revenue from taxation that will accrue to government provides resources that can be used to significantly improve the conditions in the region in particular and Pakistan in general. The economic benefit to the local economy is also significant, since the project will not only support several hundred employees directly, but it will also support significantly more of their dependents. It is estimated that, on average, each employee will support five to six dependents or family members. This should result in a general improvement in standards of living in the study area and provides an alternative livelihood.

All mitigation measures presented in **Table – 7.1 below** are to be carried out by the project contractors as per procedures & policies specified by HNPL and supervised by the HSE Manager.

Table - 7.1: Mitigation Measures during Construction Phase

AIR QUALITY			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Air quality: - dust emissions during construction and ground works.	Development of procedures for: -water spraying roads and dusty materials stockpiles - covering vehicles carrying dusty materials on leaving the site to prevent materials being blown from the vehicles -speed limits on unpaved surfaces on site to limit dust.	Dust propagation will be limited to construction area and will not influence local community. However workers will be supplied with dust masks especially on dry days.	Minor adverse
GROUND WATER			

Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Importation of pollutants already present within the materials to be used for filling and site leveling operations	Ensure that pollutants are not present in materials imported onto the site by appropriate selection of source material by the Contractors and chemical analysis by HNMPL if required.	Potential for importation of pollutants in the material will be minimized through HNMPL's specifications to Contractors and monitoring by HNMPL project team.	Minor adverse
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground, especially in the construction lay-down area, <i>during storage</i> .	All storage areas will have appropriate environmental security measures to prevent accidental release to ground.	Potential for accidental release of materials during storage on the site will be minimized.	Minor adverse

GROUND WATER	[continued]		
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground, especially in the construction lay-down area, <i>during transport to the area of use</i> .	Appropriate procedures and protocols to be established and monitored for materials transport and handling whilst on the site.	Potential for accidental release of materials during transport within and handling on the site will be minimized.	Minor adverse
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground, <i>during use</i> , for example, re-fuelling, maintenance, etc.	Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, re-fuelling and maintenance areas will include some form of secondary containment.	Potential for accidental release of materials during use will be minimized.	Minor adverse
Accidental release of liquid wastes <i>during removal</i> from site.	Appropriate procedures and protocols to be established and monitored for waste materials removal.	Potential for accidental release of waste during removal from the site will be minimized.	Minor adverse
Accidental discharge of sanitary wastewater to ground and groundwater from the workers camp.	Sanitary waste will not be discharged to the ground. Contractors will provide modern Sewage Treatment Facilities.	None	Negligible/Nil
Contamination of local water ways from proposed effluent plant discharge.	Ensure that the plant complies with IFC standards and other international guidelines. Final effluent should have no significant negative impact on the receiving water. The plant will be designed for the full load during construction.	Potential for release of harmful of effluent if the facility is underspecified or not managed correctly.	Minor adverse
Discharge of pollutants in water used for plant, equipment and vehicle washing to ground.	Washing activities will take place on areas with appropriate containment and procedures and	Potential for accidental release of pollutants to the ground during washing activities will be	Minor adverse

	protocols will be established and monitored to ensure that the preventative measures are sufficient to meet the effluent standards.	minimized.	
--	---	------------	--

GROUND & WATER			
[continued]			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Increase of sediment load in natural aquatic receptors resulting from direct run-off disposal.	Minimization of excavations face during Construction. Temporary drainage grooves and sedimentation ponds for surface run-off collection. The topography is nearly flat.	None	Negligible
Natural aquatic receptors degradation due to direct disposal of domestic type wastewater.	Construction of appropriate sewage system and wastewater treatment facility by Contractor. Effluent if any will meet the standards.	None	Negligible
Groundwater contamination from leakage of polluting substances.	Usage of non-hazardous construction materials for human health and environmental protection. Storage of potential polluting materials in appropriate areas, including secondary containment. Any contaminated land occurred during construction will be directly removed and disposed of in accordance with local regulations for waste disposal.	None	Negligible

MATERIAL USE & WASTE MANAGEMENT			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Waste generation.	Introduction of waste storage and control procedures Segregation and recycling of waste by EPC Contractor into metal components, plastics, glass separately.	Waste for disposal will be disposed of at an approved waste disposal site.	

ECOLOGY			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Plant Site			
Loss of vegetation on site.		Vegetation loss cannot be	

Clearance.		avoided, but clearance with successful restoration, improvement and long term management of the surrounding areas for conservation and productive uses will provide significant compensation.	
Further land take over (habitat loss) for temporary Construction Camp.	Build temporary construction camp on land that in due course be re-used for HNMPL for other activities. Contractors/HNMPL will also restore, wherever possible to green areas such as the planting of grass, shrubs & trees.	No additional impact since is visualized.	
Destruction of fauna and habitat (mammals, birds, reptiles, amphibians, invertebrates).	Further ecological/fauna survey at appropriate seasons and translocations monitored by the HNMPL specialist.	Moving fauna to neighboring sites may help short-term survival, but not medium-term if these sites are already occupied. In long term populations may recover on restored sites.	
Increase in exploitative pressures on habitats neighboring the sites.	Conduct and implement further "Habitat Survey and Management Study", in close consultation with local officials & communities.	With co-operation of officials & local community and project providing alternative source of income, habitats should be improved.	Moderate to substantial beneficial.
On ecology of surrounding area by temporary workforce as a result of removal of vegetation and the displacement of wildlife.	Education, monitoring and enforcement program. Adequate waste management and sanitation facilities. No permits will be provided to Contractors for any burning.	Implementation may be difficult and some impact can be expected.	Minor adverse (subject to implementation and enforcement).

LANDSCAPE AND VISUAL

Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Damage to the landscape character and visual amenity due to Introduction of incongruous features and activities.	Sensitive planning of site works and worker's compound. Advanced structure planning. Minimize lighting and night time workings.	Some exposure to alteration of the landscape character and loss of visual amenity, predominantly due to out-of-site activity.	Minor adverse impact.

NOISE & VIBRATION

[Incorporating Transport]

Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Noise from construction of new plant.	Good site management; Appropriate choice of machinery; Methods of working; Hours of working; efficient material handling.	A baseline noise study has been completed, but further study may be needed to predict whether there may be noise increases at nearby villages.	Minor adverse
Noise from traffic relating to construction using existing roads through	Define access routes to the site with the smallest number of properties in	There may be noise increases at residential properties in proximity to	

local residential areas & cities	proximity to it. Keep vehicle movements to a minimum. Once link roads are completed, all construction traffic to/from the site should only use the link roads.	the chosen access route, and then from the link road once completed.	
----------------------------------	--	--	--

SOCIAL			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Worker - industrial emergency	Prearranged quality curative treatment in Local Hospital for all emergencies.	Depends on nature of emergency	Minor adverse
Non-local worker living conditions and quality of life. Utility and service provision impacts on local villages.	Contractors will provide detailed specification of camp layout, facilities, and utility provision (and disposal) in accordance with identified international standards. HNMP to monitor health and safety and terms and conditions of employment.	Depends on individual worker susceptibility. If conditions are poor multitude of issues could arise in camp and spill into local communities.	Minor / Moderate adverse
Disturbance and conflict in camp	In-camp codes of conduct and enforcement of key behaviors and non-use of alcohol shall be required.	None identified	Minor adverse

SOCIAL			
	[continued]		
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Disturbance and /or conflict with local population.	Camp code of conduct upheld by workers and enforced by camp. Provision of employment and opportunities to local population to minimize hostility.	Some residual impact expected but scale limited by worker free time, and local interaction with camp, especially if "Liaison Committee" is formed early.	Minor / Moderate adverse
Potential for increased incidence of sexually transferable disease (STD) in local populations and amongst workers.	Preventative health awareness campaigns for STDs provided to foreign workers and targeted at key local locations / groups. Contractors will provide health checks and immunizations before expatriation.	Difficult to identify cause or source of such disease as this is commonly hidden and poorly reported. However some disease may be spread and curative treatment may be required for the different diseases, in case of HIV this would be of a long term nature.	Moderate adverse

7.2. MITIGATION MEASURES DURING OPERATION PHASE

These are presented in **Table – 7.2 below.**

Table 7.2: Mitigation Measures During Operation Phase

AIR QUALITY			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Uncontrolled release of gas emissions from the plant building	Equipment design and primary operational management control techniques	Local air emissions will be based on IFC, WHO & ILO Guidelines for the protection of human health at all emission point sources. On that basis, it is concluded that there will be no adverse health effects in the local population due to the operation of the cement plant.	Not significant
Uncontrolled release of particulate emissions from the plant operation	Adequate control measures to be adopted.	Local air quality will be virtually unaffected in Project area & surroundings, and will be based IFC Guidelines for the protection of human health.	Negligible
Release of combustion emissions from transport associated with transport of materials to and from the site.	Use of new, efficient vehicles, driver training to minimize emissions (e.g. prevention of over revving, shut off engines when vehicles not in use), proper maintenance, rationalization of traffic management system to optimize transport efficiency.	Localized minor effects on air quality at any properties very close to certain roads, but increments a very small fraction of air quality criteria. Given the volume of trucks, however, impact is Moderately adverse.	Moderate.

Ground Water			
Environmental Impact	Proposed Mitigation	Residual Impact	
Ground and Groundwater contamination.	Secondary containment for potential polluting materials. Any contaminated land removal and disposal in accordance with local and general international requirements.	Potential contamination will be limited on-site.	
LAND QUALITY			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground during delivery to the	Appropriate procedures and protocols to be established and monitored for materials delivery and handling.	Potential for accidental release during delivery of materials to the site will be minimized.	Minor adverse.

site.	HNMPL will have, at all times, clean up kits available.		
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during storage.	All storage areas will have appropriate environmental security measures to prevent accidental release to ground. EP Contractor to design the plant for berms /detrimental retainer walls that are designed for 1.5 times the capacity of any such storage tank.	Potential for accidental release of materials during storage on the site will be minimized.	Minor adverse.
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during transport to the area of use.	Appropriate procedures and protocols to be established and monitored for materials transport and handling whilst on the site.	Potential for accidental release of materials during transport within and handling on the site will be minimized.	Minor adverse.
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during use, for example, re-fueling, maintenance, etc.	Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, re-fuelling and maintenance areas will include some form of secondary containment.	Potential for accidental release of materials during use will be minimized.	Minor adverse.
Accidental release of liquid wastes during removal from site.	Appropriate procedures and protocols to be established and monitored for liquid waste materials removal.	Potential for accidental release of waste during removal from the site will be minimized.	Minor adverse.
Accidental discharge of sanitary wastewater and wastewater to ground.	Sanitary wastewater will not be discharged to the ground. Wastewater sumps and pits will be properly designed. Pipe-work will be inspected periodically by HNMPL and recycle water wherever possible.	None	Negligible/Nil.
Discharge of pollutants in water used for plant, equipment and vehicle washing to ground.	Washing activities will take place on areas with proper drainage systems with containment and treatment. Effluent, if any, will meet the standards.	Potential for accident release of pollutants to the ground during washing activities will be minimized by proper design and use by HNMPL.	Minor adverse.
MATERIAL USE AND WASTEWATER MANAGEMENT			
Environmental Impact	Proposed Mitigation	Residual Impact	
Storage of solid and liquid wastes.	Inspection of all waste storage areas to ensure appropriate identification, segregation and containment.	Potential release into the environment.	
Waste management	Arrangement of all solid waste management licenses and permits. Establishment of waste	Waste management will be covered by internal procedures and will be regulated through	

	management disposal/recycling techniques and appropriate choice/negotiation of contractor by HNMPL. Review of waste minimization and recycling options for all waste will be exhaustive	local regulations. Increased quantity of waste will be disposed of off-site. HNMPL will monitor its procedures to increase or maximize recycling/reuse of any waste generated.
--	---	--

ECOLOGY			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Disturbance of wildlife by noise.	Reduced at source and less than 60 dB at the plant fence.	The project site does not have any sensitive species.	Minor Adverse.
Disturbance of wildlife by human presence and activities.	Environmental educational program. On-site ecologist by HNMPL.	There should be some habituation to human presence by some non-sensitive wildlife.	Minor Adverse.
LANDSCAPE AND VISUAL			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Damage to the landscape character and visual amenity due to introduction of incongruous features and activities	Proper design of light sources by establishing and effective balance between safety/security and environmental sensitivity. Sensitive and uniform (paint specifications) coloration of plant and vehicles.	Some exposure to alternation of the landscape character and loss of visual amenity, predominantly due to off-site quarry activities.	Minor to moderate adverse impact

TRAFFIC AND TRANSPORT			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Increased heavy vehicles traffic both locally and nationally.	Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion; heavy traffic will be subject to a traffic management plan, as necessary.	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.	Minor Adverse.
NOISE AND VIBRATION			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Noise from plant	None recommended unless the plant and various installation differ significantly from similar established plants used as a reference.	None expected	Nil. Less than 60 dBA.

