ENVIRONMENTAL IMPACT ASSESSMENT (EIA)
M/S FAYYAZ GHEE & COOKING OIL MILLS (PVT) LTD

(Plot #139-140 Industrial Estate District Rahim Yar Khan)

February 2022

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DISCLAIMER

The data was based on the originality of project site shown by the project proponent/ stakeholders/ promoters, provided maps, verbal communications and all other related documents. The authenticity of supra-mentioned relies with the proponent/ stakeholders/ promoters, not with the environmental consultant. The EIA report can't be negotiated in any court of law.

Author:

Environmental Consultant

CONTENTS

S.NO.	DESCRIPTION	PAGE NO.
	Abbreviations	8
	EXECUTIVE SUMMARY	**9**
	Title and Location of Project	9
	Project Proponent	9
	The EIA Study Consultant	9
	Brief Description of the Project	10
	Environmental Condition of the Site	10
	Major Impacts and Recommendations for Mitigation Measures	10
	Proposed Environmental Monitoring	17
	CHAPTER No: 01	18
1	**Introduction**	18
1.1	Purpose of the Report	18
1.2	Identification of the Project and Proponent	18
1.3	The Consultant	18
1.4	Brief Description of the Project	19
1.4.1	Nature and size of the Project	19
1.4.2	Location of the Project	19
1.5	Objectives of the Study	20
	CHAPTER No: 02	21
2	**Description of the Project**	21
2.1	Type and category of the project	21
2.2	Objective of the Projective	21
2.3	Alternative Considerations	21
2.3.1	Location alternatives	21
2.3.2	Modified Construction Technology Alternatives	21
2.3.3	Technology Alternatives	22
2.4	Location & Site Layout of Project	22
2.5	Land use & vegetation features of the site	22
2.6	Road Access	22
2.7	Vegetation features of the site	24
2.8	Cost and Magnitude of Operation	24
2.9	Schedule of implementation	24
2.10	Description of the project (Process flow chart/steps, Technology, Raw material and products, by-products)	24
2.10.1	Process Flow Chart	25
2.10.2	Technology	27
2.10.3	Raw material and products	36
2.10.4	By-products	37
2.10.5	Safety Features	37
2.10.6	Other Ingredients used in Oil Refining Process	37
2.10.7	Water consumption and waste water Disposal	37
2.10.8	Solid Waste	38
2.10.9	Health and Safety	38
2.11	Safety Signs/Safety Boards	39
2.12	Plantation	39
2.13	Fire Protection System	39
2.14	Restoration and Rehabilitation Plans	39
2.15	Details of restoration and rehabilitation at the end of the project life.	39

2.16	Government Approvals	40
	CHAPTER No: 03	41
3	**Description of Environment**	41
3.1	**Physical Environment**	41
3.1.1	Topography	41
3.1.2	Soil	41
3.2	**Climate and Meteorology**	41
3.2.1	Wind speed in the project area	43
3.2.2	Wind Direction in the Project area	44
3.3	**Ambient Air Quality**	44
3.3.1	Noise Monitoring	44
3.3.2	Basic Environmental Condition	44
3.3.3	Meteorological Condition	44
3.3.4	Methodology Adapted	44
3.4	Ground Water	44
3.5	**Ecological Environment**	44
3.5.1	Flora and Fauna	44
3.6	**Socioeconomic Environment**	45
3.6.1	Demographic Characteristics of the Project Area	45
3.6.2	Religion	45
3.6.3	Education	45
3.6.4	Health Facilities	45
3.7	**Quality of Life Values**	46
3.7.1	Civic Amenities	46
3.7.2	Games	46
3.7.3	Welfare of employees	46
3.7.4	Historical Buildings near the Project Site.	46
3.7.5	Aesthetics Values	46
	CHAPTER No: 04	47
4	**Potential Environmental Impacts and Mitigation Measures**	47
4.1	Methodologies for impact identifications	47
4.1.1	Leopold Matrix	47
4.2	Impact Analysis and Prediction	47
4.2.1	Consultation/Case Studies	53
4.2.2	Meetings	53
4.3	Characteristics of Impacts (nature, magnitude, extent and location, timing, duration, reversibility, risk)	53
4.3.1	Impact Assessment Criteria	53
4.4	Analysis of Impacts and recommended mitigations	54
4.5	Environmental Impacts due to project location	54
4.6	Environmental Impacts due to project design	55
4.6.1	Mitigation measures and recommendations	55
4.7	Environmental Impacts due to construction phase	55
4.7.1	Impact on Physical Environment	55
4.7.1.1	Topography	55
4.7.1.1.1	Impacts	55
4.7.1.1.2	Mitigations	55
4.7.1.2	**Air Quality**	56
4.7.1.2.1	Impacts	56
4.7.1.2.2	Mitigations	56
4.7.1.3	**Noise**	56
4.7.1.3.1	Impacts	57
4.7.1.3.2	Mitigations	57

4.7.1.4	Water Resources	57
4.7.1.4.1	Impacts	57
4.7.1.4.2	Mitigations	58
4.7.1.5	Soil	58
4.7.1.5.1	Impacts	58
4.7.1.5.2	Mitigations	58
4.7.1.6	Wastewater	59
4.7.1.6.1	Impacts	59
4.7.1.6.2	Mitigations	59
4.8	Solid Waste	59
4.8.1	Impact	59
4.8.1.1	Mitigations	59
4.8.2	Health and Safety	60
4.8.2.1	Mitigations	60
4.8.3	Impact on Biological Environment	60
4.8.4	Impact on Socio-economic Environment	60
4.8.4.1	Economic Activity	60
4.8.4..2	Lifestyle and Culture	61
4.9	Impact during operational phase	61
4.9.1	Impact on Physical Environment	61
4.9.2	Solid waste/Sludge Management	61
4.9.2.1	Mitigation Measures	61
4.9.3	Wastewater	61
4.9.3.1	Mitigation Measures	62
4.9.4	Gaseous emission	62
4.9.4.1	Mitigation Measures	62
4.9.5	Energy Requirement	62
4.9.5.1	Mitigation Measures	62
4.9.6	Noise level	63
4.9.6.1	Mitigation Measures	63
4.10	Impact on Biological Environment	63
4.10.1	Natural Vegetation	63
4.10.1.1	Mitigation Measures	64
4.10.2	Fauna	64
4.10.2.1	Mitigation Measures	64
4.11	Potential Environmental Enhancement Measures	64
4.12	**Purpose of Mitigation Measures**	65
4.12.1	What is the problem i.e. in terms of '' Major Environmental Impact "which may arise by the subject project activity?	65
4.12.2	When the problem will occur and when it should be addressed?	65
4.12.3	Where and how the problem should be addressed?	65
4.13	**Why of achieving mitigation measures**	65
4.13.1	Changing in planning and design	65
4.13.2	Improved monitoring and management practices	65
4.13.3	Compensation in money terms	65
4.13.4	replacement, relocation and rehabilitation	66
	CHAPTER No: 05	67
5	**Environmental Management and Monitoring program**	67
5.1	Intuitional Capacity	67
5.2	Training Schedule	67
5.2.1	Training of building contractor	68
5.3	Summary of impacts and their mitigation measures	69

5.4	Equipment Maintenance Detail	72
5.5	Environmental Budget	73
5.6	Environmental Management Plan	74
5.7	Proposed Environmental Monitoring	79
	CHAPTER No: 06	80
6	**Stakeholders and Public Consultation**	80
6.1	Objectives of Consultation	80
6.2	Consultative Aspects	80
6.3	Identification of main stakeholders	81
6.4	Meeting with stakeholders	81
6.5	Analysis of Stakeholders Consultations	82
6.5.1	Sample Size	82
6.5.2	Statistical Analysis	82
6.5.3	Result and discussion	82
6.6	Summary of issue raised by stakeholders	83
	CHAPTER No: 07	85
7	**Conclusion and Recommendations**	85
7.1	Conclusion	85
7.2	Recommendations	85
8	**References**	86
9	**Glossary**	87
	LIST OF TABLES	
Table 1:	Detail of Proponent	9
Table 2:	Month wise temperature, precipitation and humidity.	10
Table 3:	Summary of Major Impacts & their Proposed Mitigation during project location	12
Table 4:	Summary of Major Impacts & their Proposed Mitigation during project design.	13
Table 5:	Summary of Major Impacts & their Proposed Mitigation during Construction Phase.	14
Table 6:	Summary of Major Impacts & their Proposed Mitigation during Operational Phase	16
Table 7:	Environmental Monitoring	17
Table 8:	Details of PPEs	43
Table 9:	Average rainfall.	
Table 10:	Scale Table of Importance & Magnitude	47
Table 11:	Leopold Matrix	49
Table 12:	Impact Assessment criteria	54
Table 13:	Training Program	68
Table 14:	Summary of Impacts and their Mitigation Measures	69
Table 15:	Equipment Inspection Detail	72
Table 16:	Allocation of Environmental Budget	73
Table 17:	Environmental Management Plan	74
Table 18:	Environmental Monitoring	79
	LIST OF FIGURES	
Figure 1:	Project Site	10
Figure 2:	Month wise average and normal Temperature	11
Figure 3:	Google Earth Map of Project Site	19
Figure 4:	Water Detail	37
Figure 5:	Solid waste detail	38
Figure 6:	Daily Mean Temperature	
Figure 7:	Maximum and Minimum Mean Temperature	
Figure 8:	Wind Rose of RYK-IE	

Figure 9:	Institutional Capacity for the implementation of EMP	67
Figure 10:	Gender Ration of Respondents	82
Figure 11:	Education Status of Respondents	82
Figure 12:	Occupation of Respondents	82
Figure 13:	Satisfaction of Respondents	82
Figure 14:	Effect of project on local Environment	83
Figure 15:	What type of pollution caused by project	83
Figure 16:	Effect of project on living standard of area	83
Figure 17:	Effect of plant species of area.	83
	Annexures	
Annexure-A	Location & Site Layout.	
Annexure-B	Flow diagram	
Annexure C	Tree plantation plan	
Annexure D	Underground water Lab report	
Annexure-E	List of official stakeholders and local people consulted is attached	

LIST OF ABBREVIATION

BOR	Board of Revenue
BOD	Biochemical Oxygen Demand
Cl	Chloride
COD	Chemical Oxygen Demand
CCB	Citizen Community Board
CSR	Corporate Social Responsibility
EM	Environment Management
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EMP	Environmental Management Plan
EMMP	Environmental Management and Monitoring Plan
EA	Executing Agency
IEC	International Electrotechnical Commission
IEE	Initial Environmental Examination
ILO	International Labour Organization
IPEM	Implementation Plan of Environmental Management
MSWs	Municipal Solid Wastes
NEQS	National Environmental and Quality Standard
O&M	Operation and Maintenance
PAPs	Project Affected Persons
PEPA	Punjab Environmental Protection Act
PEQS	Punjab Environmental Quality Standards
Pak-EPA	Pakistan Environmental Protection Agency
PIRC	Project Implementation Review Committee
PPE	Personnel Protective Equipment
PM	Particulate Matter
RYK-IE	Rahim Yar Khan Industrial Estate
SWM	Solid Waste Management
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TMA	Tehsil Municipal Administration
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority
W.H.O	World Health Organization

EXECUTIVE SUMMARY

Project Title and Location

This document forms the Environmental Impact Assessment for M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited. The purpose of this subject project is to produce safe food products like Ghee & Cooking Oil, create new jobs, reduce poverty, encourage industrialization in Punjab and resultantly increase the GDP of the country.

The subject project for which this Environmental Impact Assessment Study has been conducted is the construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan.

Under the Pakistan Environmental Protection Act 1997 (PEPA-97), clause 12, it is required that the proponent of any development project will have to submit an IEE or EIA report to the concerned Environmental Protection Agency/Department to obtain approval prior to start of construction or operation of the project. The objective of the Environmental Impact Assessment (EIA) study is primarily to document the existing baseline environmental conditions of the project area, establish the potential impacts of the project construction and operation on the physical, ecological and human environments, and propose the mitigation measures for the adverse impacts.