SOCIAL			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Increased Employment. (Positive Change)	Measures to maximize local employment. Recommended: <ul style="list-style-type: none"> • Local recruitment and training. • Identification of targets of local people to be employed by skill levels. 	This depends on skills of the people. Enhanced apprenticeship/training for some local people whose skills could be improved including Recruitment Policy to extend in future to limited sponsorship for workers / local people children.	Major beneficial.
Increased National tax and budget (Positive Change).	Assistance to villagers to formulate projects and strengthen advocacy. Money from improved budget can be used to realize these objectives. HNMPPL may offer skills training for improved planning & project formulation.	Increased Regional & National Budget and secondary impact on local Communities. Residual impact will depend on effectiveness of allocation process in favor of affected villages. An ineffective process would cause conflict / discontent.	Major beneficial.
Extended and improved road and implications for local economy (minor/moderate beneficial).	Regulations relating to roadside and commercial activities to be adhered to by business persons and enforced by Community. Monitoring of health, road safety issue. Curative and preventive action to be taken if issues identified by monitoring.	Improved opportunities should be seen in increased opportunities and wealth of nearby villages.	Minor beneficial.

SOCIAL			
Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Hazards associated with development of new roads from main Highway to the plant.	With regards to identified 'high' risks: <ul style="list-style-type: none"> • Inclusions of pedestrian walkways and crossings • Lighting, particularly at intersections. • Planned access and parking. Risk of accident shall be reduced by implementation of education (road safety awareness) programs and liaison with the local communities as well as driver training programs and implementation of 	Some residual impact is expected, but should be limited by implementation of aforementioned mitigation measures.	Moderate adverse – possibility severe adverse if there is disregard for safety issues by the road users.

	near-miss/accident reporting procedures. Communities to consider the need for additional safety bylaws.		
--	---	--	--

7.3. OTHER MITIGATION MEASURES

7.3.1. Waste Minimization and Treatment & Disposal Measures

These have been discussed in Sections 8.1 and 8.2, above.

7.3.2. Natural Resource Management

These have been discussed in Sections 7.1 and 7.2, above.

7.3.3. Mitigation of Human Impacts

A) Economic Environment

The Project could have both positive and negative impacts on the economic environment.

Whilst there is significant potential for positive economic benefits of the Project, the extent to which it is likely to lead to economic development and or inflation depends on the Project approach to providing services to its workers (e.g. transport, canteen services, and in-house medical care).

Mitigation: The Company needs to consider the Socio-economic baseline context and consult community leaders and civil society when making economic development agreements.

B) Employment, Livelihoods and Income Generating Activities

Access to Project Employment is a key priority for local stakeholders.

In both construction and operational phases there is an opportunity for maximizing positive impacts of the Company on local employment through involving unskilled (and where possible skilled) labour from all Project communities. However, although the generation of employment opportunities resulting from Project activities is expected as a positive impact, there is a risk that conflicts could arise between local inhabitants and new comers or outsiders over such employment opportunities. Furthermore there is high risk that, unless Project employment by the Company and contractors is managed appropriately, nepotism would influence the recruitment procedure, meaning that people without connections would not get

access to Project opportunities – namely employment and other livelihood benefits. This could lead to a moderate risk of social conflict.

Mitigation Measures:

- The Company should work actively to promote local access to Project employment in both the construction and the operations phases.
- The Company needs to identify the skills that it needs for its construction and operations phases that could be provided as part of a community skills development program providing basic vocational training in the communities.

7.3.4. Occupational Safety & Health Measures

Some the measures have already been discussed in Section-7, addition measures in this respect are discussed below:

Construction and operational activities could expose workers to health and safety risks. In particular, the following activities could have negative health impacts: noise and dust; working with heavy equipment (strains and accidents); working in confined spaces (fumes could mean respiratory impacts), heavy lifting, storage, handling and use of dangerous substances and waste (strains and accident risks), and working under noisy conditions (hearing and stress/psychological impacts). Excavations and transportation of materials may cause further health and safety negative impacts.

Occupational health and emergency health services for both the construction labour force and operations employees will be at risk of negative health impacts which cannot be quantified, until clear plans emerge. The need for an ongoing, proactive workers health and safety plan applies for the full Life Cycle of the Project, particularly with regard to the operational phase for the employees.

Without an operational/fully functional Health and Safety plan and health training for workers the risks for worker health and safety are high.

Mitigation Measures:

The Company needs to demonstrate a best practice occupational health scheme, and share plans for the health maintenance and emergency services for their employees so that local health infrastructure capacity is not put under greater strain. An important mitigation is the forming of partnerships of understanding and relationship building with local health care providers;

Company's contractors should adopt strict construction and operation practices with best technology and health and safety training to ensure the safety of its workers.

8

ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

8. ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

8.1. GENERAL

The Environmental Management Plan (**EMP**) aims to provide:

- An integrated plan for the comprehensive monitoring and control of impacts
- Auditable commitments displaying practical achievable strategies for management to ensure that environmental requirements are specified and complied with.

For this purpose, an outline of EMP has been developed which includes

- what has to be managed and monitored, how and why
- when and where
- by whom
- whom to report and who to follow up if there is any problem.

8.2. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The EMP will facilitate proponents to address the adverse environmental impacts of the project, enhance project benefits and introduce standards of good environmental practices.

8.2.1. Objectives of EMP

The EMP aims to ensure that:

- Site activities are well managed
- All environmental safeguards are carried out correctly
- Coordination is made with other trades
- Adverse impacts on environment are minimized
- All relevant legislation is complied with prescribed procedures/standards
- The project is monitored for environmental impacts

8.2.2. Structure of EMP

The structure of the EMP will:

- Describe that how it fits into the overall planning process for the project
- Detail the activities that are to be carried out

- Identify the impacts of activities may have on environment
- Propose environmental control methods to be used to prevent or minimize those environmental impacts
- Assign responsibility for each control measure to specific staff members
- Identify key monitoring parameters and schedule of monitoring of these parameters
- Identify training requirements at various stages of the development of the project
- Identify the resources required to implement the EMP and outline relevant expenses arrangements

8.3. INSTITUTIONAL REQUIREMENTS

The following organizations would be involved in the implementation of the proposed EMP;

- **M/S Nishat Hyundai Motor Pakistan** as the proponents of the project and owners of the EMP during construction and operation of the project.
- Project Contractor, as the executor of the EMP during construction stage of the project.
- Supervisory Consultant, as monitor of the execution of the EMP during construction stage.
- Environmental Protection Agency (EPA), Punjab as Government Department to review and monitor the implementation of remedial and mitigation measures as given in Environmental Assessment.

8.4. REGULATORY REQUIREMENTS

The ESIA report has been prepared in the light of guidelines provided by the MIGA and the Project Proponents are required to implement the EMP strictly in line with this regulatory framework to get the environmental benefits of the project:

8.5. SPECIFIC IMPLEMENTATION RESPONSIBILITIES

The implementation of the EMP will be the prime responsibility of the project proponents who designate responsibilities and obligations to their selected contractors and staff. Monitoring, documentation and reporting the compliance components of the EMP will be the responsibility of proponent. Specific responsibilities of key role players are illustrated hereunder:

A) Proponents

M/S Nishat Hyundai Motor Pakistan will be responsible for ensuring overall implementation of the EMP during construction as well as operational stages of the project. The responsibilities of the proponent and the site team supervising the project activities include;

i) Project Manager (Proponent)

- Make sure that all activities are completed according to specifications
- Certify that work being done by the contractor/s is in accordance to the EMP
- Make sure that the specific system for environmental management is planned, documented, implemented and maintained through all stages of the project
- Coordinate with regulatory agencies like EPA, etc
- Communicate with local community in order to get time to time feedback of these stakeholders on various social and environmental concerns
- Make sure liaison between the contractor/s and environmental consultant men to check environmental compliance with EPA requirements
- Conduct environmental monitoring during operational stage of the project.

ii) Site Supervisor

- Make sure all work crew are inducted in environmental and emergency procedures and instruct on control measures
- Direct site activities according to the EMP
- Monitor operations of the EMP and recommend any necessary changes to the Project Manager (Proponent)
- Make sure all contractors, subcontractors and suppliers have necessary and current certificates of competency
- Collect delivery certificates for quality assurance

iii) Work Crew

- Attend site induction and other training sessions

- Make sure that procedures are followed
- Advise site supervisor of any potential or actual breaches of plans

B) Contractor

The Contractor will be responsible for the implementation of all measures necessary to ensure that Proponent's environmental and HSE policies are met. In order to fulfill these requirements, Contractor will carry out the following;

- Implement environmental good practice measures outlined in the mitigation measures.
- Provide, to extent practicable, environmental training to the work force and promote environmental awareness.
- Coordinate with local authorities as appropriate
- Advise site supervisor of any violations of EMP
- Facilitate consultants during environmental monitoring

C) Consultant

The principal responsibilities of the Consultant include:

- To monitor on regular basis whether construction activities are carried out in an environmentally sound and sustainable manner
- Coordination with provincial and local officials, community groups, government departments etc. on environmental issues and obtaining the necessary clearances from the regulatory authority/ies (if any)
- Monitoring of the environmental aspects of project during construction to ensure that the environmental requirements of the contract and the mitigation measures proposed in the EMP are implemented
- Supervising Contractor preparing environmental input to the progress report
- Developing and conducting environmental training activities for Contractor and the Supervision Consultant staff
- Undertake critically important routine monitoring of construction, waste disposal and overall environmental management practices by the Contractor

- Devise solutions to environmental issues as they arise particularly related to dust, noise levels and other impacts that are in some instances unavoidable. Good construction supervision requires that every effort be made to minimize these impacts

D) EPA

The role of EPA is on the apex and includes checking:

- Whether requirements of the conditional NOC awarded by the EPA against environmental assessment report are met
- The Implementation of mitigation recommendations as given in EMP
- Approval for starting actual project operations is obtained from EPA
- Review of audit/monitoring reports prepared internally or by a third party monitoring
- Suggest or order any appropriate solutions if something goes against the given EMP

8.6. AUDITING

The Audit will be carried out internally by the Project Manager (Proponent)/Site Supervisor assisted by one coordinator. The primary aim of the auditing process is to assess compliance and effectiveness of the EMP as well as the alternative environmental and social objectives and also to assess the effectiveness of corrective actions. Audit will also suggest remedial measures to overcome environmental and social problems. The external auditing will be carried out by the EPA, or by its appropriate environmental consultant in order to check compliance and implementation of EMP. The EPA will check various parameters with reference to various sections of PEPA -2012, guidelines provided by the SMART and standards specified by PEQS there under.

8.7. ENVIRONMENTAL MANAGEMENT PLAN (FOR CONSTRUCTION & OPERATION PHASE)

The given Environmental Management Plan (EMP) will be implemented for the better management of environmental issues which can be arises by the project activity

Table - 8.1: Environmental Management Plan

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
CONSTRUCTION PHASE						
1.	Air Quality <ul style="list-style-type: none">• Dust resulting from construction work• Use of heavy machinery can generate exhaust and dust emissions <p>– Smoke from burning of waste materials or burning of firewood in the labor camp</p>	<p>– Compliance with prescribed PEQS to control air pollution</p>	<p>– Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials.</p> <p>– Periodic maintenance and management of all the construction machinery and vehicles</p> <p>– Cutting and burning shrubs for fuel will be prohibited. Instead gas cylinders should be used in the labor camp for cooking purposes. Similarly waste burning will not be allowed.</p>	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultants	Project Manager / EPA
2.	Water Quality <ul style="list-style-type: none">• Run-off water from construction area	<p>– Control of groundwater water pollution from</p>	<p>– Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater water</p>	During Construction Phase by	Engineers & Supervision Consultants	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	<ul style="list-style-type: none"> – 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 / dengue and various other insects in the area. • Leakage of oil and chemical materials from construction activity 	construction activities	<ul style="list-style-type: none"> – Furthermore, septic tanks 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 groundwater/surface water – Prohibit illegal dumping of waste – The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s. 	Contractor with coordination of Proponent staff		

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
3.	Waste <ul style="list-style-type: none"> • Construction waste from construction activities • Domestic waste from workers camp • Hazardous waste such as dry batteries, chemicals, paints etc. 	<ul style="list-style-type: none"> – Proper & safe handling and disposal of construction related waste – Compliance with applicable waste management rules for hazardous and non-hazardous waste disposal – Implementation of waste management plan 	<ul style="list-style-type: none"> – Ensure prevention of inappropriate disposal of waste material – Conduct separate collection of construction and domestic waste to promote recycling and re-use – Dispose non-recyclable and hazardous waste material properly according to waste management rules – Proper disposal of waste on agreed site as per agreed method. The area to be leveled and contoured after disposing excess material. No waste or debris will be thrown in the nearest canal water or other water bodies. – Contractor will prepare waste management plan related to construction activities; get its approval from site engineer and ensure its full implementation 	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
4.	Noise • Noise caused by construction machinery and vehicles used for mobilization of construction equipment and workers	– Compliance with prescribed PEQS to control Noise pollution	– The contractor will strictly follow the PEQS for ambient noise – 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	Supervision Consultant	Project Manager / EPA
5.	Materials Management	– Safe and secure	– Stockpiles shall not be situated such	Contractor with	Engineer &	Project

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
		environment for construction workers	<p>that they obstruct natural water pathways</p> <ul style="list-style-type: none"> – Stockpiles shall not exceed 2m in height unless permitted by Concerned Engineer on site – If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by the construction of low brick walls around their bases – All substances required for vehicle/ machinery maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site – Hazardous substances / materials are to be transported in sealed containers or bags 	coordination of proponent and Engineer	Supervision Consultant	Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			– Spraying of insecticide shall not take place under windy conditions.			
6.	Staff Conduct	– Timely completion of project activities	– The Contractor must monitor the performance of construction workers to ensure that point relayed during their induction have been properly understood and being followed	Contractor	Design Engineer & Supervision Consultant	Project Manager / EPA
7.	Workers Health & Safety	– Prevention of any possibility of work site accident /impact on worker's health	– Provision of Personal Protective Equipment to the workers – Provision of first aid box at work site to cope with emergency situation – Safety training to the workers – Safe driving training to the drivers – Adequate safety signs on site – Provide training regarding proper handling and use of chemicals/ paints – Install fire extinguishers at fire handling places	Contractor	Engineer & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<ul style="list-style-type: none"> – Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads – Any loss of public/ private property will be compensated by the contractor – Regular checks should be carried out to ensure a contractor's is following safe working procedures and practices. 			
8.	Socio-economic Impacts	<ul style="list-style-type: none"> – Prevention of conflicts among locals and make the project socially acceptable – Empowerment of locals to possible extent – Increase in employment and business 	<ul style="list-style-type: none"> – Contractor's activities and movement of staff to be restricted to designated construction areas – The conduct of the construction staff when dealing with the public or other stakeholders shall be in a manner that is polite and courteous all the time – Lighting on the construction site shall be pointed downwards and away from oncoming traffic. 	Contractor with coordination of proponent staff	Supervision Engineer	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
		opportunities for locals	<ul style="list-style-type: none"> – The site must be kept clean to minimize the visual impact of site – Machinery and vehicles are to be kept in good working order for the duration of the project to minimize noise nuisance to neighbors. – Noisy activities must be restricted to the times given in the Project Specification or General Conditions of contract – The Contractor are responsible for ongoing communication with those people that are interested in / affected by the projects – Employ local residents as much as possible – Promote communication between external workers and local people (e.g. join local events). 			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
9.	Clearance of site from extra / surplus material and construction equipment	<ul style="list-style-type: none"> – Restoration of site to a similar condition prior to the commencement of the work or to a condition agreed with the project management and landscaping of the site 	<ul style="list-style-type: none"> – Timely removal of waste from the site to avoid congestion at work place. – Construction waste should be collected and disposed separately from other waste. – Care will be taken during handling and disposal of waste. – Contaminated soil (if generated) due to accidental spills will be removed and transported to designated site for disposal. – Avoid mixing of hazardous waste with non-hazardous waste. – Safe transportation of construction equipment from the site. – The contractor must ensures that all structure, equipment, materials and facilities used or created on site for/or during construction activities are 	Contractor	Supervision Engineers	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>removed.</p> <ul style="list-style-type: none"> – Empty/available space will be covered with grassy lawns. – Use of native vegetation as a part of landscape. Ornamental plant species like roses, jasmine, and seasonal flowers can be used in proposed landscaping, which is a common practice in this part. 			
OPERATIONAL PHASE						
1.	Air Quality <ul style="list-style-type: none"> – Release of volatile gaseous emissions from the paint room and welding facility. – Release of particulate emissions from the welding facility and 	<ul style="list-style-type: none"> – Compliance With Emission gas standards, Ambient air quality (PEQs) standards, Prevention of air pollution in surrounding area; 	General Automotive Plant Ventilation General ventilation system (system and exhaust) can be mechanical or mixed (natural supply, mechanical exhaust). Natural air supply through the windows, doors, or fixed air vents is not recommended when the width of the building exceed 24 m (79ft). Also uncontrolled air supply may disturb the various processes in automotive facility.	EHS officer of Project Proponent	Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	<p>stand by gensets.</p> <p>– Release of combustion emissions from transport associated with transport of materials to and from the site.</p> <p>– General Indoor Air quality.</p>		<p>General supply System – General supply systems are used for:</p> <ul style="list-style-type: none"> • Heating or cooling working environment; • Removing contaminants not captured by local ventilation systems; • Replacement of air exhausted by local ventilation systems and process equipment; • Controlling building pressure and airflow from space to space. <p>General Exhaust Systems- General exhaust systems complement local exhaust systems by removing air contaminated by fumes, gases or particles not captured by local exhausts. Such systems usually consist of outlets, ducts, an air cleaner and a fan.</p> <p>Centralized and decentralized (modular) systems- Centralized ventilation systems supply air to entire shop and have a large air distribution ductwork. Centralized system has lower maintenance costs</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>compared to decentralized system. With decentralized ventilation, the entire shop area is divided into zones, ventilated by a separate system with or without air distribution ductwork.</p> <p>Constant Air Volume (CAV) And Variable Air Volume (VAV) system- The airflow rate supplied into the shop throughout the year may be constant (Constant Air Volume systems) or variable (Variable Air Volume system). The design of the air supply system is normally based on the full load (cooling, contaminant or make-up air flow needs).</p> <p>Working environment heating and cooling- In painting and body shops there is a significant surplus heat generated by internal heat sources. Thus, in general climatic condition of Faisalabad, cooling of the space is objective for most of the year. In larges shops, heat typically needs to be applied to only the perimeter spaces. In</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			cooling seasons, air temperature in the building is controlled either by bringing additional outside air or by using refrigeration equipment to cool the air. Cooling systems in automotive plants are not designed to provide high level of comfort or control humidity, but only to control the temperature at the level below 80°F (27° C). Large collects that may work with either a centralized local exhaust system or with a general exhaust system			
	Indoor Air quality and Emission of Assembly shop	– Compliance With Emission gas standards, Ambient air quality (PEQs) standards, Prevention of air pollution in surrounding area	Process related measures to reduce occupational exposure to vehicles exhausts and fuel vapors. <ul style="list-style-type: none"> Separation of areas followed the engine starting from rest of assembly line by creating a positive pressure buffer zone ; Utilization of gasoline filling nozzles with a built-in vapor recovery system. With this system, as the gasoline enters the fuel tank, the displaced vapor is collected through a vacuum intake located concentrically with a nozzle near 	EHS officer of Project Proponent	Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>the filler neck of the tank as the nozzle spout is inserting. The captured vapors are transferred back to the storage tank.</p> <ul style="list-style-type: none"> Utilization of onboard exhaust filters for driving the vehicles in the assembly shop. EHC filters are connected to exhaust pipes with a plastic adapted and will have a filters life of approximately 5-10 minutes. Particles, smoke and soot with the size down to 0.1 Mk are separated in filters with up to 99 efficiency. Oxides of nitrogen (60%) and hydrocarbons (35%) are absorbed on the filters surface. The filters also reduce the concentration of carbon monoxides by 5-25%. The filters cartridge is disposable as normal industrial waste. <p>Ventilation system in the assembly shop typically consists of local exhaust Ventilation systems to control vehicle exhaust and contaminant emissions from contaminant producing areas, (e.g., windshield gluing , car testing) and a general ventilation system .General ventilation is needed to dilute the</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			contaminants released into the building that are not captured by local ventilation systems. General ventilation systems supply make-up air to replace air extracted by local exhaust system. Also, supply air is used to heat and cool the building.			
	Air Quality Emissions and Effluent Discharges of paint shop	– Compliance with PEQS	<p>The exhaust air from the spray booth will be treated by a venture wet scrubber or any other paint overspray collector in order paint overspray particles. The scrubber's water is recirculated in the system and accumulated paint particles are collected in the form of paint sludge. A reuse in automated booths of the spray booth exhaust air (several hundred thousandsm³/h.) is also possible in the process.</p> <p>Target level of Air temperature, relative humidity, air cleanliness</p> <p>Air temperatures, relative humidity, cleanliness with in a paint shop are factors</p>	EHS officer of Project Proponent	Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>which are important for proper paint application and to create comfortable working conditions. The clean room spaces and booths' design requirements are process driven, as a function of paint vendor requirements. It is important to establish both indoor and outdoor temperature and humidity design conditions for the non-clean room spaces.</p> <p>Ventilation</p> <p>Ventilation systems in paint shops typically consist of general supply and exhaust systems. The major objectives of the paint shop building ventilation system are</p> <ul style="list-style-type: none"> • Provide required make-up air for process • Maintain Proper building pressurization • Maintain comfort for occupants in the building • Provide adequate ventilation air for the occupants <p>Effluent Treatment</p> <p>A physical-chemical treatment (oil removal, metal abatement, etc.) is usually</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>used to treat the effluents, followed by a biological treatment for COD abatement. The treatment is carried out in following steps</p> <p>Primary Treatment</p> <p>Fine Screening</p> <p>It involve the fine screening using filters</p> <p>Disc filters:</p> <ul style="list-style-type: none"> ➤ The water to be treated flows by gravity in to the filter segments from the center drum. Solids catch on the inside of the filter panels mounted on the two sides of the disc segments. ➤ As the solids catch on the inside of the filter media impeding the flow of water through the disc, the water level inside the disc, begin to rise, triggering a level sensor to start the disc to rotate and a backwash cycle begins. ➤ High pressure rinse water washes the solids off the filter media into the solids collection trough. Typically the backwash requires 0.05-3% of the total filtered water flow. 			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>Drum filters;</p> <p>The water is filtered through the periphery of the drum. Backwash of the filter is only required according the loading of particles. Assisted by the filter panel's special cell structure, the particles are carefully separated from the water during backwash. Separated solids are rinsed off the filter cloth into the solids collection trough and discharged.</p> <p>Belt filter:</p> <p>Sludge or wastewater is led into the filter and passes by gravity through the filter belt2.</p> <p>The belt is designed as a slowly moving conveyer installed in a stainless steel tank. As the water passes through the filter, The filtering process ensures the efficient removal of particles. These particles are drained on the belt to high dry matter</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>content.</p> <p>The dewatered sludge is removed at the top of the filter³ and discharged through a hopper 4 for final treatment.</p> <p>The belt is further cleaned by a high pressure backwash system⁵ and the rinse water is led either back to the process or to further treatment.</p> <p>The Belt filter is normally operated intermittently (demand) controlled by a level switch.</p> <p>High Speed Clarification</p> <p>High speed clarification is a high rate compact water clarification process in which water is flocculated with micro sand and polymer in a draft tube. The micro sand enhances the formation of robust flocs and acts as ballast, significantly increasing their settling velocity.</p> <p>The unique characteristics of the resulting microsand ballasted flocs allow for clarifier</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>designs with very short retention times, high rise rates and extremely compact system footprints that are up to 50 times smaller than other clarification processes of similar capacity.</p> <p>Secondary Treatment Aerobic:Bio-filltration It is a simple and innovative process, enabling removal of pollution in a compact structure, thereby presenting a low environmental footprint. The process is able to eliminate all pollution, both organic (COD and BOD), nitrogenous (N-NH₄ and N-NO₃) and particulate compounds (TSS). The modular design of the process makes it a suitable tool in cases of variable load as art of the cell can be stopped and restarted quickly. As a biofilter, the process combines in a single structure:</p> <ul style="list-style-type: none"> a biological reactor 			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<ul style="list-style-type: none"> a physical filter to store the biomass and stop particulate pollution <p>Aerobic: Activated sludge: The process reduces to a minimum the content of nitrogen and phosphorus in wastewater in addition to significantly reducing organic matter (BOD), ammonia and suspended solids. Furthermore, it eliminates odor nuisances as the sludge is stabilized in the process. The oxidation ditch system consists of an anaerobic tank located before two interconnected biological tanks of equal volumes and a final settling tank. The biological tanks work in an alternating mode of operation and are equipped with aerators, inlet distributors and outlet chambers. The process combines functional design with an outstanding flexibility and highly adaptable operation.</p> <p>Tertiary and Specific Treatment Heavy Metals Removals without Sludge</p>			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>Generation:</p> <p>A process is capable of removing heavy metals (arsenic, cadmium, lead, zinc, nickel, iron, manganese, arsenic, uranium etc.)From different types of water, including industrial wastewaters. The process provides up to 99% treatment of the water and thus meets the EU drinking water directive.</p> <p>The waste product is fine-grained granules with strong and stable metal bonds and the final deposits represent only about 10% of normal sludge volumes.</p> <p>Sludge Disposal</p> <p>Paint sludge will be disposed through SEPA certified contractor.</p>			
	Noise Quality	–				
	Indoor Air quality of body shops and component	– Compliance With Emission gas standards, Ambient	<p>Process related measures allowing the emission rate reduction are;</p> <ul style="list-style-type: none"> • Avoid or reduce oil film on welded surfaces; • Use rectangular wave high frequency 	EHS officer of Project Proponent	Environment Consultant hired by	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	Manufacturing / assembling where welding and Joining operation will be in process	air quality (PEQs) standards, Prevention of air pollution in surrounding area	<p>pulse GMAW machines to reduce fume generation. Results of test conducted at John Deere in 1992 indicate, that pulse GMAW welding allows for fume reduction by 80% compared to the constant voltage GMAW on clean parts and by 60% on oily parts;</p> <ul style="list-style-type: none"> • Reduce expulsion with spot welding; • Avoid short-time conditions spot welding, changing over to medium-time condition. • Place containers with welded small parts in totally enclosed cabinets connected to exhaust system to avoid residual welding smoke release into building. <p>Ventilation Clean air for welding operations will be provided by ventilation systems, which typically consist of local exhaust systems and general ventilation supply and exhaust systems. The most efficient methods of contaminant control in the occupied zone of the welding shop, and particularly in the</p>		Project Proponent	