According to the Pakistan Environmental Assessment Procedures (2000) by the PEPA for Environmental approval, the Fayyaz Ghee &Cooking Oil Mills plant falls under Category B (Manufacturing and Processing) of Schedule II, which requires EIA for environmental approval prior to any construction.

Project Proponent

Mr. Ammad Ud Din proponent of proposed project needs to get NOC for compliance of Section 12 to establish its business.

Name	Ammad Ud Din
CNIC	31301-4925419-3
Mobile No	03008679999
Address	HOUSE # 129 MODEL TOWN-A KHAN PUR
Mailing Address	Plot #139-140 Industrial Estate District Rahim Yar Khan.
E mails	fayyazgroupkpr@gmail.com / amadsheikh08@gmail.com

Table 1: Detail of Proponent

The EIA Study Consultant

To comply with IEE/EIA regulations 2000 as per Punjab Environmental Protection (Amendment) Act (PEPA) 2012, M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited has engaged Environmental Consultant with the assignment of carrying out an Environmental Impact Assessment (EIA) study for “Construction of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan”.

Brief Description of the Project

The project is proposed the construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan over an area of 174240-SFT for the production of safe food products like Ghee & Cooking Oil.

N 31o 16‘42.19 N 74° 11‘43.29 E

Front Side ---------- 66 ft. wide Road
Back Side ---------- Open Plot
Right Side ---------- Open Plot
Left Side ---------- Open Plot



Figure 1: Project Site

Environmental Condition of the Site

Table 2: Month wise temperature, precipitation and humidity.

MONTH WISE TEMPERATURE, PRECIPITATION AND RELATIVE HUMIDITY				
RELATIVE HUMIDITY ,1960-98				
Month	Average Temperature		Precipitation	Relative Humidity
	Maximum	Minimum	(in mm)	(Percentage)
January	21.8	4.4	4.4	57.5
February	24.4	7.3	5.3	52.0
March	30.2	12.8	5.5	46.4
April	37	18.5	2.7	35.2
May	41.7	23.6	5.1	33.4
June	42.4	27.2	2.8	41.7
July	30.9	27.3	27.5	53.4
August	38.4	26.3	23	57.7
September	37	23.1	15.5	56.9
October	34.8	16.3	1.2	50.0
November	20.4	10.1	0.7	53.7
December	23.5	5.3	3.3	59.5
Annual	**33.5**	**17**	**100.3**	**49.8**

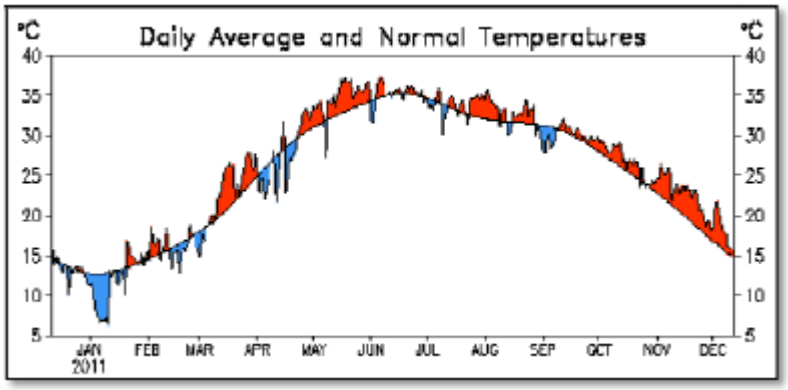


Fig 2 : Month wise average and normal Temperature

Major Impacts and Recommendations for Mitigation Measures

The following major impacts associated with the project location of the project have been identified and mitigation measures proposed:

Table 3: Summary of Major Impacts & their Proposed Mitigation during project location

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Impact due to Location	Seismic Region and flood Zone Specification	There are no significant negative impacts on the environment due to the project location/ selected site, as project is present in industrial area, and management has got the map approval from RYK-IE, same has been attached with this report.
Acquisition of land/Resettlement	Social problems	Proper resettlement planning and budgeting, community consultation.
Interference of sewage/drainage facilities with other utilities/street, land value changes.	Nuisances/disturbances to public, social problems	Proper compensation allowances for losses in project budget.
Loss/damage historical/cultural/monuments/values	Loss of irreplaceable values	Careful planning/design to minimize losses by providing offset, follow minimum distances chart.
Encroachment on ecological areas	Loss of ecology	Careful silting to minimize problem, follow minimum distances chart.
Acquisition of land	Loss of land, livelihood, assets,etc.	Consultations with affected people in the issues of land acquisition, or loss of livelihood, if any.

Table 4: Summary of Major Impacts & their Proposed Mitigation during project design.

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Environmental Impacts/hazards	Contamination of environment	Competent design
Inadequate attention/services to people	Social problems	Appropriate distribution of services through community consultation.
Temporary accommodation for construction workers - slum hazards/for storage of project equipment, materials, etc.	Unnecessary increase in social problems/Impact on soil and water and soil/Health Risks/Chances of spread of transmittable diseases like COVID-19.	Appropriate planning by effective community consultation, the equipment and construction material shall be placed at least 500m away from water bodies, Equipment and materials shall be stored at designated areas with concrete flooring to avoid any spillages which may lead to soil or ground water contamination, The domestic effluent shall be properly disposed of in soak pits. Contractor shall provide garbage bins to all workers'accommodation for dumping wastes regularly in a hygienic manner in the area, Awareness programmes to be conducted regularly for workers on COVID-19, and other health related issues, Health checkup facilities for employees and contract workers.
Site Clearing and Leveling	Soil erosion, Air pollution	Planning and designing the development within the natural constraints of the site, Avoiding the unnecessary clearing of the site, Water sprinkling shall be practiced Construction machinery shall be properly maintained to minimize exhaust emissions of CO, SPM and Hydrocarbons.
Hazardous materials thrown illegally in sewers e.g., any chemical	danger to workmen	Careful planning and design, separate treatment for hazardous materials disposal.
Inadequate methods for waste disposal	Environmental pollution	Careful planning and design.
Inadequate management of industrial wastes discharge to sewers	Damages to pipes	Careful planning and design.
Water/sewer/pipes in same trench	Health hazard if not properly designed and constructed	Careful design

Table 5: Summary of Major Impacts & their Proposed Mitigation during Construction Phase.

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Dust Emissions: Dust and PM may be generated during road construction and excavation activities. Gaseous emissions from site generators and transportation vehicles may affect ambient air quality in the vicinity of the project site which causes contamination of environment	An increase in visible dust beyond the boundaries of the construction site or Concentration of PM_{10} in excess of 150 ($ug//m^3$) PEQS for Ambient Air	Sprinkling of water on dusty roads, tracts and surfaces is recommended; During excavation works drop heights will be minimized to control the fall of materials reducing dust escape. Use of wind shield around stockpiles is recommended Vehicle speed restrictions should be applied in the project area; Raw materials should be transported in covered trucks.
Solid waste Management: If solid waste will not be managed properly, it may cause negative impacts.	Generation of excessive waste; Recyclable waste and reusable waste is discarded, Littering, Improper disposal.	Constructional waste should be utilized for road filling and maintenance purposes. Domestic waste should be disposed of properly, handed over to contractors, placed in bins. Proper solid waste management plan should be devised and implemented.
Waste water: water used in construction process and excessive water generate as wastewater and it also produced from campsite domestic activities.	PEQS parameters	Waste water after treatment should be drain out in nearby drain
Construction Noise: Noise may be generated during landscaping activities and from generators and transportation.	OSHA standards	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to national standards, following recommendations are suggested to take action against the high noise levels: ▪ Proper tuning of construction machinery and vehicles is recommended. ▪ Ear muffs and ear plugs are recommended in case of high noise levels.

		▪ Rubber wounds should be placed underneath the generator to avoid the vibration (if any).
Vegetation Loss/ Soil erosion: Minor negative impact may arise as only some weeds and grasses are present at the project site which will be cleared for the purpose of construction.	Unnecessary or excessive removal of trees and shrubs.	No tree cutting/ vegetation loss issue will be involved in the subject project. Preparation of a Reinstatement Plan to restore the land after the constructional activities is recommended.
Soil Contamination: Oil and Chemical spills can contaminate the soil.	Presence of visible amount of hydrocarbon in soil.	Provision of spill prevention and control kits Use of impermeable surfaces in workshops, and storage areas; Contaminated soil will be collected and incinerated (if any).
Traffic issues: Traffic issues may arise due to the constructional activities at the project site if traffic will not be managed properly.	Traffic rules and Regulations	Speed limit of 10 km/h should be maintained on the access road. Ample parking area must be allocated at the project site. Guards should be hired to manage the traffic at the project site.
Socioeconomic impacts: Inter-cultural differences between the project staff from other areas and the local community may arise due to the subject project. Positive socioeconomic impacts due to increased infrastructure, employment opportunities and economic growth.	No community complaints. Increased employment facilities in the area; Increased infrastructure	Training of the non-local project staff on local culture and norms. Avoidance of unnecessary interaction of local population with the non-local project staff. Employment opportunities should be provided to the local people.

Table 6: Summary of Major Impacts & their Proposed Mitigation during Operational Phase

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Gaseous Emissions: During the operational phase of the project, gaseous emissions from project site generator may affect the air quality of the project area.	PEQS for Ambient Air	Industry should ensure the PEQS compliance and should not be allowed to emit hazardous pollutants. Air Emission Control Measures are recommended to control the air emissions (if any) Vehicle emissions inspection should be done on regular basis. Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter on subject study area.
Noise: Noise due to industrial activity, machinery and generators can be a nuisance for the workers in the working area.	OSHA Standards	Activities generating high levels of noise should be minimized at the project site. Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff in case of noise at the project site. Generator should be covered with canopy (if any). Proper maintenance and tuning of the vehicles should be done. Sound proof rooms should be built for generators (if any) to be installed at the project site to control the noise.
Discharge of wastewater: The discharge of untreated municipal wastewater may be a negative impact of the subject project.	PEQS for Municipal Effluents (mg/l, unless otherwise defined)	Wastewater must be treated before its discharge. Compliance of PEQS for effluents should be ensured. Monitoring should be conducted as per PEQS and reports should be submitted to EPA.
Health & Safety Issues: different constructional and operational activities at the project site may cause health and safety issues for workers if precautionary measures will not be adopted.	OSHA Standards	Proper training of workers and staff should be conducted to avoid the accidents. Use of PPEs should be implemented at workplace. First aid measures/medical facility should be provided at the project site. Safe drinking water must be provided to workers, staff, and poor people of the area. Safety signs & boards should be placed.
Solid waste management: If solid waste will not be managed properly, it may cause negative impacts.	Exposure to potentially hazardous waste; Generation of excessive waste; Recyclable waste and reusable waste is discarded; Littering	A solid waste management plan should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager and other related personnel.

Proposed Environmental Monitoring

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

Sr. No.	Parameters	Monitoring Schedules	Monitoring Duration
1.	Ambient Air Monitoring (NO_x, CO_x, SO_x, PM_{10})	Quarterly	Instant
2.	Noise Level	Quarterly	Instant
3.	Water quality	Quarterly	Some parameters on site, Others in lab

Table 7: Environmental Monitoring

CHAPTER NO: 01

1. Introduction

1.1 Purpose of the Report

The development of any Project brings about changes, both positive and negative, in the environmental and social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. For the last four decades, this aspect has gained momentum both at official and public level. Because of this, official regulations and laws have been promulgated for the protection and conservation of the physical, biological and social environment. The law makes it mandatory to carry out Initial Environmental Examinations (IEE) or detailed Environmental Impact Assessment (EIA) of the development Projects depending upon the nature and magnitude of the impacts.

Section 12 of Punjab Environmental Protection Act, 1997 (Amended 2012) states that "No proponent of a project shall commence construction or operation unless he has filed with the Federal Agency an Initial Environmental Examination (IEE) or, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained from the Federal Agency approval in respect thereof."ll Environmental Impact Assessment (EIA) report is being submitted to the Environmental Protection Agency (EPA), Government of the Punjab for the compliance of Section 12 of Punjab Environmental Protection Act, 1997 (Amended 2012) for obtaining No Objection Certificate (NOC) before starting the construction activity at the project site.

1.2 Identification of the Project and Proponent

According to nature of project, cost of project and by also reviewing the IEE / EIA Regulation 2000, the project falls under Schedule II of PEPA Regulations.

Project Proponent

Mr. Ammad Ud Din proponent of proposed project needs to get NOC for compliance of Section 12 to establish its business.

Name	Ammad Ud Din
CNIC	31301-4925419-3
Mobile No	03008679999
Address	HOUSE # 129 MODEL TOWN-A KHAN PUR
Mailing Address	Plot #139-140 Industrial Estate District Rahim Yar Khan.
E mails	fayyazgroupkpr@gmail.com / amadsheikh08@gmail.com

Table 1: Detail of Proponent

1.3 The Consultant

To comply with IEE/EIA regulations 2000 as per Punjab Environmental Protection (Amendment) Act (PEPA) 2012, M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited has engaged Environmental Consultant with the assignment of carrying out an Environmental Impact Assessment (EIA) study for "Construction of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan".

1.4 Brief Description the Project

1.4.1 Nature and size of the Project

The said project is proposed for the construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan. The total area of the project is 174240-SFT. Total cost of the project will be 280 Million.

1.4.2 Location of the Project

Project site is located at Plot #139 -140 Industrial Estate District Rahim Yar Khan. Land coordinates of the project site are given below:

Front Side ---------- 66 ft. wide Road
Back Side ---------- Open Plot
Right Side ---------- Open Plot
Left Side ---------- Open Plot

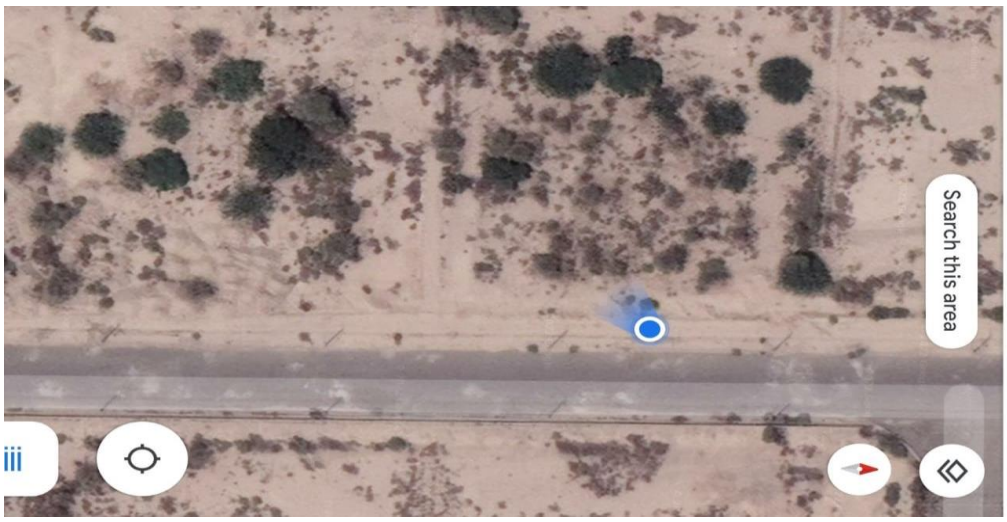


Figure 3: Google Earth Map of Project Site

1.5 Objectives of the Study

The overall objective of the EIA study is to identify and evaluate the environmental impacts from the construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan and proposed installation of machinery and to develop an appropriate Environmental Management Plan (EMP) for the mitigation of the potential adverse impacts and ensure compliance with applicable EPA Punjab regulations to obtain the NOC for the project. The EIA study addresses the initial phases of the project.

The objectives of this EIA study are outlined as under;

- Collection of detailed baseline data comprising of physical, biological and socio-economic environmental aspects through extensive field surveys, geographical and topographical maps and other relevant literature;
- Environmental analysis of alternatives for the processes, technologies and approaches associated with the project development;
- Identification of potential impacts on existing physical, biological and socio-economic environments due to the construction activities at the site;
- Devising mitigation measures for the significant adverse impacts during both the construction and operation phases of the proposed Project;
- Develop a detailed Environmental Management and Monitoring Plan (EMMP) along with allocation of responsibilities to the concerned persons and authorities.

CHAPTER No: 02

2 Description of the Project

This chapter presents all aspects of the proposed project. It details the nature of the proposed construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan and proposed installation of machinery, its location, designs and site layout/plan. It presents the activities that will be involved during all stages of project; how product will form, detail of process and machinery as well as details on supportive resources i.e. man power and utility requirements.

2.1 Type and category of the project

The project is proposed construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan after installation of machinery project capacity would be 100 MT/Day. According to nature of project, cost of project and by also reviewing the IEE / EIA Regulation 2000, the project falls under Schedule II.

2.2 Objective of the Projective

Objectives of the Project are to provide safe food products like Banaspati Ghee & Cooking Oil to the markets and to make it accessible to everyone. Following are the main objectives of the proposed project:

- To enhance the economic growth of country;
- To develop a sustainable economic approach to interlink various industries;
- To provide more job opportunities to local public and to improve their living standards;
- To improve the economic activities

2.3 Alternative Considerations

2.3.1 Location alternatives

To fulfill the commercial aspects of the project under reference of this EIA Report, it is to be sited at a place where commercial processing activity is either already going on or there are bright prospects of the same. Concurrently, it must also meet the legal requirements of the Punjab Environmental Protection Act, 1997 (Amended 2012). Availability of land at the best convenient place is equally important among other considerations for the site selection. Availability of access roads, communication facilities, electricity, basic infrastructure, sewerage etc. is yet the other necessary requirements.

2.3.2 Modified Construction Technology Alternatives

The proposed development will be constructed using modern, locally and internationally accepted technology and materials to achieve public health, safety, security and environmental aesthetic requirements. Equipment that saves energy will be given first priority without compromising on cost or availability factors.

2.3.3 Technology Alternatives

M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited is an Environmental conscious company which intends to use modern and state of art machinery with minimum impacts on Environment.

2.4 Location & Site Layout of Project

Project site is located at Plot #139 -140 Industrial Estate District Rahim Yar Khan.

Front Side ---------- 66 ft. wide Road
Back Side ---------- Open Plot
Right Side ---------- Open Plot
Left Side ---------- Open Plot

For further details layout map of the project site on A3 page is attached as Annexure-A with the report.

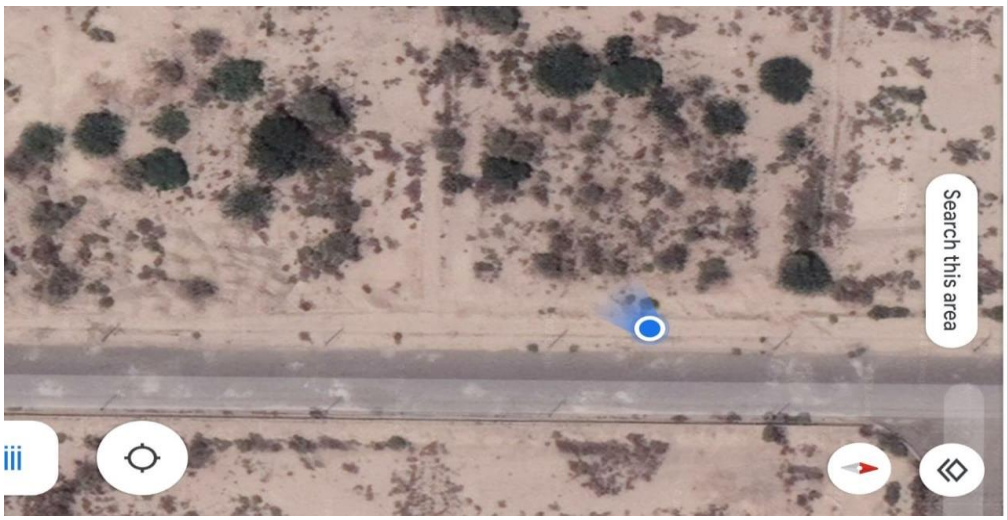


Figure 3: Google earth Map of Project Site

2.5 Land use & Vegetation features of the site

Subject project will be construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan after installation of machinery project capacity would be 100 MT/Day; the land is property of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited, land ownership documents are attached with this report. There will be no involvement of tree cutting at any stage of the project construction activities.

2.6 Road Access

A properly develop road network is the key of success for the industrial projects, as these roads are important for the reception of raw materials and distribution of industrial goods. Hence, in RYK-IE a well thought road network exists for faster and safer accessibility. All roads of RYK-IE are wide enough for long trailers and containers.

A main spinal road of 176 feet width exists at the, inside the RYK-IE leads to all parts of estate for a smooth flow of traffic. Lateral roads of 100 feet and 66 feet width connect to the main road well distributed with RYK-IE.

KLP Road is the main access road which link the project area with main road, kacha sadiq abad road linked too it is 66 Feet wide.

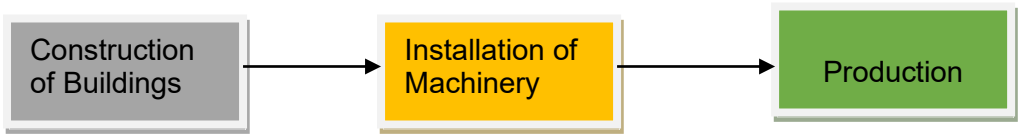
Name of the proposed project	M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited.
Purpose of the Project	Installation of machinery for manufacturing of Banaspati Ghee & Cooking Oil by using the undermentioned raw materials. 1. RBD Palm Oil 2. RBD Palm Olein 3. Soyabean Oil 4. Canola Oil
Final Product	Banaspati Ghee & Cooking Oil
Land Requirement	
Total Area	174240 SFT
Status and location	
Location of the proposed site	Plot #139 -140 Industrial Estate District Rahim Yar Khan.
Water Requirement	
Water consumption for the project	Approximately 1060 Gallons/ day during construction phase.

2.7 Vegetation features of the site

Vegetation feature like small bushes, tress were present at site and will be cut due to project implementation.