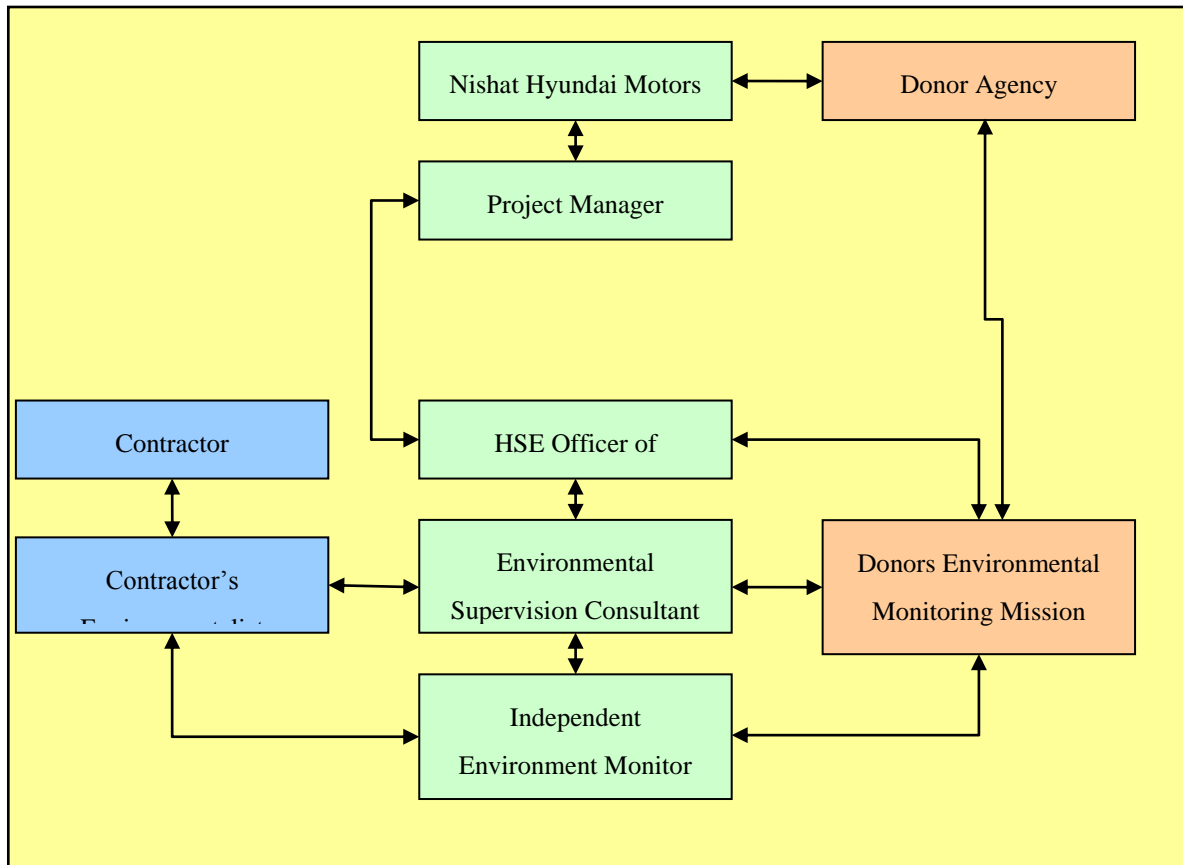
Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			<p>breathing zone of the operator or welder (with a manual welding), are:</p> <ul style="list-style-type: none"> Exhaust from the total welding process enclosure when automatic welding machines are used; Exhaust from welding area enclosure, when robotic welding and material handling are used, and Local exhaust which captures the contaminants at or near their source. <p>Fume Filtration – Often when air is exhausted; it is exhausted through a fume/dust collector. These collectors may be:</p> <ul style="list-style-type: none"> Small, portable collectors connected to the local exhaust and the fan; <p>Medium size wall- or floor-mounted collectors working as part of the local exhaust system with one or few exhaust hoods, or</p>			
3.	Land Quality – Accidental release of	–	– Appropriate procedures and protocols to be established and monitored for	EHS officer of Project	Environment Consultant	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	fuels, oils, chemicals, hazardous materials, etc., to the ground during delivery to the site. – Discharge of pollutants in water used for equipment and vehicle washing to ground.		materials delivery and handling. Proponent will have, at all times, clean up kits available. – All storage areas will have appropriate environmental security measures to prevent accidental release to ground. – Washing activities will take place on areas with proper drainage systems with containment and treatment. Effluent, if any, will meet the standards.	Management Unit	hired by Project Proponent	
4.	Material Use And Wastewater Management – Storage of solid and liquid wastes. – Waste management	– Management and Compliance with waste management rules – Prevention of inappropriate waste disposal	– Inspection of all waste storage areas to ensure appropriate identification, segregation and containment. – Establishment of waste management disposal/recycling techniques by proponent Establishment of filter dust handling procedures and choice of the	EHS officer of Project Management Unit	Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			contractors. Hazardous waste disposal techniques to be established. Review of waste minimization and recycling options for all waste will be exhaustive			
5.	Noise & Vibration – Noise from cement plant	– Compliance with prescribed PEQs to control Noise pollution	– Good site management; appropriate choice of machinery; methods of working; hours of working; efficient material handling.	EHS officer of Project Proponent	Environment Consultant hired by Project Manager	EPA
6.	Traffic And Transport – Increased heavy vehicles traffic both locally and nationally.	– Prevention measures against accidents and health problems	– Maximize the use of the rail network, when available, for bulk deliveries and abnormal loads. Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion; heavy construction traffic will be subject to a		Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			traffic management plan, as necessary.			
7.	Access to social services <ul style="list-style-type: none"> – Social facilities like road, school etc. – Employment opportunities 	<ul style="list-style-type: none"> – Improved social infrastructure and living standards of local residents 	❖ Increased access to social services <ul style="list-style-type: none"> – Construction of access road, community road, and road around the project boundary – Electrification of surrounding area must be examined – Provision of employment to every affected person on fair basis 	Project Proponent	EHS officer/ Environment Consultant hired by Project Proponent	EPA
8.	Work environment (including work safety) <ul style="list-style-type: none"> – Labor accidents due to handling heavy loads; working at heights; electric shocks – Diseases caused by air pollutants, water 	<ul style="list-style-type: none"> – Prevention measures against labor accidents and health problems 	❖ Labor accidents <ul style="list-style-type: none"> – Prepare a manual for labor accident prevention including safety education and training – Provide workers with appropriate protective equipment – Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads 	EHS officer of Project Management Unit	Environment Consultant hired by Project Proponent	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	pollutants, and noise from the operation – Fire Hazards		<ul style="list-style-type: none"> – Keep lifting devices well maintained and perform maintenance checks as appropriate – Use equipment that protects against electric shock <p>❖ Fire Hazards</p> <ul style="list-style-type: none"> – Installing fire extinguishers in fire handling places – Installing fire fighting system – Developing fire fighting organization and implementing fire drills. 			



Hierarchy of EMP implementation

8.8. ENVIRONMENTAL MONITORING PROGRAM

The monitoring program is designed to ensure that the requirements of the NOC awarded by the EPA are met. Monitoring Program (MP) provides important information that allows for more effective planning and an adaptive response based on the assessment of the effectiveness of mitigation measures. The monitoring of various parameters will help to determine the extent to which project construction/operation activities will cause environmental disturbance. Following is a tentative plan for environmental monitoring;

Environmental Monitoring Plan

Sr. No	Monitoring Parameter	Monitoring Location	Remarks
A. Construction Stage			
1.	Noise	Construction Vehicle/ Machinery/ generators/Welding work	Construction vehicles / machinery / generators will be checked regularly for noise level by the contractor during construction phase.
2.	Smoke Emissions (CO, NO _x , PM, SO ₂ etc)	Construction Vehicle/ Machinery/ generators	Construction vehicles / machinery / generators will be checked regularly for smoke emissions by the contractor during construction phase.
3.	Water Quality As per PEQS	Ground Water/ Surface Water	Sampling and laboratory testing will be done on monthly basis during the construction.
4.	Solid Waste	Worker Camp/ Construction Site	Collection of solid waste shall be checked regularly by the contractor during construction phase.
B. Operation Stage			
1.	Security	Mill area	Security arrangement will be made.
2.	HSE Plan	---	Health, safety and Environmental will be monitored on daily basis.
3.	Indoor Gaseous Emissions monitoring (CO, NO _x , O ₂ , SO ₂ , VOCs,)	Welding area room, paint are Generators room, etc	Will be carried out on quarterly basis from the stacks of generator and boiler
4.	Water Quality As per PEQS	Ground Water/ Surface Water	Sampling and laboratory testing will be done on monthly basis during the operational phase.
5.	Solid Waste	Worker Camp/ Furnace site/ raw material storage site	Collection of solid waste shall be monitored on daily basis during construction phase.
5.	Noise	Mill area	On daily basis by the mill

Sr. No	Monitoring Parameter	Monitoring Location	Remarks
	As per PEQS		management and on quarterly basis by a third party
6.	Waste Water Monitoring As per PEQS	From final discharge point of Waste Water Treatment facility	As described by SMART

8.9. REPORTING STRUCTURE AND OUTCOMES

Monitoring reports will contain the results of different physical, chemical and ecological parameters along with photographic record made in the period preceding the report as well as recommendations for action, if required, for improving the construction process from an environmental perspective. Data will be presented both in tabular and spatial form.

8.10. ENVIRONMENTAL MANAGEMENT AND MONITORING COST

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively.

However, a lump sum amount of **US\$. 76, 482** is estimated for the implementation of the Environment management, environmental training and monitoring for a period of two years during construction of the project. After that, monitoring program will be revised in consultation with EPA and cost will be revised accordingly.