2.8 Cost and Magnitude of operation

Approximate cost of the project is 280 billion which include the cost of development works



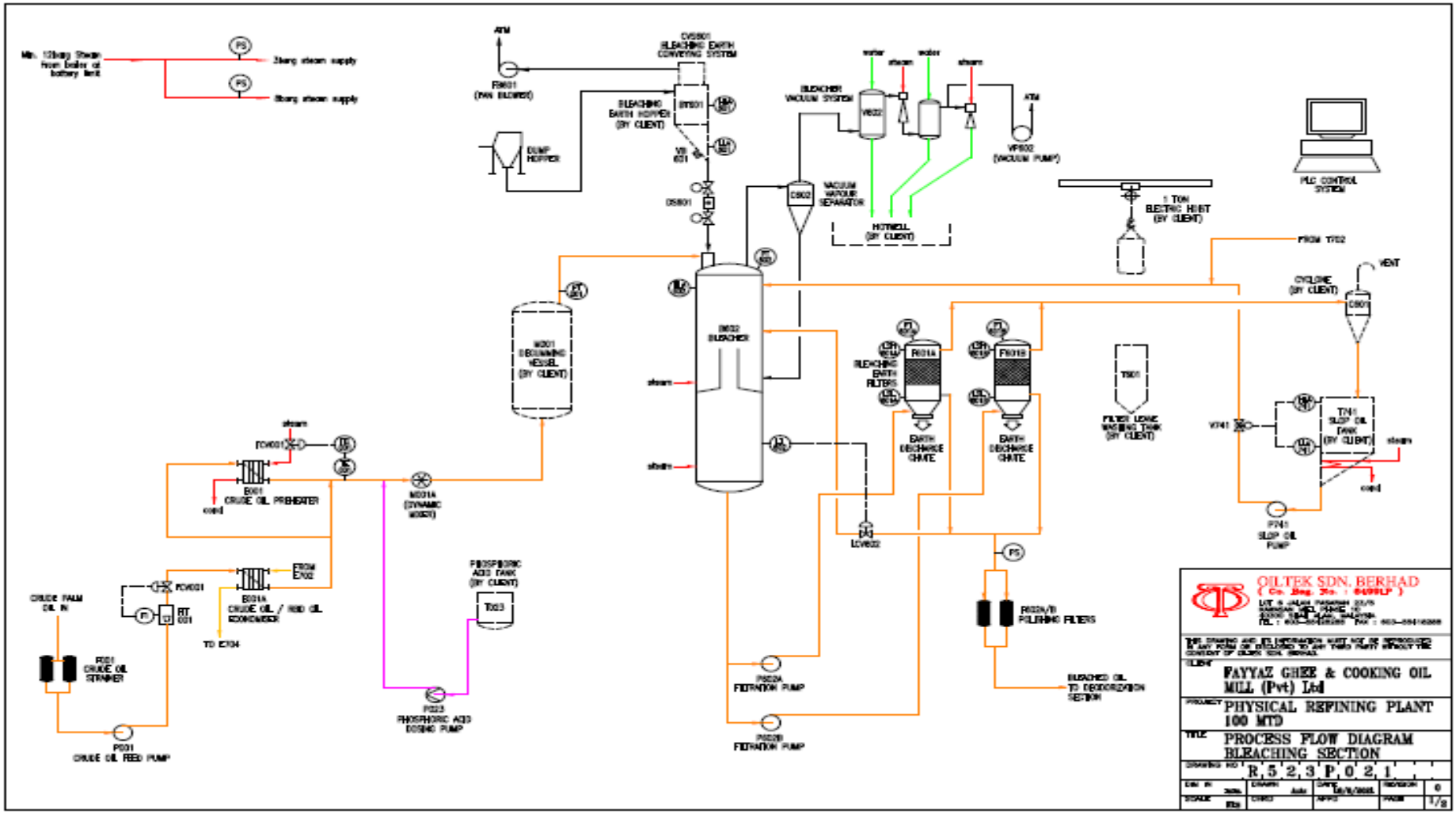
2.9 Schedule of implementation

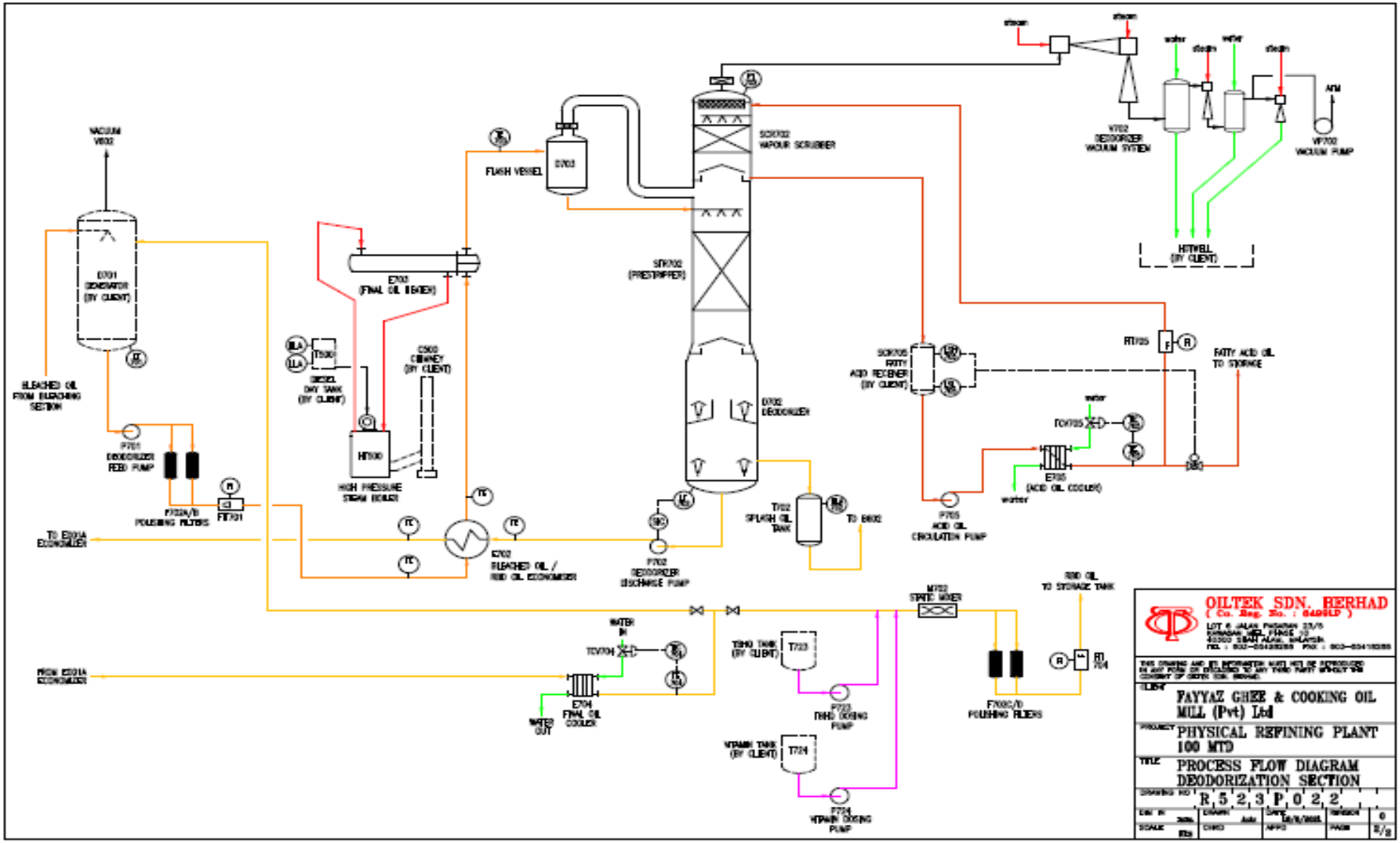
The project is proposed construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan said installation will be completed within few months from the issued date of environmental approval.

2.10 Project Description

The said project is proposed construction of construction of M/S Fayyaz Ghee &Cooking Oil Mills (Pvt.) Limited for installation of 100 MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan. The total area of the project is 174240-SFT. Total cost of the project will be 280 Million.

2.10.1 Process Flow Chart (Also attached as Annexure B)





VACUUM V602
D701 DENEGATOR (BY CLIENT)
BLEACHED OIL FROM BLEACHING SECTION
P701 DEODORIZER FEED PUMP
F702A/B POLISHING FILTERS
FIT701
TO E201A ECONOMIZER
E703 (FINAL OIL HEATER)
T500 DIESEL DAY TANK (BY CLIENT)
C500 CHIMNEY (BY CLIENT)
HT500 HIGH PRESSURE STEAM BOILER
E702 BLEACHED OIL / RBD OIL ECONOMIZER
FLASH VESSEL
D703
SCR702 VAPOUR SCRUBBER
STR702 (PRESTRIPPER)
D702 DEODORIZER
P702 DEODORIZER DISCHARGE PUMP
T702 SPLASH OIL TANK
TO B602
SCR705 FATTY ACID RECEIVER (BY CLIENT)
P705 ACID OIL CIRCULATION PUMP
E705 (ACID OIL COOLER)
FATTY ACID OIL TO STORAGE
V702 DEODORIZER VACUUM SYSTEM
VP702 VACUUM PUMP
HITWELL (BY CLIENT)
M702 STATIC MIXER
RBD OIL TO STORAGE TANK
F702C/D POLISHING FILTERS
FROM E201A ECONOMIZER
E704 FINAL OIL COOLER
WATER IN
WATER OUT
T723 TBHQ TANK (BY CLIENT)
P723 TBHQ DOSING PUMP
T724 VITAMIN TANK (BY CLIENT)
P724 VITAMIN DOSING PUMP
OILTEK SDN. BERHAD
FAYYAZ GHEE & COOKING OIL MILL (Pvt) Ltd
PHYSICAL REFINING PLANT 100 MTD
PROCESS FLOW DIAGRAM DEODORIZATION SECTION
R 5 2 3 P 0 2 2

2.10.2 Technology

M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited will install latest machinery for production and quality inspections. For physical refining, chemical refining and solvent extraction of edible oil proponent will purchase latest refinery plant from Malaysian Company Oil Tek.

Some of the machinery is indigenously designed to give maximum out put and aid production and inspection activities.

M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited will install high pressure steam boilers to increase refining temperatures to obtain better quality products with enhanced deodorization characteristics and smoke points Products.

Detail of Machinery is on next page:

List of Plant and Machinery (Local and Imported).

100 MTD Physical Refinery Plant Company Oil Tek Country of origin Malaysia

A. Pretreatment & Bleaching Section				
Sr. #	**Part #**	**Item Name**	**Description**	**Quantity**
1	F001	Crude Oil Strainer	Bucket Type Mild Steel / Stainless Steel	1
2	P001	Crude Oil Feed Pump	Centrifugal type with coupling, motor SS	1
3	FIT001	Crude Oil Flow Meter with Totalizer	Stainless Steel 316	
4	E001	Crude Oil Preheater	Carbon Steel / SS316	1
5	TE001	Crude Oil Temperature Sensor	RTD temperature sensor type	1
6	TCV001	Crude Oil Temp. Control Valve	Pneumatic type with I/P Positioner	1
7	E001A	Crude RBD Oil Economizer	Stainless Steel 316	1
8	P023	Phosphoric Acid Dosing Pump	Positive displacement type	1
9	M001A	Dynamic Mixer	Stainless Steel 316	1
10	CVS601	Bleaching Earth Conveying System	Mild Steel 1000KG/H	1
11	HLA/LLA601	Level Switches	Liquidphant tuning fork type	2
12	DS601	Bleaching Earth Dosing System	PLC control system with mechanical system	1
13	B602	Bleacher with Jet Mix Technology	Stainless steel 304	1
14	LT602	Level Transmitter	Flange mounted differential pressure type	1
15	PT602	Pressure Transmitter	Gauge pressure type	1
16	V602	Bleacher Vacuum System	Carbon Steel / Stainless Steel	1
17	P602A/B	Filtration Pumps	Centrifugal type with coupling, motor SS	2
18	F601A/B	Bleaching Earth Filters	Stainless Steel/Carbon steel	2
19	LSL/H601-2	Level Switches	Liquidphant tuning fork type	4
20	PI601-2	Filter Pressure Indicator	PLC based indicator	2
21	PT601-2	Filter Pressure Transmitter	Gauge pressure type	2
22		Actuated Valves for the Filter atm.		1- Lot
23	HLA/LLA741	Level Switches	Liquidphant tuning fork type	2
24	V741	Actuated Discharge Valve	Ball valve type with actuator Carbon steel	1
25	P741	Slop Oil Pump	Centrifugal type with coupling, motor SS	1
26	F602A/B	Polishing Filters	Bag type Polyester Body stainless steel	2
27		Thermometer and Pressure Gauges	Dial Type	1- Lot