Environmental Component	Quantity	Amount US\$	Details	Remarks
A. Environmental Management Cost				
Health & Safety Measures: This will include the provision of Personnel Protective Equipments (PPEs) (Shoes, Gloves, Goggles, Helmets, First Aid Kit etc) to be provided at the site for at least 20 - 25 workers.	Lump sum	20,000.0	The workers are required to provide the PPEs for work site safety precaution and to avoid any safety hazard.	Amount to be included in the Project Budget.
Sub-Total (A)		20,000.0		

Environmental Component	Quantity	Amount US\$	Details	Remarks
B. Environmental Monitoring Cost				
i). Air Quality Monitoring (as per EPA Standards)	9	11,502	01 samples @ US\$ 1278/sample	Amount to be included in Project Budget
ii) Water Quality Monitoring (as per EPA Standards)	24	9,480	01 samples @ US\$ 395/sample	Amount to be included in Project Budget
iii) Noise Level Monitoring (as per EPA Standards)	15	3,000	01 samples @ US\$ 200/sample	Amount to be included in Project Budget
Sub-Total (B)		23,982.00		
C. Training to Staff and Cost of Environment Manager <ul style="list-style-type: none"> In-country training of three officers in the road-related environmental issues. Training for data analysis, management, and application to the job scenarios of three officers. 		21,000.00	Training related with the EHS and Ergonomics etc for awareness	Required for implementation of true spirit of EMP
D. Tree Plantation <ul style="list-style-type: none"> Linear plantations on both sides of the road 	1150	11,500		
Total Environmental Management and Monitoring Cost (A+B+ C+D)		76, 482	Summing up A, B, C & D	Amount to be included in the Project Budget

9

STAKEHOLDER ENGAGEMENTS

9. STAKEHOLDER ENGAGEMENTS

9.1. GENERAL

This section describes the regulatory policy, planning and current practices of project proponent pertaining to the stakeholder engagements and outcomes of stakeholder consultation process initially done as part of the ESIA report. The feedback from communities and other stakeholders directly or indirectly affected by the project is collected so that it may be used to adjust and improve the project's design, planning, implementation and help the implementation structure ensuring that the project is both environmentally and socially sound. The consultation process was carried out in accordance with the requirements of the MIGA and Government of Pakistan on public consultation.

The objectives of this process were;

- To disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders,
- To gather information on relevant issues so that the feedback received could be used to address these issues at an early stage of the project,
- To determine the extent of the negative impacts of different project activities and suggest appropriate mitigation measures.

9.2. IDENTIFICATION OF STAKEHOLDERS

There are two types of stakeholders, i.e.

- a. Primary stakeholders
- b. Secondary stakeholders

9.2.1. Primary Stakeholders

The primary stakeholders are the initial stakeholders, such as affected persons, general public and women residing in the project area. Accordingly, the consultations / focus group discussions were made with all primary stakeholders for sharing of information about the proposed project and expected impacts and understanding about the concerns by category of stakeholders.

9.2.2. Secondary Stakeholders

The secondary stakeholders are the representatives of Government Departments/Agencies involved in the planning, design, implementation and operation of the project, including various government departments such as District Administration, FIEDMC, EPA, WAPDA,

Agriculture including the Horticulture wing, Irrigation, Forest, and other relevant departments.

9.3. STAKEHOLDER ENGAGEMENTS PLANNING

A twofold stakeholder engagement is planned and carried out for the proposed project as following:

(a) Stakeholder Consultation during the Preparation of ESIA Report:

The consultation with the primary and secondary stakeholders has been conducted initially during the preparation of the ESIA report, details of which have been given in the subsequent paragraph at 10.4.

(b) Stakeholder Consultation / Public Hearing during the Approval of the project:

The proponent is bound to complete as a regulatory obligation by the Environment Protection Agency (EPA), Punjab to conduct such Consultative Event known as “Public Hearing” under Section 12(4) of Punjab Environment Protection Act, 2012. This process shall be carried out during the review of the project to get the Environmental approval from the EPA, Punjab, Pakistan.

During this process following activities shall be carried out.

- i. The proponent shall cause to be published, in any English or Urdu national newspaper, a public notice mentioning therein the type of project, its exact location,
- ii. The public notice issued shall fix a date, time and place for public hearing of any comments on the project or its EIA. The date fixed for public hearing shall not be earlier than 30 days from the date of publication of the notice.
- iii. The EPA shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.
- iv. All comments received by the EPA from the public or any Government Agency shall be collated, tabulated and duly considered by it before its decision for approval

9.4. STAKEHOLDER CONSULTATION PROCESS

The overall strategy for stakeholder’s consultation is as follows:

Table - 9.1: Process of Stakeholder Consultation

Stakeholders	Purpose of Consultations	Methodology	Stage
Primary Stakeholder	<ul style="list-style-type: none"> Information gathering and data collection. Information sharing about the project (disclosure) Opinion seeking (concerns and expectations) Grievance redress 	<ul style="list-style-type: none"> Focus Group Discussions Household surveys Formal and informal Community meetings 	<ul style="list-style-type: none"> Base line Study Impact Assessment
Secondary Stakeholder	<ul style="list-style-type: none"> Participation in the development process Information gathering Authentication and validation of the development processes Verification of the record 	<ul style="list-style-type: none"> One on one meetings In-depth interviews 	<ul style="list-style-type: none"> During the ESIA preparation On need basis during the project implementation and

Stakeholder consultation for this project was planned during the preparation of ESIA report. In first step during the scoping, which has already taken place, consisted of meetings with individuals, groups, relevant organizations and government departments, which are in some way linked to the project and therefore considered stakeholders. The meetings were conducted to inform stakeholders about the project and how it may affect their lives/activities, and to record their concerns, whether real or perceived. Through the use of various tools the study team tried to involve the stakeholders in active decision-making. The results of this exercise are described below, where mitigation measures have been developed addressing the pertinent stakeholder concerns.

9.5. PRIMARY STAKEHOLDERS CONSULTATION

Apart from gathering of quantitative data through household survey of the area of influence of the project and survey of local community to share the information about the project and record their concerns/ feedback associated with this project. In this context, nearest community shared their view point regarding the assessment especially procedure for entering their concerns/ grievances, employment opportunities, and implementation of the project. A list of public consultations is presented in the below **Table - 9.2**.

9.5.1. Topics for Discussion

The topics discussed in the consultations were:

- Employment and livelihoods of communities.
- Gender and women issues
- Contractor's camp and access
- Environmental issues during construction and operation of project
- Company responsibility for employment, etc

Table - 9.2: List of Primary Stakeholder's Consultations in the Project Area

Date	Location	Distance from the Site (km)	Number of Participants	Summary of Feedbacks	Recommendation in ESIA
07.09.2017	Butiwala	1.1	29	<ul style="list-style-type: none"> • People were in favor of the project. • People demanded the early execution of the project as it shall create job opportunities. • People perceived and demanded the local employment. 	It is recommended that the project contractor and proponent should prefer the local communities to hire during commencement of project.
07.09.2017	Napalky	1.0	31	<ul style="list-style-type: none"> • People were in opinion that under Corporate Social Responsibility, the upcoming project shall provide the training facilities to works which belongs to the local communities. • People perceived and demanded the local 	It is recommended to provide the maximum employment to the project area people.

				employment.	
08.09.2017	Chak Jhumra	1.8	42	<ul style="list-style-type: none"> • People were in opinion that increased industrialization is increasing the socio-economic structure of the area as a whole. • They were in opinion that workers are now earning good daily wages. And presence of more industries shall increase their wages values. • They were in opinion that representative of local can play a vital role to provide the local man power. 	Proper coordination with the local people will make the project socially acceptable.

08.09.2017	Bilal Nager	2.4	17	<ul style="list-style-type: none"> They were in opinion that workers are now earning good daily wages. And presence of more industries shall increase their wages values. 	
08.09.2017	Sidhunwala	2.9	12	<ul style="list-style-type: none"> The people of this area were of the view that the industrial city is uplifting the economic status of the area. People are now keen to get the education. 	The project under its CSR may fix some budget for workers training.
09.09.2017	Banghanwala	2.7	25		
SUMMARY OF COMMENTS BY THE OFFICIAL					
Date	Location	Designation	Names of Participants	Summary of Feedbacks	Recommendation in ESIA
09.09.2017	Faisalabad	Deputy Director Environment Protection Agency	Muhammad Shoukat	<ul style="list-style-type: none"> The project should get the environmental approval before the commencement as it is 	The project should committed to show compliance with all rules regulation and standards of EPA during the whole

				<p>the regulatory requirement.</p> <ul style="list-style-type: none"> • The whole operation should be in compliance with the Punjab Environmental Quality Standards. • There should be proper mechanism of reporting compliance with PEQS. 	project life.
09.09.2017	Chak Jhumra	Officer of SNGPL	Amjad Ishaque	<ul style="list-style-type: none"> • The project should comply with the regulatory requirements of all stakeholders. 	The project activities should be in compliance with the applicable environmental standards.
09.09.2017	Faisalabad	Officer of FIEDMC	Muhammad Arsahd	<ul style="list-style-type: none"> • The project should follow the SOPs as being prepared by the FIEDMC and as applicable time to time for better business 	The project should dedicated to comply with all applicable Government laws.
09.09.2017	Faisalabad	Managing Director – HFO (NGO)	Dr. M. Haidary	<ul style="list-style-type: none"> • He was in opinion that 	--

				<p>the need industrialized as land is barren and people has to go far from their home for employment. He further added that workers are now earning good daily wages which shall cause increased social boost up.</p>	
--	--	--	--	---	--

9.5.2. Consultation Teams

An Environmental Specialist conducted the Focused Group Discussions (FGDs) with stakeholders, whereas a Social Specialist supported by a field assistant conducted interviews and meetings with government functionaries.



a) Consultation with local shop Keepers b) Consultation with College Teacher



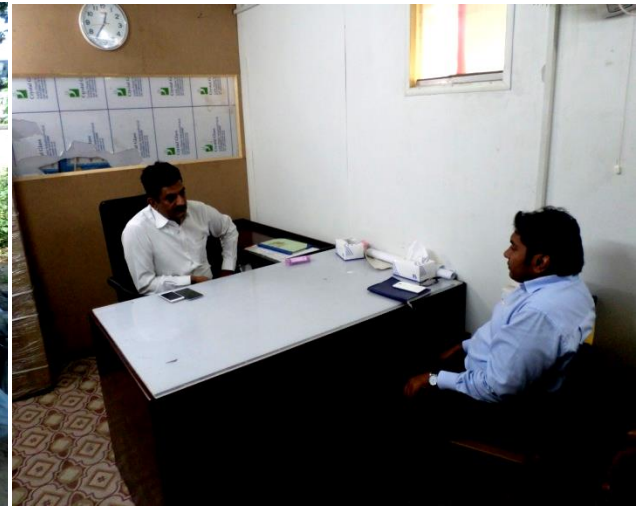
c) Consultation with General Public d) Consultation with Local Counselor



e) Consultation with Local Trader f) Consultation with Local Contractor



g) Consultation with Elders of Community



h) Consultation with Industrialist

9.6. MEETINGS WITH SECONDARY STAKEHOLDERS

The following stakeholders were consulted on different occasions during the preparation of ESIA to seek their inputs, feedback and opinion on the design and scope of the project. The offices and Individuals who were consulted are as follows:

- Office of District Officer, Environment Protection Agency, Faisalabad.
- Faisalabad Industrial Estate Development and Management Company (FIEDMC)
- Department of Social Welfare, Faisalabad
- Department of Wild Life and Fisheries
- Sui Northern Gas Pipe Line (SNGPL), Faisalabad
- Human Federation Organization (Local NGO)

The stakeholders supported the proposed project provided that environmental and other project related issues are addressed through mitigation measures and best management practices.

9.7. OUTCOMES OF CONSULTATIONS

The outcomes of the primary and secondary consultation are precisely briefed as below:

- All actions associated with the project should be taken through proper consultations.
- There should be a continuous community consultation program throughout the project implementation period.

- There should be employment opportunities for skilled and unskilled people, preference should be given to the local communities.
- To include local people wherever possible in jobs during the construction of project. Thus, income generating activity of the area should be enhanced.
- Reduce the chances of environmental effects like noise/ vibration and dust emissions caused to the nearby community.
- Overall the project is good for the surrounding villagers in specific and the country in general.
- No serious concerns with the project because this project will increase the employment and enhance the luxury lifestyle with affordable cost.

10

MIGA-Performance Standards on Social and Environmental Sustainability

10. MIGA – PERFORMANCE STANDARDS ON SOCIAL & ENVIRONMENTAL SUSTAINABILITY

10.1. GENERAL

The assessment of environmental risk and impacts has been undertaken in compliance with the MIGA “Performance Standards 1 to 8, on Social and Environmental Sustainability, October 1, 2013”.

10.2. PERFORMANCE STANDARD 1 - SOCIAL AND ENVIRONMENTAL ASSESSMENT AND MANAGEMENT

10.2.1. Social and Environmental Assessment

This ESIA Study Report complies with the requirement of “MIGA Performance Standards on Environmental and Social Sustainability - Effective October 1, 2013” while taking into considerations also the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines for Metal, Plastic & Rubber Products Manufacturing and IFC General EHS Guidelines.

10.2.2. Management Program

Based on the social and environmental risks impacts and mitigation measures requirement, committed to establish a management program. Various policies and procedures need to develop and the project management is in the process of developing policies and procedures.

10.2.3. Organizational Capacity

The project management has to develop an organizational structure required for the operation stage of the Project.

The company is also in the process of defining rules, responsibilities and the authority to implement the management program.

10.2.4. Training

The management is committed, that the employees & contractors training with respect to work skills; hazards; fire; environment; emergency; spills; accidents; first aid; etc.; shall be implemented.