Sr. #	Part #	Item Name	Description	Quantity
28	LI701	Deaerator Level Indicator	PLC based indicator	1
29	LT701	Level Transmitter	Flanged mount differential pressure type	1
30	FIT701	Bleached Oil Flow Meter	signal transmitter type	1
31	F702A/B	Polishing Filters	Bag type Polyester Body stainless steel	2
32	P701	Deodorizer Feed Pump	Centrifugal type with coupling, motor SS	1
33	E701	Startup Heater	Carbon Steel /stainless steel	1
34	E702	Bleached Oil/ RBD Oil Economizer	Material (Wetted Part) stainless steel	1
35	E703	Final Oil Heater	Shell and tubes type stainless steel & CS	1
36	TE703	Final Oil Temperature Sensor	RTD temperature sensor type	1
37	D702	Deodorizer	Material (Wetted Part) stainless steel	1
38	PT702	Deodorizer Vacuum Transmitter	Absolute pressure type	1
39	LIC702	Deodorizer Level Controller	PLC based PID controller	1
40	LT702	Deodorizer Level Transmitter	Guided radar type	1
41	LCV702	Deodorizer Level Control Valve	stainless steel	1
42	P702	Deodorizer Discharge Pump	Centrifugal type with coupling, motor SS	1
43	E704	Final Oil Cooler	Carbon Steel /stainless steel	1
44	TIC704	Final Oil Temperature Controller	PLC based PID controller	1
45	TE704	Final Oil Temperature Sensor	RTD temperature sensor type	1
46	TCV704	Final Oil Temperature Control Valve	Pneumatic type with I/P Positioner	1
47	FIT704	RBD Oil Flow Meter With Totalizer		1
48	F702C/D	Polishing Filters	Bag type Polyester Body stainless steel	2
49	T702	Splash Oil Tank	Cylindrical type with hand hole SS	1
50	HLA/T702	Level Switch	float type	1
51	V702	Deodorizer Vacuum System	Carbon Steel / Stainless Steel	1
52	SCR702	Vapor Scrubber	stainless steel 316-304	1
53	LSH/L705	Level Switches	Liquidphant tuning fork type	2
54	LCV705	Fatty Acid Discharged Valve	Ball valve type with actuator stainless steel	1
55	FIT705	Fatty Acid Circulation Flow Meter	signal transmitter type	1
56	P705	Acid Oil Circulation Pump	Centrifugal type with coupling, motor SS	1
57	E705	Acid Oil Cooler	Carbon Steel / Stainless Steel	1

58	TE705	Acid Oil Temperature Sensor	RTD temperature sensor type	1
59	TCV705	Acid Oil Temperature Control Valve	Pneumatic type with I/P Positioner	1
60		Vapor Ducting and Expansion Bellows	Material Stainless steel	1- Lot
61		Pressure and Temperature Gauges		1- Lot
62		Steam flow meter		1
63	P723	TBHQ Dosing Pump	Positive displacement type	1
64	P724	Vitamin Dosing Pump	Positive displacement type	1
C. High Pressure Boiler:				
65	HT500	High Pressure Steam Boiler	Fuel Natural Gas/Diesel Desg. Pressure 80 Bar	1
D. PLC Control System				
66		PLC System	One CPU,other accessories PLC Siemens S7	1 Set
67		HMI Station	Desktop computer with 24” LCD	1 Set
68		Starter Panel	Starters and contactors for all the motors	1 Unit
E. Pipes, Valves & Miscellaneous				
69		Pipes & Fitting Accessories	Stainless steel 304, 316 / carbon steel	1- Lot
70		Valve for On-off and Throttling Services	Ball,Globe,Butterfly Valves SS & CS	1- Lot
71		Polyamide Tubing for Pneumatic Signal Line	c/w filter regulators for air supply	1- Lot
72		Copper Tubing for Steam Tracing	c/w thermodynamic steam traps	1- Lot
73	SH602	Sparging Steam Header for Bleacher	Carbon steel	1
74	SH702	Sparging Steam Header for Deodorizer	Carbon steel	1
75	SH706	Steam Header for Vacuum Systems	Carbon steel	1
76	WH706	Water Header for Vacuum Systems	Stainless steel	1
77		Steam Reducing Station	12 barg to 8 barg cast iron	1 Set
78		Steam Reducing Station	12 barg to 3 barg cast iron	1 Set

100 MTD Chemical Refinery Plant Company Oil Tek Country of origin Malaysia

Neutralization Section				
Sr. #	**Part #**	**Item Name**	**Description**	**Quantity**
79	F011	Crude Oil Strainer	Bucket Type Mild Steel / Stainless Steel	1
80	P011	Crude Oil Feed Pump	Gear type motor mounted on base plate.	1
81	FI011	Crude Oil Flow Meter	Float Type	
82	E011	Crude Oil Heater	Carbon Steel / SS316	1
83	TC041	Temperature Control Loop	RTD temperature sensor type	1
84	P041	Hot Water Pump	Centrifugal Type	1
85	P021	Phosphoric Acid Dosing Pump	Diaphragm Type	1
86	M011A	Phosphoric Acid Mixer	Centrifugal Type	1
87	F031	Lye Strainer	Stainless steel construction	1
88	P031A	Caustic Soda Transfer Pump	Centrifugal Type	1
89	P031	Caustic Soda Dosing Pump	Plunger Type	1
90	M012	Neutralizing Disk Mixer	Centrifugal Type	1
91	S012	Neutralization Separator	Belt Drive Type	1
92	P051	Soap stock Discharge Pump	Gear type	1
93	P061	Slop Oil Pump	Centrifugal Type	1
94	FI041	Water Flow meter	Float Type	1
95	M013	Washing Mixer	Centrifugal Type	1
96	S013	Washing Separator	Belt Drive Type	1
97	D013	Vacuum Dryer	Cylindrical Type	1
98	V013	Vacuum Ejector System	Ejectors & condensers	1
99	P013	Dry Oil Pump	Centrifugal Type	1
100		Local mounted indicating gauges	Pressure, temperature	1- Set
101		Pipes, Valves and Fittings	For interconnecting equipment	1- Set
102		Starter Panel	Starters and contactors for all the motors	1

100 MTD Solvent Extraction Plant

Crushing & Extraction							
Sr. #	**Part #**	**Item Name**	**Qty.**	**Sr. #**	**Part #**	**Item Name**	**Qty.**
1	P0110Z-01	Manual Gate	1	28	P02500-01	Classifying Screener	1
2	P0110Z-02	Manual Gate	1	29	P02520-01	Aspirator	1
3	P01010-01	Chain Conveyor	1	30	P03140-01	Chain Conveyor	1
4	P0102Z-01~02	Pneumatic Gate	1	31	P0320Z-01	Pneumatic Gate	1
5	P01030-01	Cylinder Magnetic Separator	1	32		Flaker Feeder	1
6	P0104Z-01~03	Pneumatic Gate	1	33	P03040-01	Flaker	1
7	P01050-01	Weighing Scale	1	34	P03070-01	Inclined Chain Conveyor	1
8	P01060-01	Classifying Screener	1	35	P03320-01	Chain Conveyor	1
9	P01070-01	Bucket Elevator	1	36	P0307Z-01~02	Pneumatic Gate	1
10	P01080-01	Aspirator	1	37	P0332C-01	Fan	1
11	P0108B-01	Rotary Valve	1	38	P0402S-01	Screw Conveyor	1
12	P0108M-01	Pulse Dust Collector	1	39	P04050-01	Expander	1
13	P0108C-01	Fan	1	40	P04080-01	Dryer & Cooler	1
14	P01090-01	Conditioner	1	41	P0408B-01	Rotary Valve	1
15	P0109B-01	Rotary Valve	1	42	P0408C-01	Fan	1
16	P0109C-01	Fan	1	43	P0408H-01	Air Heater	1
17	P0109H-01	Air Heater	1	44	P04110-01	Inclined Chain Conveyor	1
18	P01100-01	Chain Conveyor	1	45	P0503F-01	Magnetic Hopper	1
19	P01140-01	Bucket Elevator	1	46	P05040-01	Hammer Mill	1
20	P0114Z-01~02	Pneumatic Gate	1	47	P0506B-01	Rotary Valve	1
21	P02170-01	Cracker	1	48	P0506M-01	Pulse Dust Collector	1
22	P02190-01	Aspirator	1	49	P0506C-01	Fan	1
23	P02280-01	Inclined Chain Conveyor	1	50	P0509S-01	Screw Conveyor	1
24	P0228Z-01~02	Pneumatic Gate	1	51	P06010-01	Chain Conveyor	1
25	P02290-01	Aspirator	1	52	P06040-01	Classifying Screener	1
26	P0229B-01	Rotary Valve	1	53	P0605F-01	Meal Grinder Feeder	1
27	P0229C-01	Fan	1	54	P06060-01	Meal Grinder	1

Sr. #	Part #	Item Name	Qty.	Sr. #	Part #	Item Name	Qty.
55	P0607M-01	Pulse Dust Collector	1	82	P0158T-02	Steam Header	1
56	P0607C-01	Fan	1	83	P0114Z-03	Pneumatic Gate	1
57	P0608S-01	Screw Conveyor	1	84	P0322Z-01	Pneumatic Gate	1
58	P06090-01	Bucket Elevator	1	85	P0322Z-02	Pneumatic Gate	1
59	P06100-01	Chain Conveyor	1	86	P0106Z-01	Manual Gate	1
60	P0158T-01	Steam Header	1	87	P0106Z-02	Manual Gate	1
61	P0177P-01	Condensate Water Pump	1	88	P0509Z-01	Manual Gate	1
62	P03100-01	Chain Conveyor	1	89		Electrical control cabinet	1
63	P0312S-01	Screw Conveyor	1	90		Valves inside plant.	1
64	P03130-01	Horizontal Drum Cooker	1	91		Sensor and control inst.	1
65	P03150-01	Inclined Chain Conveyor	1	92	E0101Z-01	Pneumatic Gate	1
66	P03200-01	Chain Conveyor	1	93	E01021-01	Extractor Hopper	1
67	P0320Z-02	Pneumatic Gate	1	94	E0102F-01	Extractor Feeder	1
68	P03210-01~02	Oil Press	1	95	E0102P-01	Hydraulic System for Ext.	1
69	P0321B-01	Rotary Valve	1	96	E01020-01	Extractor	1
70	P0321C-01	Fan	1	97	E0103P-01	Miscella Circulation Pump	1
71	P03220-01	Inclined Chain Conveyor	1	98	E0103P-02	Miscella Circulation Pump	1
72	P032301	Chain Conveyor	1	99	E0103P-03	Miscella Circulation Pump	1
73	P03290-01	Oil setting Tank	1	100	E0103P-04	Miscella Circulation Pump	1
74	P0527P-01~02	Oil Pump	1	101	E0103P-05	Miscella Circulation Pump	1
75	P05320-01	Decanter Centrifuge	1	102	E0103P-06	Miscella Circulation Pump	1
76	P0536P-01~02	Oil Pump	1	103	E0103P-07	Miscella Circulation Pump	1
77	P05370-01	Plate Type Heat Exc.	1	104	E0104A-01~02	Hydro Cyclone	1
78	P0332Z-01	Manual Gate	1	105	E0105P-01	Miscella Pump	1
79	P0601Z-01	Pneumatic Gate	1	106	E0106P-01	Fresh Solvent Pump	1
80	P0601Z-02	Pneumatic Gate	1	107	E01070-01	Inclined Chain Conveyor	1
81	P0307Z-03	Manual Gate	1	108	E0108Z-01	Pneumatic Gate	1

Sr. #	Part #	Item Name	Qty.	Sr. #	Part #	Item Name	Qty.
109	E01090-01	DTDC	1	136	E0136H-01	Mineral Oil Heat Exchanger	1
110	E0109B-01	Rotary Valve	1	137	E0137H-01	Mineral Oil Cooler	1
111	E0109B-02	Rotary Valve	1	138	E0138C-01	Vent Gas Fan	1
112	E0110S-01	Screw Conveyor	1	139	E01390-01	Vent Gas Condenser	1
113	E01110-01	Wet Type Scrubber	1	140	E01400-01	Solvent Heater	1
114	E01120-01	Waste Water Re-boiler	1	141	E0151C-01	Cooling Fan	1
115	E0112H-01	Waste Water Pre-heater	1	142	E0151X-01	Silencer	1
116	E0113P-01	Waste Water Circulation P.	1	143	E0152H-01	Air Heater	1
117	E01140-01	1st Stage Evaporator	1	144	E0154B-01	Rotary Valve	1
118	E0114A-01	1st Stage Separator	1	145	E0154B-01	Manual Gate	1
119	E0114H-01	Vapor and Liquid Contactor	1	146	E01550-01	Inclined Chain Conveyor	1
120	E0115H-01	Miscella Heat Exchanger	1	147	E01570-01	Steam Header	1
121	E01160-01	Solvent Condenser	1	148	E01580-01	Steam Header	1
122	E0117P-01	Steam Ejector	1	149	E0242P-01	Fresh Solvent Pump	1
123	E01190-01	2nd Stage Evaporator	1	150	E02720-01	Cooling Tower	1
124	E0119A-01	2nd Stage Separator	1	151	E0272P-01	Cooling Water Circulation P	1
125	E0119P-01	Miscella Pump	1	152	E0272P-02	Cooling Water Circulation P	1
126	E01200-01	DT Condenser	1	153	E0177P-01	Condensate Pump	1
127	E01210-01	Stripper	1	154		Electrical control cabinet	1
128	E0122P-01	Crude Oil Pump	1	155		Valves inside plant.	1
129	E01250-01	Crude Oil Cooler	1	156		Sensor and control inst.	1
130	E0130P-01	Water Circulation Pump	1				
131	E01310-01	Absorber	1				
132	E0132P-01	Mineral Oil Circulation P.	1				
133	E01330-01	Desorber	1				
134	E0134P-01	Mineral Oil Circulation P.	1				
135	E01350-01	Mineral Oil Heater	1				

Detail of Local Machinery and Equipment

1	Transformers	(630KVA)	01 nos.
2	Generator	(675KVA)	01 nos.
3	Boiler	08 Ton/Hour	02 nos.
4	Hydrogen Compressor	30-40 KW	02 nos.
5	Ammonia Gas compressor with accessories	30-40 KW	03 nos.
6	Air compressor	15-18 KW	01 nos.
7	Product Pouch Filling Machine	Ghee & Cooking Oil	04 nos.
8	Neutralizer	20Ton	03 nos.
9	Auto Clave	20Ton	02 nos.
10	Auto Clave Cooler	20Ton	01 nos.
11	Auto Clave Filters		02 nos.
12	Lathe & Shaper Machine		01 nos.
13	vertical Drill		02 nos.
14	Turbine (water)	20-25KW	02 nos.
15	Electrolizer	60 cubic meter/hour	01 nos.
16	Tin & Bucket filling Machine	16kgs	01 nos.
17	Bucket Sealing Machine	30-40 KW	01 No.
18	Wheel Grinder	1-3 KW	01 No.
19	Hacksaw Machine	1-3 KW	01 No.
20	Welding Plant (Oil Based)	Multi-step 1 phase	01 No.
21	Welding Plant (Oil Based)	Multi-step 3 phase	01 No.
22	Drill Machine	Multi-function	02 No.
23	Disk Grinder		02 No.
24	Gas Cutter		02 No.
25	Mechanical Workshop Tool Kit.		02 No.
26	R.O Plant	10cubic meter/hour	01 No.
27	Cooling Tower	50,100cubic meter/hour	04 No.
28	R.O Plant	10cubic meter/hour	01 No.
29	Chain Block Mechanical Type	5 Ton,10 Ton	02 No.
30	Chain Block (Electrical Hoist)	1 Ton,1 Ton	02 No.

Sr. No.	Item Name	Description
31	Electrical Main Supply Panel	1000Ampere
32	Electrical Changeover Panel	1000Ampere (Wapda/Genset)
33	Distribution Panel	Designed as per sections requirement
34	Power Factor Bank	50KVAR
35	Main Supply Cable	SC-240mm Double PVC
36	Distribution Cable	TC,FC, 1mm to 150mm Double PVC
37	Electrical Motors IP 65 H,F Class	2,3,5,7.5,10,15,18,20,25,40,50 HP 3Phase
38	Exhaust Fan	220VAC
39	Ceiling Fan	220VAC
40	Pedestal Fan	220VAC
41	Air Conditions	1,1.5,2,4 Ton single & three phase AC
42	Boundary Lights	100Watt
43	Energy Saving Lights	12,18,25,45,80,150 watt
44	CCTV System	
45	Electrical Tools Kit	
46	Electrical Testing Board	
47	Fire Fighting Kit	
48	Fire Extinguisher	CO2, DCP
49	Fire Fighting housing Pipe	2", 3" Dia
50	PPE(Personal Protective Equipment)	Helmet, Gloves, Goagles,Belt,shoes
51	Dropout kit Kat fuse Rod	15 feet

2.10.3 Raw material and products

RBD PALM OIL, RBD PALM OLEIN OIL, Cotton Seed Oil and Canola Oil will be the raw material.

Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited will manufacture Banaspati Ghee and Cooking oil with brand name Quwat Banaspati Ghee and Quwat Cooking oil after installation of 100MTD Physical Refinery Plant at Plot #139 -140 Industrial Estate District Rahim Yar Khan.

The FGCOMPL will sell its safe food product through impressive distribution network of committed distributers in south Punjab's famous cities, Rahimyar khan, Multan, Bahawalpur, Muzaffar Garh, D.G Khan etc.

AOGI FGCOMPL will use high quality food grade packing material for its safe food products. Quwat banaspati & Quwat cooking oil will be the most popular and largest selling brands in south Punjab Alhamd o lillah.

Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited will manufacture the safe Banaspati Ghee and Cooking oil food products with brand name Quwat Banaspati Ghee and Quwat Cooking oil having low in cholesterol and will be fortified with Vitamins A & D. It is made from 100% pure, carefully selected vegetable based oils such as Palm Oil and its fractions, Cottonseed Oil, Soybean Oil and Sunflower Oil.

Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited will make its products available in tin packs **(**16Kg, 5Kg, 2.5Kg), food grade plastic buckets (5Kg and 2.5Kg), and food grade pouches (1Kg, 0.5Kg and 0.25Kg) etc.

As the proponent committed that after installation this plant banaspati Ghee and Cooking Oil will be prepared to provide superior health quality. It will be made by fortifying a blend of Canola and Sunflower Oils and by an anti-oxidant suitable for many health affects. The Proponent committed to make Cooking Oil fruitful for heart patients, diabetic and arthritis patients, brain cells protection, and protect the body against the harmful affects of oxidation that causes heart disease and cancer. It will be made available in, 1, 3, 5 and 10 Liter easy handle pet bottles and 1 Liter pouch.

The proponent asked that his both safe food products will be ideal for health conscious peoples.

2.10.4 By products

By products Fayyaz Laundry soap.

FGCOMPL will also produce Fayyaz Laundry soap which will be it's by product and will be made having a powerful cleaning properties and no harm for hands.

2.10.5 Safety Features

Fire extinguishers, fire hydrant, fire hose reels & fire alarm system will be installed for plant and employee's safety. Required PPEs will also be provided to working staff in the plant.

2.10.6 Other Ingredients used in Oil Refining Process

Bleaching earth, Citric Acid, CAUSTIC SODA (Liquid), Phosphoric Acid, Vitamins, TBHQ, Phosphoric Acid, Nickel (Catalyst), Multi layered film for pouch, Cartons, Tin Packing, Pet Bottle, Gum Tapes will be the raw material/ingredients.

2.10.7 Water consumption and waste water disposal

In constructional phase, 1060 gallons approximately per day water will be required.

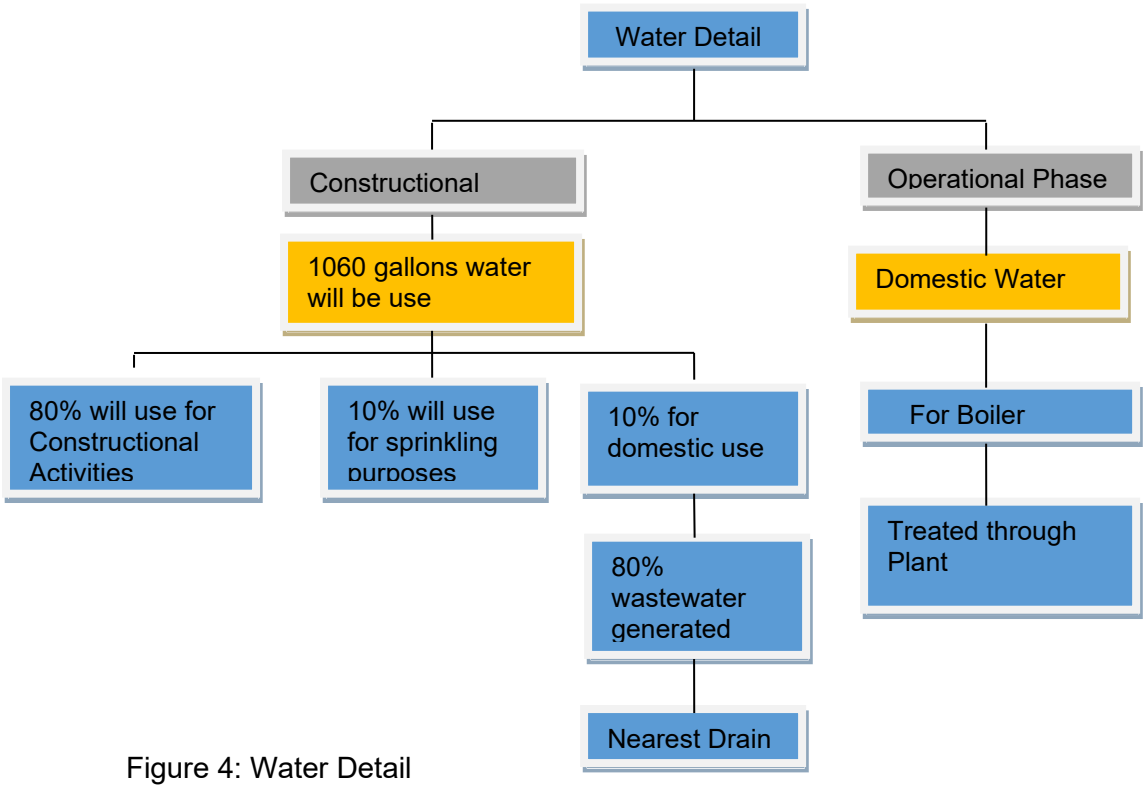


Figure 4: Water Detail

40 degree Celsius water will be drained in drained pipe allocated by RYK industrial estate. This water will not contaminated or poisonous.

2.10.8 Solid Waste

In constructional phase all waste materials such as landscape and land clearing debris, gravel and aggregate products, concrete, masonry scrap and rubble (brick, concrete masonry, stone), and plastics and paper from cement bags will be recycled during the construction activities as road filling and maintenance purposes. Solid waste by domestic sources will be generated during construction phase which will be placed in separate bins. In operational phase, the waste which will be generated will preferably be recycled, and remaining waste like plastic pouches waste, carton and tin waste etc. will be handed over to contractor.