10.2.5. Monitoring

Mandatory monitoring, according to the Punjab Environment Quality Standards and “Self Monitoring and Reporting by Industry (SMART)” Program, needs to be carried out during construction and operation stage of the Project. It is recommended that a third party monitoring should also be undertaken annually. HNMPL is also

committed to follow the monitoring requirements specified in the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines for Metal, Plastic & Rubber Products Manufacturing (April 30, 2007).

10.3. PERFORMANCE STANDARD 2 – LABOR AND WORKING CONDITIONS.

10.3.1. Working Conditions and Management of Work Force

It is mandatory for the company to follow the Industrial Relations Ordinance and the Provincial Employees Social Security Ordinance for setting up the working conditions and management of workers relationship. The company has to established procedures/policies for non-discriminations, equal opportunity, retirement and grievance mechanism.

The regular workers union will come in place after the project has gone into operation, as per requirement of the Industrial Relations Ordinance.

10.3.2. Protecting the Work Force

A strict policy, as per local laws shall have to be evolved and strictly implemented for non-employment of child and forced labor. The company is committed to enforce this policy under the laws requirement. This policy will be also be imposed on contractors and contract labor.

Social Management System is yet to be developed. The management has indicated that this will be implemented by due date.

The management has also plans to address strictly the issue of child labor and forced labor with its supply chain.

10.3.3. Occupational Health and Safety.

Health & Safety Management System, Health & Safety Procedures and Health & Safety Training Procedures are in the process of being developed.

Adequate Personnel Protection Equipment (**PPE**) will be procured and compliance of its use shall be strictly enforced by the Company.

Routine medical check-up and record of all employees will be maintained after designation of dispensary/hospital and a qualified medical officer will be hired. The medical policy will include protective measures against HIV/Aids.

Adequate and well-equipped first aid kits will be placed in the manufacturing shops, electrical sub-station, canteen and other workplaces of the Plant facility as well as at

other key locations. Ambulance service will be contracted to available round the clock.

10.4. PERFORMANCE STANDARD 3, POLLUTION PREVENTION AND ABATEMENT

(a) General

HNMPL is purchasing new & modern machinery and related equipment. The plants will correspond to the prevention of pollution and minimize emissions to be consistent with World Bank Standards, IFC's Environmental, health and Safety Guidelines, and good Hyundai & international industry practices.

(b) Pollution Prevention, Resource Conservation and Energy Efficiency.

The Company is committed to maintain release of all type of pollutants in compliance with the World Bank & MIGA/IFC Standards. The company is also committed to examine and incorporate in its operations resource conservation and energy efficiency measures, consistent with the principles of cleaner production.

1. Noise

Assembly plant machinery & equipment and related sections are designed to operate within permissible noise levels of International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines.

2. Water Quality

Although the proposed site is located in M-3 Industrial City, HNMPL is committed to ensure that proper measures shall be implemented to prevent and control erosion & sedimentation.

3. Hazardous Materials

The project management, during construction and operation stages, will endeavor to avoid use of hazardous materials. Wherever avoidance is not feasible, it will endeavor to minimize or control the release of hazardous materials resulting from their production, transportation, handling, storage and use for project activities.

The project management, in particular, commits that it will not use Ozone depleting substance like Freon's for refrigeration, PCBs and asbestos.

Pesticide Use and Management

The project management is committed that during its project activities, it will manage to avoid use of pesticides. When pesticides use becomes necessary, it will use pesticides with low human toxicity, known to be effective against the target species, and have minimal effects on non-target species and the environment.

The project management commits that it will not use products that fall in the World Health Organization Recommended Classification of Pesticides by Hazard Classes Ia and Ib or Class II.

10.5. PERFORMANCE STANDARD 4, COMMUNITY HEALTH, SAFETY AND SECURITY

(a) General Requirements

The project management is committed to conform to all the requirements of Community health and safety.

All emissions, liquid effluents, noise levels and solid waste will be managed to conform to the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines for Metal, Plastic & Rubber Manufacturing and IFC General EHS Guidelines.

(b) Infrastructure and Equipment Safety

The project management, commits that during design, engineering, construction and operation activities it will ensure that structural elements or components are in accordance with good international industry practice.

All structural elements will be designed and constructed by qualified and experienced professionals, and certified or approved by competent authorities or professionals.

(c) Hazardous and Safety

The project management commits that it will prevent or minimize the potential for community exposure to hazardous materials that may anytime be released by the project. It also commits that where there is a potential for the community to be exposed to hazards, particularly those that may be life threatening, it will exercise special care to avoid or minimize their exposure by modifying, substituting or eliminating the condition or substance causing the hazards.

(d) Environmental and Natural Resource Issues

The project management is committed to avoid or minimize adverse impacts due to project activities on soil, water and other natural resources in use by the affected communities.

(e) Community Expose to Disease

The project management commits that its project activities do not have potential for and will also prevent or minimize the potential for community exposure to water-borne, water-based, water-related, vector-borne disease, and other communicable diseases.

(f) Emergency Preparedness and Response

Details has been given in Sections 7, 8 and 9 of this report.

(g) Security Personnel Requirement

The management plans to hire security services on contract from registered and approved agencies. They are committed that in hiring security services it will ensure that it will be guided by the principles of proportionality, good international practices in terms of hiring, rules of conduct, training, equipping and monitoring of such security personnel, and applicable law.

10.6. PERFORMANCE STANDARD 5 – LAND ACQUISITION AND INVOLUNTARY RESETTLEMENT

(a) General Requirements

The land the Project will be purchased from M-3 Industrial City. The land is not under any economic activity; including industrial, commercial and agriculture.

No involuntary resettlement is envisaged for the Project area.

10.7. PERFORMANCE STANDARD 6 – BIODIVERSITY CONSERVATION AND SUSTAINABLE RESOURCE MANAGEMENT

(a) Habitat

The project activities will not lead to any destruction of habitat and threat to the maintenance of biodiversity.

(b) Modified Habitat

The project activities are not expected to affect habitat.

(c) Natural Habitat

The management of the project commits to undertake measures through following actions:

- Post-construction restoration of habitats, where practically, technically and financially feasible.
- Offset any losses that are caused by its operation, through creation of ecologically comparable area/(s) that is managed for biodiversity.

(d) Critical Habitat

The project area does not fall into critical habitat areas.

(e) Legally Protected Areas

The project is not located within a legally protected area.

(f) Invasive Alien Species

The project management is committed not to intentionally introduce any new alien species. Its activities also do not involve any introduction of alien species.

(g) Management and Use of Renewable Natural Resources

The project management is committed to manage renewable natural resources in a sustainable manner.

10.8. PERFORMANCE STANDARD 7 – INDIGENOUS PEOPLES

The Social Impact Assessment indicates that none of the communities within the project's area of influence will be affected by the project's activities. It is worth noting there are no Indigenous People in the project area according to definition. The management is committed that when any adverse impacts occur due to project activity, they will be minimized, mitigated and for any damage to occur to any segment of environment will be compensated.

(a) Development Benefits

The management plans to hire, as far as possible, labour on contract, to pass on the benefits of its activities to the peoples of the area

(b) Special Requirements

The establishment of the project at the selected location will not have any impact on traditional or customary land under use. Its activities are not expected to having any adverse impact on livelihoods, or cultural, ceremonial, or spiritual use that defines the identity and community of the Peoples.

(c) Relocation of Indigenous People from Traditional or Customary Lands

There are no Indigenous people in the project area.

10.9. PERFORMANCE STANDARD 8 – CULTURAL HERITAGE

According to thorough investigations, there is no cultural heritage in the Project area, according to its definition.

10.10. METHODOLOGY FOR EVALUATING ENVIRONMENTAL IMPACTS

Baseline data and conditions will form the basis for evaluation of the environmental impacts of proposed HNMPL Project. For details refer to Chapters 6, 7, 8 and 9.

11

Grievances Redressing Mechanism

11. GRIEVANCES REDRESSING MECHANISM (FORMAL AND INFORMAL CHANNELS)

11.1. FORMAL CHANNEL

11.1.1. Environmental Legislation

The Punjab Environmental Protection Act (PEPA)-2012 provides a complete code of conduct for addressing grievances stemming from damages to any sector of the environment from the project activities.

The project is required to operate at least 95 % of its operational period in strict compliance with the required emission standards of Punjab as provided in the Punjab Environmental Protection Act 2012 and the Punjab Environmental Quality Standards as well as the guidelines laid down by the “Pollution Prevention and Abatement Hand Book, July 1998, the World Bank” and International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines. This ensures that the project proponent is legally bound to observe all legal requirements to avoid damaging the environment around the project.

11.1.2. Punjab Environmental Act and Environmental Management

The Punjab Environmental Protection Act (PEPA)-2102, covers aspects related to the protection, conservation, rehabilitation and improvement of the environment and the prevention, control of pollution and promotion of sustainable development. Being the prime environmental law, PEPA establishes complete regulatory and monitoring bodies, policies, rules, regulations and environmental quality standards. To ensure enforcement, the act establishes regulating bodies i.e. Punjab Environmental Protection Council (PEPC) and responsible bodies i.e. Punjab Environmental Protection Agency at Provincial level. The act extends to the whole of Province including its territorial waters.

Environment Protection Agency (EPA), Punjab, in which jurisdiction the proposed project falls, has the power to arrest without warrant any person against whom reasonable suspicion exists of his having been involved in an offence under the PEPA-2012, and enter, inspect and search without warrant any premises, vehicle or vessel. It also provides for seizing any plant, machinery, equipment, vehicle or substance, record or document. -EPA also provides the power to summon and enforce the attendance of any person and issuance of Environmental Protection Order 16 (EPO 16) in relation to a person who is contravening a provision of the PEPA-2012.

11.1.3. Enforcement of PEPA and Liability

The Government of Punjab is bound to protect the environment in accordance with its international commitments under various conventions and treaties it has signed or ratified. The PEPA-2012 translates these commitments into a compliance programme for the industrial establishments. Non-compliance to these commitments may result in loss of credibility, popularity and even financial aid from the international forums.

The Punjab EPD is directly responsible for enforcement of rules and regulation relating to environmental management/ protection in the province.

The PEPA-2012 requires:

- That no person (including companies) under its purview will discharge or emit any effluent or noise in contravention of the Punjab Environmental Quality Standards.
- That no proponent of a project shall commence construction or operation unless he has filed with the provincial EPA in whose jurisdiction the project falls, an Environmental Assessment report according to the sensitivity of the project or where the project is likely to cause an adverse environmental impact.
- That no person may dispose of waste on public land or on highway on or a land owned or administrated by a local council, unless done in accordance with the provisions of the Punjab Environmental Protection Act-2012.

The following section of the PEPA - 2012 further clarifies the mechanism of Environmental Management and Grievance Redress Mechanism.

Section 11:

Prohibition of certain discharges or emissions.—(1) Subject to the provisions of this Act and the rules and regulations no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the Punjab Environmental Quality Standards or, where applicable, the standards established under sub-clause (I) of clause (g) of sub-section (1) of section 6.

(2) The Provincial Government, in case the project falls in the latter's provincial jurisdiction, may levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1), to be calculated at such rate, and collected in accordance with such procedure as may be prescribed.

Section 12:

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

Section 16:

Environmental protection order.---(1) Where the Provincial Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of the provisions of this Act, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Agency or, as the case may be, the Provincial Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Agency may consider necessary within such period as may be specified in the order.

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

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

Section 17:

Penalties.—(1) Whoever contravenes or fails to comply with the provisions of Sections 11, 12, 13 or Section 16 or any order issued there under shall be punishable with fine which may extend to one million rupees, and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues:

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

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

Contraventions of the provisions of the PEPA-2012 is punishable with impressments extending up to five years, or with fine extending up to one million or with both. Where an offence is committed by a company every Chief Executive officer (CEO) and the company shall be deem guilty of the offence. Action can even be taken against Government Agencies and Local Authorities.

Government may also constitute an Environmental Tribunal to hear cases relating to the PEPA-2012. The tribunal may only hear cases when the complaint is made in writing by EPA, or Local Council or any aggrieved person who has given at least thirty days notice to EPA of the offence and of his intension to make a complaint to the Tribunal. The Tribunal may also hear appeals from the Agencies. Appeals from the tribunal shall go to the High Court.

In order to resolve the disputes relating to the environment issues, Environmental Tribunal Rules 1999 has been promulgated. In trying the offences, the tribunal has to follow the Code of Criminal Procedures 1898. The tribunal shall send the copies of his orders to the parties concerned and the Director General of the EPA. The Tribunal shall dispose of its proceedings within 60 days. An appeal to the Tribunal, accompanying a copy of the impugned order, copies of the documents relied and prescribed fees, shall be sent to the Registrar by the appellant. Generally the proceedings of the Tribunal shall be open.

11.2. GRIEVANCE REDRESS MECHANISM- INFORMAL

11.2.1. Procedure for Redress of Grievances

Suggested procedures to be adopted for the redress of the grievances are given below:

- Project affectee will submit his/her application to the Field Implementation Unit for consideration. Within 15 days of the receipt of the complaint, action will be taken up for redressal of the grievance. Wherever policy matters are involved, the case will be referred to the appropriate authority or committee appointed by the Project, to decide the matter.
- In case some response on the complaint is not received within 15 days of the receipt of the complaint, the complainant may also send a reminder with 15 days' notice to take legal remedial measures.
- In case the matter has been decided but the complainant is not satisfied, he/she may go to the court of law.
- In case of such eventualities, all affected persons should be exempted from legal and administrative fees made/paid/incurred pursuant to the grievance redressal procedures.
- All complaints received in writing or written when received verbally will be properly recorded and documented.

11.2.2. Proposed Mechanism for Grievance Redress

Under the Project the following will be established or appointed to ensure timely and effective handling of grievances:

- A Public Complaints Unit (PCU), which will be responsible to receive, log, and resolve complaints; and,
- A Grievance Redress Committee (GRC), responsible to oversee the functioning of the PCU as well as the final non-judicial authority on resolving grievances that cannot be resolved by PCU;
- Grievance Focal Points (GFPs) having educated people from each community that can be approached by the community members for their grievances against the Project. The GFPs will be provided training by the Project in facilitating grievance redress.

Details of the proposed mechanism are given below.

PCU – Function and Structure

PCU will be set up as part of the Risk Management Department of the Project. A senior official with experience in community and public liaison will lead the unit. Two assistants, one male and one female will be responsible for coordinating correspondence and preparing documentation work and will assist the senior official. The senior official will be responsible to review all documentation. The PCU will be responsible to receive, log, and resolve grievances. Given that the female community members have restricted mobility outside of their homes, the female PCU staff will be required to undertake visits to the local communities. The frequency of visits will depend on the nature and magnitude of activity in an area and the frequency of grievances.

GRC – Function and Structure

The GRC will function as an independent body that will regulate PCU and the grievance redress process. It will comprise of:

- | | |
|--|-------------------|
| ➤ Chief Executive of the Company or his nominee: | Chairman/Chief |
| ➤ Representative of M-3 Industrial City | Ex-officio Member |
| ➤ Head of the District Government | Ex-officio Member |
| ➤ Head of the District Local Self Government | Ex-officio Member |
| ➤ A dignitary of the project area | Member |
| ➤ Head HSE Department of the project | Member |
| ➤ Representative of the aggrieved person | Member |
| ➤ An Environmentalist | Member |

The GRC will meet once every three months to review the performance of the PCU; the frequency can be changed depending on the nature and frequency of grievances received. The performance will be gauged in terms of the effectiveness and the timeliness with which grievances were managed. In case there are any unresolved or pending issues, the GRC will deliberate on mechanisms to resolve those and come up with solutions acceptable to all concerned.

Grievance Focal Points

The GFPs will be literate people from each community that will facilitate their community members in reporting grievances from the Project. The GFPs will be provided training by the Project in facilitating grievance redress. Each community will have a male and female GFP appointed for this purpose.

Procedure of Filing and Resolving Grievances

Grievances will be logged and resolved in the following steps:

Step 1: Receive and Acknowledge Complaint

Once the PCU receives a complaint, which could be the complainant giving it in person, via letter or email, through phone call, or through a GFP, an acknowledgement of receipt of the complaint has to be sent within two working days to the complainant. The complainant will be issued a unique complaint tracking number for their and PCU's record.

Step 2: Investigation

PCU will work to understand the cause of the grievance for which the PCU may need to contact the complainant again and obtain details. The PCU will be required to complete preliminary investigations within five working days of receiving the complaint and send a response to the complainant documenting the results of their investigations and what the PCU plans to do ahead.

Step 3: Resolution through PCU

Once the PCU have investigated a grievance, it will share with the complainant the proposed course of action to resolve the complaint, should PCU believe any to be necessary. If the complainant considers the grievance to be satisfactorily resolved, the PCU will log the complaint as resolved in their records. In case the grievance remains unresolved it will be reassessed and GRC will have further dialogue with the complainant to discuss if there are any further steps, which may be taken to reach a mutually agreed resolution to the problem.

For minor grievances, Steps 1, 2 and 3 or Steps 2 and 3 can be merged.

Step 4: Resolution through GRC

In case the PCU is unable to resolve the issue, the matter will be referred to GRC. All complaints that could not be resolved within four weeks will by default be referred to GRC. However, the complainant or the PCU can convene the GRC at any point in time, depending on the nature and urgency of the issue.

11.2.3. Operating Principles for PCU

The PCU will operate on the principles of transparency, approachability and accountability. To achieve these, the PCU will be required to:

- Be equipped to handle grievances in the local languages.
- Be equipped to work through all possible modes of communication, such as,

emails, surface mail and face-to-face meetings at project site or requiring visits.

- Employ female staff, preferably from the nearby communities, to oversee complaints and issues of the female community members.
- Maintain a log of all grievances, with record of the date and time of the complaint logged and stakeholder information, such as, name, designation and contact details;
- Provide opportunity to the stakeholder to revert with their comments on the proposed plan of action.
- Keep the stakeholder informed of the progress in grievance resolution.
- Obtain stakeholder consent on the mechanism proposed to redress the grievance and document consent, and,
- Maintain confidentiality of the stakeholder, if requested so.

Stages of Grievances

Once a grievance is logged with the PCU, it could acquire the following stages:

Stage 1: it is resolved by the PCU or if not PCU, by the GRC;

Stage 2: If the stakeholders are still not satisfied, they can proceed through local judicial proceedings.

Awareness

The stakeholders will be informed of the establishment of the PCU, GRC and GFPs through a short and intensive awareness campaign. Under the awareness campaign, the proponent will share:

- Objective, function and the responsibilities of the PCU, GRC and GFPs;
- Means of accessing the PCU and the mechanics of registering a grievance at the PCU,
- GRC and GFPs;
- Operating principles of the PCU, GRC and GFPs; and,
- Contact details.
- Additional awareness campaigns may be organized, if necessary

11.3. COMPENSATION FOR ENVIRONMENTAL DAMAGES

As described under serial 12.1.1, above, since the project is to follow the World Bank Group (WBG) / MIGA's emission standards, therefore, it is required to operate at least 95 % of its operational time in compliance with the required emission standards of the WBG. This ensures that the project operation is legally bound to observe all legal requirements to avoid damaging the environment around the project.

Secondly, as described under serial 12.1.1 under the Punjab Environmental Protection Act-(PEPA), 2012, the likely damages to be caused to any sector of the environment or property or else will be paid to the affected parties.

Thirdly, under the PEPA the EPA of the concerned province and the Environment Tribunal can legally prosecute the project proponent for the damages to occur from the pollution generation from the project.

There is complete legal cover to address issues related to compensation for any environmental damage arising out of project activity. However, to address any such issues more expeditiously, the project administration will have a local committee as an Informal Mechanism.

This informal mechanism will provide convenient, quick and cost effective decisions for compensation against any environmental damages that occur from the project activity. This informal mechanism will also build confidence between the project administration and public and safeguard the interests of both the project and the public at large.

12

Social Management Plan

12. SOCIAL MANAGEMENT PLAN

12.1. SOCIAL MANAGEMENT PLAN - INTRODUCTION

HNMPL is committed to design, develop, and operate the proposed Project in a manner that will protect the quality of life for local residents, improve living conditions, provide needed community infrastructure to the extent possible, enhance skills and employment opportunities, encourage business development, and protect human health in the area. All programs will be developed in concert with stakeholders. In this regards, the primary impacts addressed in the Social Management Plan (SMP), both for construction and regular operation of the project, include:

- Local infrastructure pressures;
- Employment, training, and educational opportunities;
- Local economic opportunities and business development;
- Community health and safety; and
- On-going public consultation and disclosure.

12.2. CONSTRUCTION PHASE - SMP

The construction of Project will involve the employment of approximately 700 workers at peak over a 28-month period of construction. Provisions for housing and services as well as health and safety measures for workers within Construction Contractor's camps and on project sites will be addressed in the Construction Contractor's and sub-contractors' agreements in accordance with the local law. However, it is expected that there will be a number of migrants moving into the area as service providers that will impact communities and areas adjacent to or nearby project construction camps. There is a possibility among these service providers that there will be a substantial number of population influx. It is expected that 200 - 300 times the worker population, largely male, will enter the area during the construction period, that is anywhere from 900 to 1000 additional people, inclusive of construction workers. These assumptions are based on previous experience with similar projects.

A plan is required to mitigate, reduce and/or offset any additional impacts such a population influx may cause communities in the project area. In particular, there is a need to manage this population, address health issues, prevent traffic accidents and discourage human trafficking.

In addition, there is a need to assist local authorities/organizations in order to ensure that they have a good understanding of the challenges and ample resources to deal with these impacts and mitigate them effectively and in a gender-sensitive manner. The plan aims to fulfill the requirements of the MIGA policies providing mitigation for indirect project impacts (population influx and “camp followers”) on communities in the vicinity of project camps and incorporating gender planning.

The main objective of the plan is to propose suitable mitigation measures for the impacts of construction workers and their service providers and related impacts on communities in the Project Area. The plan needs to create a balance between providing necessary mitigation in order to create temporary and reasonable living conditions for construction workers but at the same time to control the scale of impacts by discouraging population influx. The plan also must address the any concerns of permanent residents of impacted areas, especially women, about the influx creating security and health concerns. These points imply that provisions should be ‘adequate’ in terms of standards for construction workers and service providers and take into consideration the needs of surrounding communities.

Spontaneous service providers are part of the multiplier service (indirect component) that provides services to the direct construction workforce by setting up facilities in a random disorganized ribbon in the vicinity of work camps. Services offered can vary from food and retail products.

More specifically, the plan should ensure that the following conditions are met:

- The Contractors and sub-contractors carry out gender-sensitive local labor recruitment as a key measure to reducing potential population influx and optimizing benefits for local communities.
- Health conditions among service providers and residents adjacent to project sites and communities are of a reasonable standard with basic measures to ensure safe drinking water and sanitation and to reduce incidents of Sexually Transmitted Diseases, so that the general health of camp followers does not affect the health of workers or nearby communities.
- Local authorities/organizations involved in urban planning, enforcement, and monitoring of health and social impacts are ensured adequate training, personnel, technical assistance and support funds to plan, manage all potential social and health risks, and carry out prevention and control measures and enforcement.
- Illegal social and economic activities by workers and service providers, including trafficking in people and employment of minors, are quickly

discouraged and heavily penalized, including the consequences of job loss and repatriation.

Construction Camp

The site or sites for the construction camps are yet to be defined but taking into account the baseline conditions, site allocated should be located keeping in view physical environmental sensitivity. The key features of the camp site, as they relate to the construction activities, are summarized below:

- The site should in a relatively flat area and there should not be any drainage lines traversing the site.
- The site should be clear of any forest vegetation and broadleaved trees species. Notwithstanding, the extent of vegetation clearing should be minimized.
- There should not be any agricultural activities on land/area selected for the camp site. The area will be affected by the construction activities, but should ultimately be reinstated.
- During the dry season, there is a significant risk of air pollution from clay road dust. Control of dust need to be mitigated by water tankers during peak traffic times. There is also increased risk of traffic accidents, noise and amenity issues associated with an influx of high number of construction workers.

Direct Workforce Impacts

- Construction employment effects are normally short term with abrupt peaks and very rapid declines in the workforce. A construction workforce is generally highly transient and although total numbers of the workforce may appear stable, this may result from equal numbers of incoming and outgoing workers. This highlights the need for flexible and well-managed accommodation arrangements. Due to the size of the proposed workforce and the relative geographical isolation, construction camps will be necessary in the locations discussed in the previous paragraphs.
- The various construction camps and essential on-site infrastructure will complete in stages and some workforces who may be accommodated off designated sites in what are described as “temporary camps”.
- The majority of unskilled and some semi-skilled labor categories will be drawn from outside the primary impact area.
- It is anticipated that the construction workforce, during most of the construction period, will adopt a daylight time work system, followed by break to return to the camp.

Most Probable Population Influx Scenario

- Half of the influx at camps is estimated to being local from within the Faisalabad District, and from villages within or immediately adjacent to the project area.
- Majority of the remaining population will come from other parts of Punjab or may be other provinces.