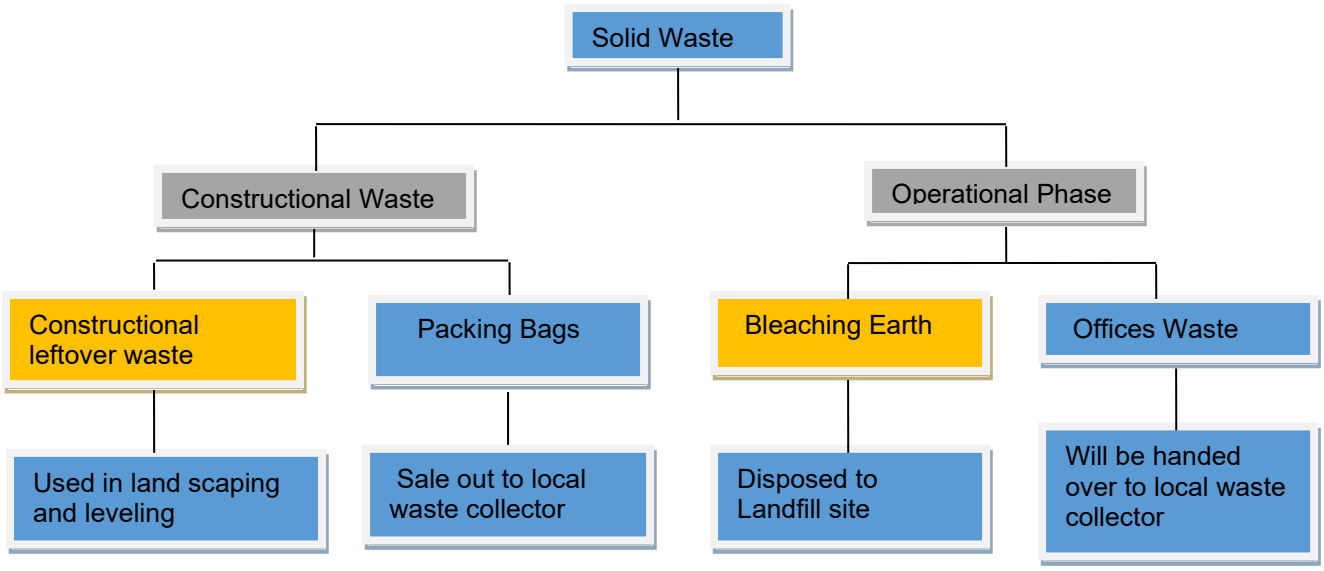


Figure 5: Solid Waste Detail

2.10.9 Health and Safety

A well maintained health and safety plan will be formulated and same will be followed throughout the project operational activities. It will assure the contractor will maintain all the safety measures in construction. Mainly ear muffs and helmets will be provided at the time of operation. In operation no activity is involved because 98% system is automated. Beside this safety mats, shoes, gloves all will be part of the work‘s dress.

Table 8: Details of PPEs

Protection	Occupational Hazards	PPEs
Head Protection	Falling objects, inadequate height clearance, and overhead power cords	Helmets with or without electrical protection
Hand protection	Hazardous material, cuts or lacerations, vibrations, extreme temperatures	Synthetic or Rubber gloves, leather, insulating material etc.
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation	Glasses, shield protective, etc.
Hearing protection	Noise, ultra sound	Hearing protectors like ear plugs, ear muffs

Respiratory protection	Dust, fogs, fumes, gases, smokes, vapors, oxygen deficiency	Facemasks or air supply
Body protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Aprons, insulating clothing etc. of appropriate materials

2.11 Safety Signs/Safety Boards

At any workplace Safety signs and symbols are very important to avoid many accidents. They must be in easy and understandable language to all the workers. Workers should have the knowledge of sign wordings and they must be trained and aware about them. Safety signs, symbols and boards must be provided by every site to protect the workers and employees from the risks of hazards that has not been controlled by other means. Safety signs and boards give safety message and they must be of different colors that workers could understand their meanings easily. At the subject project, safety signs and boards will be placed to avoid the workers and staff from any risk.

2.12 Plantation

Maximum plantation will be done, within and around the project area; tree plantation plan has been made same will be followed after completion of constructional activities, tree plantation plan is attached herewith as Annexure C.

2.13 Fire Protection System

An addressable fire protection system with detection and alarm annunciation and other installations etc. will be provided to protect against any fire hazards in the proposed project. Fire buckets and fire extinguishers will be installed at all sensitive places within the working area of proposed project.

2.14 Restoration and Rehabilitation Plans

All possible precautions will be taken to prevent an untoward incident in terms of life and property losses. On completion of the project, solid waste will be removed from the site in order to maintain aesthetics of the area. All measures will be undertaken for ensuring occupational safety, security and clean environment during the working hours. Vegetation and landscaping will be done by the proponent after the completion of project.

2.15 Details of restoration and rehabilitation at the end of the project life.

There will be no matter of rehabilitation, as the proposed site is already owned by the project proponent. At the end of the life of the project, it will be duly dismantled with special precautions to avoid/ minimize pollution and at the same time taking all safety precautions to protect human life and property around the building.

Debris or any other wastes resulting from demolishing of the building will be disposed of in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling the building all Government rules and regulations are applicable to such activities will be strictly adhered to.

2.16 Government Approvals

It has been ensured by management that all the approvals/certificates from concerned departments will be obtained after getting Environmental Approval from EPA Punjab and will be submitted to EPA at the time of operational phase Environmental approval.

CHAPTER No: 03

3 Description of Environment

This section describes the baseline conditions, which cover the existing Physical, ecological and socio-economic environment of the project as well as study area. Data was collected by reviewing secondary data and field survey.

3.1 Physical Environment

3.1.1 Topography

The topography of the project area is flat. The General height of the area is approximately 88 meters above the Mean Sea Level (MSL).

Rahim Yar Khan is a famous city in the south of Punjab (Pakistan). It is the capital District as well as the Tehsil with the same name. It is one of the few cities in the world that are still at their pioneering places since the formation. Rahim Yar Khan is situated at 70 - 18 EOO and 28 - 24 N, in the range of 88 meters above the sea level. District Rahim Yar Khan lies in the extreme south of Punjab. On the north, it is bounded by Rajanpur District, on the West by Jaccobabad and Sukkhur Districts, on the east by Bahawalpur district and in the south by Indian Territory.

3.1.2 Soil

The soil in the Project Area is cohesion less and is of alluvial type. Various soil layers below the ground level includes: silty clayey clay etc. The soil is different in character and generally inclined to be dry. However, it is rich in potential plant nutrients.

3.2 Climate and Meteorology

The climate of the Rahim Yar Khan is extremely hot and dry in the summer season while in winter the city is quite pleasant and is usually dry and cold. In RYK, the average annual temperature is 26.2°C. Precipitation here averages 101 mm. The summer season is reasonably longer than the winter season. The summer begins in the month of April and carries on until the month of October while the winter season starts from November to March. On the other hand, the month of March and November are agreeable here. Dust storms are quite common throughout the summer. The average rain fall in this city is about 100 millimeters. Coordinates: 27°51'17"N 70°48'39"E.

Nearest Meteorological, station from the project area is 54 Km from the project site in Kanpur. Seasonal climatic conditions must be considered for the design and execution of Project. The climate including air, temperature, precipitation, humidity and evaporation is an influencing factor, affecting the construction of project and other engineering structures. However, to determine the overall effect of the climatic stresses, daily and seasonal temperature changes, site altitude, direct solar radiation, and precipitation must be considered. The Project Area has extreme climate: it has hot summer and cold winters. The summer season is reasonably longer than the winter season. The summer begins in the month of April and carries on until the month of October while the winter season starts from November to March. On the other hand, the month of March and November are agreeable here. Dust storms are quite common throughout the summer.

May, June, and July are the hottest months with mean daily maximum temperature from 42.4 ºC. The daily mean minimum temperature is 4.4ºC in January. The average annual temperature is 26.9°C. Precipitation here is about 174 mm | 6.9 inch per year.

The project area receives rains in all the seasons but monsoon rain is pronounced and constitutes a definite rainy season between the month of July and September. The average rainfall is about 100 millimeters. Below figures showing the temperature, precipitation, and relative humidity trends in the study area.

Table: 02 Month wise temperature, precipitation and humidity.

MONTH WISE TEMPERATURE, PRECIPITATION AND RELATIVE HUMIDITY				
RELATIVE HUMIDITY ,1960-98				
Month	Average Temperature		Precipitation	Relative Humidity
	Maximum	Minimum	(in mm)	(Percentage)
January	21.8	4.4	4.4	57.5
February	24.4	7.3	5.3	52.0
March	30.2	12.8	5.5	46.4
April	37	18.5	2.7	35.2
May	41.7	23.6	5.1	33.4
June	42.4	27.2	2.8	41.7
July	30.9	27.3	27.5	53.4
August	38.4	26.3	23	57.7
September	37	23.1	15.5	56.9
October	34.8	16.3	1.2	50.0
November	20.4	10.1	0.7	53.7
December	23.5	5.3	3.3	59.5
Annual	**33.5**	**17**	**100.3**	**49.8**

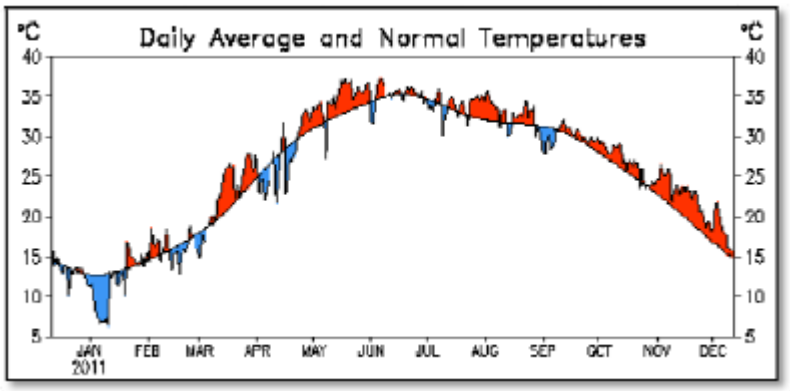


Figure 2: Month wise average and normal Temperature

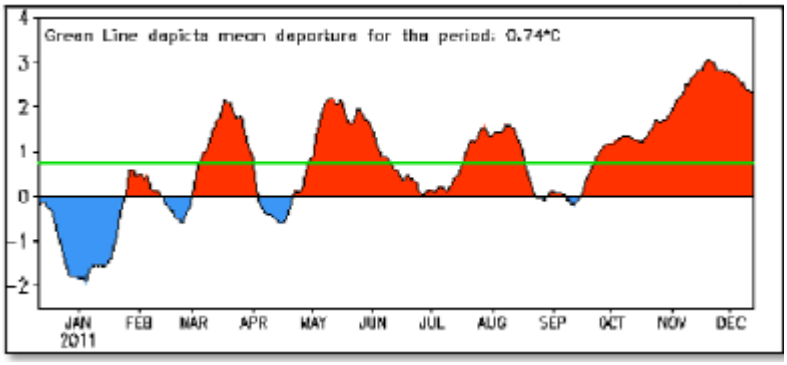


Figure 6: Daily Mean Temperature

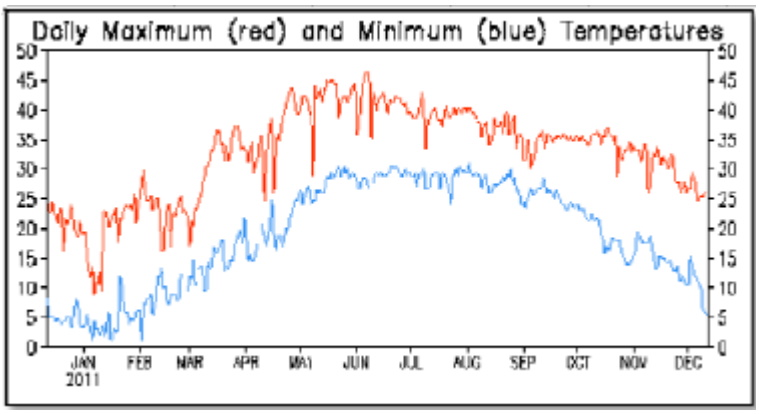


Figure 7: Maximum and Minimum Mean Temperature

The variation between maximum and minimum from 10-20°C (Figure 7) the mean departure from the daily mean is about 0.74°C.Which is quite range full from October-January (Fig 6).

3.2.1 Wind speed in the project area

The wind direction in winter months is north-east and in summer south-west with average yearly speed 1.13 m/s to 3.75 m/s.The wind pattern is almost typical of many south and central locations of Pakistan.



Figure 8: Wind Rose of RYK-IE.

3.2.2 Wind Direction in the Project area

The wind is generally strong blowing from NE to SW where as in winter relatively weaker winds below from SW to NE (Fig:8) wind velocity and direction is important to study the depression of industrial emission.

3.3 Ambient Air Quality

Atmospheric pollution, particularly in urban areas like Rahim Yar Khan, has a strong impact on daily life. Motor vehicles are a major source of air pollution in the project area. Monitoring was conducted at the project site.