Population Influx Impacts and Mitigation

Without social management interventions, the risk of significant social impacts arising from the project, during construction phase, is considered high. The social impact of a workforce of this size will be significant with populations increasing many-fold that living near the vicinity of the project. A high percentage of the affected people will be indigenous populations living in surrounding villages. A high percentage of the workforce will be men and a some percentage of the service providers may be women. Although the impact will be short term (about 2 years) it will also be intense.

An overview of Construction and Camp Impacts and Mitigation is presented in **Table - 12.1.**

Table – 12.1: Construction & Camp Impacts and Mitigations

Impact	Mitigation	Responsible Party
Potential for unregulated development of contractors or sub-contractors work camps	Contractors responsible for camp construction and monitoring of conditions	Contractors. HNMPL HSE Dept. to cover monitoring
Potential for a proliferation of random disorganized service providers developments with unhealthy and unsanitary living conditions	Social Management and Mitigation Plan (see following Section) Population Management and Security (PMS) Task Force and Local Health Official.	HNMPL HSE Dept
Increases in risks to worker and local resident health	HNMPL Health and Safety Plan to be finalized for worker safety and incorporated into the contractors agreement	Contractors with monitoring by HNMPL HSE Dept. and Local Health Officials
A risk of violence and security problems due to the unusual, temporary population influx of workers and camp followers, and to the lack of local resources and human capacity.	Social Management and Mitigation Plan (see following Section) and Population Management and Security (PMS) Task Force	HNMPL Administration Dept.
Potential for discontent among local people if a significant percentage of workers are not given work	Direct work force local labour recruitment plan	HNMPL HR Dept.

Potential for local discontent due to inappropriate social behavior of workers (drinking, gambling, and harassing local women.)	Workers' Code for appropriate behavior incorporated into contractor's agreement, with work dismal as a consequence.	Monitoring by Contractors and HNMPL and M-3 Industrial City Security Force.
Lack of supply of potable water and water for domestic use for local population and population influx	Provisions for improved water supply and sanitation as part of the Social Management Plan and incorporated into the contractor's agreement.	Contractors with monitoring by HNMPL
A significantly increased risk of traffic accidents with unregulated control of construction vehicles	1) Traffic safety programme (on site) 2) Traffic safety programme between sites and along main routes within the region Both to be incorporated into the contractors agreement, with stress on training and speed control	Contractors with monitoring by HNMPL & M-3 Industrial City Admin. Depts.
The generation of dust and noise by project vehicles on residents with houses in close proximity to the road	1) Dust and noise control measures for all project sites and adjacent populated areas 2) Monitoring of measures by contractors	Contractors with monitoring by HNMPL
The project has the potential to significantly increase jobs, employment and incomes of men and women in the local area which would help to mitigate the above negative impacts	Direct work force local labour recruitment plan of HNMPL, including gender balanced targets (where appropriate) to guide local and external hiring.	HNMPL HR Department

12.3. SOCIAL MANAGEMENT AND MITIGATION PLAN

It is clear that the existing social environment within the primary impact area has virtually no social carrying capacity to absorb and service the estimated workforce and service providers.

It is also clear that there is a risk of large number of service providers living in uncontrolled and unsanitary conditions. The risk of incoming human trafficking and to lesser degree outgoing human trafficking will be substantial. There are also a number of specific impacts arising from the interaction between the social and physical environment which requires immediate mitigation such as the risk of exposure to dust, the increased risk of traffic accidents and the increased risk to water supply. The opportunity to support the local community will be an additional project benefit.

In order to reduce these risks, social management and mitigation program should cover the following main components:

- Capacity Building for Local Agencies and Staff

- Infrastructure
- Health Issues
- Security and Population Management Issues
- Traffic Safety and Regulations

12.3.1. Water Supply

With an expected increase in population of at the peak of the construction phase and non-existent of in safe drinking water the area (ground water is brackish in the area), there is a need for ensuring a regular supply of safe drinking water to designated camp and service providers area. The following steps are needed:

- Draft a plan for the supply of water to camps by contractors, based on estimated population increase and scenarios for the construction period.
- Plan should access needs, resources and need for examining all types of safe water sources.
- Management arrangements for water supply to be considered in Plan, including private water supplier for camps and service providers.
- Camp areas will be a key location for water quality and use monitoring due to the relative high population density and risk of contamination of water supplies by the different users.

12.3.2. Sanitation

Sanitation relates to the construction of toilets in camp and service providers areas. This will require the following activities:

- Draft a plan for the construction of toilet facilities for camps and service providers areas, based on estimated population increase and scenarios for the construction period;
- Construction to commence as soon as possible for health reasons;
- Management arrangements for maintaining toilet facilities to be outlined in the plan – responsible party to be identified and funds secured for maintenance.

12.3.3. Waste Disposal

Given the expected population increase, there will be a need to organize an effective waste collection and disposal system. The following steps are required:

- Draft a plan for waste collection and disposal system for camps and service providers areas, based on estimated population increase and scenarios for the construction period;
- Contractors should be engaged to construct disposal areas as identified in the plan;
- Work should commence as soon as possible for health reasons;

12.3.4. Health Issues

In addition to safe water supply, sanitation and waste collection and disposal, there are a number of other outstanding health issues. The District and/or Tehsil Administration & Health Offices will be required to carry out a number of monitoring activities and possible interventions for camps and service providers and will be requiring additional training and funding in order to do this.

- Price monitoring of essential goods_since inflation is likely to occur with demand exceeding supply at various times during construction (socio-economic monitoring will cover these issues and service providers and hereby villages/towns will be key locations for monitoring).
- Monitoring of births, mortality, causes of mortality and illness by Village Heads or Local health authorities to be reported on a monthly basis
- Support by HNMPL to local health staff for carrying out the above work in camps areas.
- The services of local police along with local health officials need to be extended to cover service provider areas. This will monitor infectious diseases, injuries, violence and other potential health problems.

12.3.5. Population Management and Security Issues

Security and population management are important aspects for service providers, both from the point of view of internal security (ensuring safety and order) and potential negative impacts on nearby communities (crime or negative social influences). There are two main preventative issues: 1) supporting and improving security measures; and 2) demographic management and monitoring.

Security and population management of the contractor's camps will be the responsibility of the contractors.

12.4. OPERATION PHASE - SMP

HNMPL shall maintain and implement a Stakeholder Engagement Plan (SEP) and grievance mechanism relevant for each Phase of the Project to ensure that all stakeholders are identified, that sufficient information about issues and impacts arising from the Project and proposed mitigation are disclosed in a timely manner and that all stakeholders are consulted in a meaningful and culturally appropriate way throughout project implementation and operation phases. Determine whether any vulnerable / disadvantaged groups or communities are likely to be disproportionately or permanently and adversely affected by the Project and identify and implement appropriate communication methods to consult with them about mitigation measures.

HNMPL shall plan grievance mechanism principles and requirements within their own Management Systems as appropriate, and provide training to staff on the SEP requirements. HNMPL will aim to involve stakeholders and to keep good communication practices during the lifetime of the project through its Administration Department. The objectives will be:

- Providing local communities with a project schedule and information on project activities that may affect them, together with mechanisms for their feedback.
- Provide general information to improve knowledge of what the project involves, with all stages and expected performance
- To make available to the public a grievance procedure, in order to collect, respond and resolve issues and complaints on a timely basis.

For each of the stakeholder groups defined in the SEP communication tools suggested will be used in order to ensure easy, transparent, direct, open and interactive communication with all stakeholders.

Any grievances are resolved on a timely basis, with evidence of formal and informal communication retained.

Most of the SMP mentioned for the construction phase will also apply during operation phase where appropriate.

12.4.1. Traffic Management Plan

Traffic Management Plan will be developed for the safe use of vehicles on and off site; driving standards; safe access to construction sites as well as within HNMPL boundary, with minimum negative impact on the existing roads and in parallel for

ensuring community safety and easy access to their properties (homes, land and gardens), construction and operation Workforce transportation should be considered within this plan.

For traffic control and safety, the information about the project activities and driving standards will be announced through, discussion forums, and any other means of communication available. HNMPL will openly and transparently inform residents in the affected places and villages as a minimum on a quarterly basis regarding the planned activities and safety measures to be employed.

The traffic flow through the site and within the urban areas will be coordinated with the responsible traffic officers/authorities responsible in the municipalities.

12.4.2. Truck Parking & Rest Area

About 20 trucks will be daily moving in & out of the plant. Since most of the movement will be during daytime a parking, lodging and rest area for truckers will necessary. This area can be either close to the Highway, within Industrial City or plant site.

Normally, such areas get developed in an unorganized fashion, creating environmental and social problems. If allowed to proceed un-mitigated the area can become a major environmental hazard.

12.5. COMMUNITY HEALTH AND SAFETY

A Community Health and Safety Educational Programme will be developed to inform and build awareness and understanding of the local community and transport drivers on the hazards and potential adverse impacts during the construction & operation phases and how to minimize the potential for an accident and/or injury to occur. The Programme will be linked to the SEP and utilize various communication methods to address the needs of vulnerable groups such as children and illiterate residents.

Workers must receive training and guidance on how to avoid conflicts with the local community members and sign a code of conduct, in order not to create conflicts with the local environment. Any damage or grievance shall be managed by the Grievance Mechanism and any repair/compensation be made in a timely basis.

In order to avoid negative impacts on local residents, Worker transportation and modes for workforce movements during construction works and plant operation will be organized in a way that will minimize negative impacts on local residents.

12.6. HEALTH AND SAFETY

Plan to be provided to ensure compliance with National, Provincial and WBG safety requirements.

However, during and after construction traffic accidents will increase due to higher traffic volumes and speeds, and there is a risk of the spread of HIV/AIDS. Road safety and HIV/AIDS awareness campaigns have been proposed to mitigate these impacts.

As a part of its social management plan HNMPL will include special campaign against the spread of HIV/AIDS. Urban expansion and higher immigration rates along the project road will lead to greater demand on infrastructure services and natural resources; this will require regulation by the regional / district planning authorities.

12.7. RECOMMENDATIONS AND MITIGATION MEASURES

Based on the initial benchmark study following recommendations are made:

- The management of the Project can capitalize on the positive attitude of the people of area towards proposed Project by offering them maximum employment opportunities at the construction stage and operational phase of the proposed plant.
- Insufficient and inadequate socio-economic structure of the community of the area also provides ample opportunities to Company management to win sympathies of local people in their favor, by introducing meaningful and manageable plan of community development.
- Aggressive and comprehensive plantation plan can also lessen fear of local people towards environmental issues.
- Plant management can explore direct or indirect chances of female employment opportunities. Such efforts can be fruitful to minimize negative social impacts.
- Sustainable development approach through conservation of natural resources would be the best strategy to compensate negative socio-environmental impacts.
- Plant management should offer technical training opportunities to the local youth, if possible, to remove relative sense of deprivation.

- Social responsible attitude and stewardship of company management towards local people and resources can make project area people friendly.
- Prior to action of the Project installation a comprehensive awareness campaign may be launched at masses level to avoid any conflict.
- To avoid any political, ethnic and value conflict, the administration of the plant may win the confidence of local elites, authorities, leaders and interest groups by adopting informal confidence building measures.

The SMP establishes the role and responsibilities of HNMPL, government, stakeholders and communities in mitigating and managing social impacts and opportunities during the construction and operational phases of the proposed project.

In general terms, the plan shall provide a program that will:

- avoid or reduce negative social impacts
- maximize positive social impacts
- monitor effectiveness of mitigation strategies.

The use of seven over-arching initiatives to reduce the negative social impacts of the Project and to uphold HNMPL's Business Principles, include:

- monitoring social impacts and other social issues and co-developing management initiatives with government and the community;
- ensuring Project employment, training and business benefits include a focus on local communities;
- supporting enterprise development to foster a strong local economy;
- sponsoring and giving to local community organizations sufficient development opportunities;
- setting strong behavior protocols for employees; and
- being responsive to community concerns by gathering community feedback through engagement.

The plan includes potential timing of impacts, measures of any change to be experienced by the community, who may be affected by change, how changes will be measured and what actions will be taken, by whom and when in order to manage impacts.

12.8. COMMUNITY DEVELOPMENT

HNMPL is committed to support the communities in which it operates and to this end will implement a community development plan, through engagement with local stakeholders and includes activities to:

- Address skills development needs.
- Eradicate poverty and projects to create jobs.
- Investigate and implement community investment opportunities.

HNMPL's Community Policy will express the organization's commitment to communities affected by its operations. To this end, communities are defined as those individuals or groups that may be directly affected by the company's activities. As a result, HNMPL operations are required to formalize their community engagement strategies by preparing a Community Engagement Plan. The plan defines a technically sound and culturally suitable approach to community engagement.