To record the baseline ambient air quality of the project area, monitoring was conducted at advised locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide and PM_{10}) in the air.

3.3.1 Noise Monitoring

3.3.2 Basic Environmental Condition

During the measurement, following conditions were prevailed on workplace:

3.3.3 Meteorological Condition

During the noise level, monitoring weather was dry and sky was clear. Air was blowing at normal speed.

3.3.4 Methodology Adapted

Noise level was monitored; lab results are within PEQ‘s.

3.4 Ground Water

The grownd water resources are available in aboudance in the project area. Ground Water Table (GWT) exist at a depth of about 40 to 60 ft. below natural ground level (NGL).To meet the agricultural and drinking requirement boring points and handpumps are quite obvious in and around project site.

The underground water will be used as a source of water at unit. Sample was taken from the bore hole near the project area to test its parameters, lab reports are attached as Annexure D.

3.4 Ecological Environment

As climate of the Rahim Yar Khan is extremely hot and dry in the summer season while in winter the city is quite pleasant and is usually cold and dry.

Rahim Yar Khan is semi-arid and subtropical, the vegetation of the district falls under scrub, dry, tropical thorn forest type as per phyto-geographical classification of the area.

3.5.1 Flora and Fauna

Different birds were observed at the project site during the site visit including sparrow, crow, pigeon and dove etc. Other than that, no fauna was observed at the site during the site visit.

3.6 Socioeconomic Environment

Socioeconomic environment of district Rahim Yar Khan has been studied through secondary sources and a brief introduction has been given below:

3.6.1 Demographic Characteristics of the Project Area

The population of RYK city in 1998 was 233,537, but according to the 2017 Census of Pakistan, the population rose to 420,419 with a growth of about 80.02% in 19 years.

3.6.2 Religion

The population of the district is predominantly Muslims, other minorities like Christians, Sikhs and Hindus etc. are also presents.Muslims religious community with 96.50% of the population while Hindus (including Scheduled Castes) were 3.12% of the population. The Bhagwan Shri Krishna Mandir in Sadiqabad is one of the main Hindu temple in Rahim Yar Khan district.

3.6.3 Education

In recent years, the establishment of Khwaja Fareed University of Engineering & Information Technology (KFUEIT) and Sheikh Zayed Medical College has put the city on International Education map and revolutionized the higher education in arteries of Southern Punjab. Besides these flagship institutions, Campus of Islamia University Bahawalpur, Khwaja Fareed Post-Graduate Government College, Government Women Degree College, Sheikh Zayed Public School, Shaikh Khalifa Khalifa School, Army Public School, Beacon House School System, Ranger Public School, The City School, Lahore Grammar School and many other private school & colleges are efficiently contributing their share in providing quality education to the future generation of this part of the country.

Sheikh Zayed Medical College is named after the Late Ruler of United Arab Emirates His Highness Sheikh Zayed Bin Sultan Al Nahyan. Establishment of Sheikh Zayed Medical College in the city has put the city on International map. The College is accredited by Pakistan Medical and Dental Council. It was earlier based on Self finance Education Scheme. The Board of Directors includes personnel linked to the Royal Family of Abu Dhabi, United Arab Emirates.

Also, there is sub-campus of Islamia University Bahawalpur, Khawaja Farid Post-Graduate Government College, Government Women Degree College, Nicaas College, Punjab College, Superior College, Sheikh Zayed Public College and School, Army Public School, Beacon House School System, The Educators School, Ranger Public School, City School and many other good schools.

3.6.4 Health Facilities

Medical and health facilities are available in the Rahim Yar Khan and its suburbs.Sheikh Zayed Medical College and Hospital is the latest in the medical care facilities in Rahim Yar Khan. There are also other hospitals of voluntary organizations which provide health cover to the public. Other health facilities are THQ Hospital, Eye Hospital Khan Pur, RHCs, Rural Dispensaries, MCH Centers etc. Besides, a number of private medical practitioners, Hakims and homeopathic doctors are also practicing in the city.

3.7 Quality of Life Values

All classes of people are present in Rahim Yar Khan City; People lead lives according to their income.

The people are simple and most of the population resides in villages. Major caste living in district include Rajput, Jat, and Kyanis.most of the people engage in different jobs other than cultivating crops. The people living in the cantonment are mainly the army officials while those living in the city are either landlords or have their own showrooms etc.

People start their day early in the morning with male members of the house going to their work place and children going to schools. Female members of the house stay back and look after the house. However, there are also women who work. The working women usually work as doctors and teachers.

The city is leading towards continuous development and advancement. Initially the city lacked good market for clothing and other household items. People usually traveled to RY Khan or Lahore for the shopping. Now the trend is changing. The famous clothing brands including mushrooms. Leisure club, Chinyere, Bareeze and many more have now opened in the District People of this area have gone abroad to earn their lively hood and most of them are settled in United Kingdom and Middle East. These people are a big source of foreign remittance and are contributing to the foreign exchange of the country.

3.7.1 Civic Amenities

Civic amenities like potable drinking water, dispensary and rest area are available near the project site.

3.7.2 Games

Cricket, Football, badminton, Hockey, Volleyball, Kabbadi and Kushti are major sports of Rahim Yar Khan District. Kabaddi is liked and played almost in all urban and rural areas of the districts. Besides, badminton, football, tennis, cricket, lawn tennis are played.

3.7.3 Welfare of employees

Management of project is mindful of the fact that the satisfied employees will deliver better output.

3.7.4 Historical Buildings near the Project Site.

No any historical buildings near the project site.

3.7.5 Aesthetics Values

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

CHAPTER No: 04

4 Potential Environmental Impacts and Mitigation Measures

The following chapter describes the overall possible impacts of project on the physical, biological and socioeconomic environment because of construction and operation phases and mitigation measures to minimize the significance of the possible impacts up to an acceptable level. The anticipated impacts related to location, design, construction and operation of the proposed project have been assessed and mitigation measures have been suggested in this report.

Impacts are assessed by analyzing their magnitude and sensitivity. The sensitivity and magnitude of the impact are described with reference to legal requirements, accepted scientific standards or accepted impact assessment practice, and/or social acceptability; where possible.

But where no known published ‘standard‘ criteria exists for determining the magnitude of effects, established professional criteria and best practice techniques are used.

4.1 Methodologies for impact identifications

The methodology adopted for impact evaluation includes the Modified Leopold Matrix.

4.1.1 Leopold Matrix

The analysis is performed with the Leopold Matrix (LM). This matrix has:

1. On the horizontal axis, the actions which cause environmental impact, and

2. On the vertical axis, the existing environmental conditions which may be affected by those actions.

This provides a format for comprehensive review of the interactions between proposed actions and environmental factors.

The most important blocks marked are evaluated individually, and a number between 1 and 10 is placed in the upper left-hand corner to indicate the relative magnitude of the impact (1 represents the least magnitude, and 10 the greatest). Likewise, a number between 1 and 10 is placed in the lower right-hand corner to indicate the relative importance of the impact (again, 1 represents the least magnitude and 10 the greatest).

Table 10 : Scale Table of Importance & Magnitude

Sr. No.	Type of Impact	Scale of Magnitude (0 – 10)	Scale of Importance (0 – 10)
1	No Impact	0	0
2	Low Impact	1 — 4	1 — 4
3	Medium Impact	5 — 6	5 — 6
4	High Impact	7 — 10	7 — 10

For the evaluation of this project, each action checked was evaluated in terms of magnitude of effect on environment characteristics and conditions [on the vertical axis]. From upper right to lower left across each block where significant interaction is expected slash \was placed diagonally. The most important blocks marked are evaluated individually, and a number between 0 to10 is placed in the upper left-hand corner to indicate the relative magnitude of the impact 1 is the best magnitude, and 10 the greatest magnitude. In the same way, a number between 0 and 10 in the lower right-hand corner to indicate the relative importance of the impact again, 0 is the magnitude, and 10 the greatest.

The next step is to evaluate the numbers which have been in the slashed boxes. The high or low numbers on any one box indicates the degree of impact of the appropriate action on the given characteristic of the environment. The assignment of magnitude and importance numbers is based, to the extent possible, on factual data rather than on the evaluator‘s preference.

For the rating design regarding the probable impacts requires the evaluator to quantify his\her judgment. The rating scheme\scheme allows the reviewers to thoroughly follow the evaluator‘s line of reasoning, to aid in identifying points of agreement and disagreement. In fact, matrix is the abstract for the text of the environmental impact assessment.

Table 11: Leopold Matrix

Construction Phase																			
Magnitude / Importance			Actions															Total Score of Impact	Average Score of Impact
			Transportation of raw material	Construction Activities	Operation of generators	Water consumption	Wastewater generation	Storage of raw materials	Social activities	Public welfare	Economic activities	Employment	Infrastructure improvement						
PHYSICAL	Soil	Soil Quality	2 / 1	3 / 2	0 / 0	1 / 1	5 / 2	4 / 4	1 / 1	0 / 1	1 / 1	1 / 3	4 / 6					22 / 22	2 / 2
		Erosion	2 / 1	6 / 6	0 / 0	0 / 0	2 / 2	1 / 1	2 / 1	0 / 0	1 / 1	1 / 1	3 / 4					18 / 17	1.6 / 1.5
		Geomorphology	0 / 0	5 / 5	0 / 0	4 / 2	5 / 3	2 / 1	0 / 0	0 / 0	1 / 1	2 / 1	4 / 6					23 / 19	2.09 / 1.7
	Water	Surface Water	0 / 0	0 / 0	0 / 0	6 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0					6 / 0	0.5 / 0
		Subsurface Water	1 / 2	1 / 1	0 / 0	7 / 8	5 / 7	1 / 1	0 / 0	0 / 0	1 / 1	0 / 0	2 / 2					18 / 22	1.6 / 2
	Air	Air Quality	2 / 1	6 / 6	0 / 0	0 / 0	2 / 2	1 / 1	2 / 1	0 / 0	1 / 1	1 / 1	3 / 4					18 / 17	1.6 / 1.5
		Odors	1 / 1	1 / 1	3 / 3	0 / 0	5 / 7	4 / 6	1 / 1	0 / 1	0 / 1	1 / 1	1 / 1					17 / 23	1.5 / 2.0
		Noise	5 / 6	9 / 10	7 / 8	0 / 0	5 / 4	2 / 2	5 / 0	0 / 1	5 / 6	4 / 6	4 / 6					46 / 55	4.1 / 5

BIOLOGICAL	Fauna & Flora	Crops	2 / 2	5 / 6	3 / 2	0 / 0	4 / 6	2 / 2	2 / 3	4 / 3	5 / 7	3 / 3	3 / 3	33 / 37	3 / 3.3
		Birds	2 / 2	7 / 7	5 / 5	2 / 1	4 / 4	1 / 1	5 / 4	0 / 0	5 / 5	3 / 4	4 / 4	34 / 37	3.4 / 3.3
		Mammals	5 / 4	6 / 7	2 / 2	2 / 1	4 / 3	2 / 1	3 / 3	0 / 0	4 / 3	3 / 4	3 / 3	34 / 31	3.3 / 2.8
SOCIO-ECONOMIC	Social	Industrial	5 / 6	7 / 7	5 / 5	4 / 6	6 / 7	4 / 5	6 / 6	5 / 6	8 / 8	9 / 9	7 / 7	66 / 72	6 / 6.5
		Recreational Use	2 / 3	3 / 4	2 / 3	3 / 3	3 / 3	1 / 1	3 / 4	4 / 5	4 / 5	2 / 1	4 / 3	31 / 35	2.8 / 3.1
		Historical / Cultural	2 / 2	7 / 7	2 / 2	2 / 1	4 / 4	1 / 1	5 / 4	4 / 4	5 / 5	3 / 4	4 / 4	39 / 38	3.5 / 3.4

Over all the impact of project is positive in term of employment and infrastructure improvement. Mostly the average values are falling in 0.2-5 range which means the overall impact will be low to moderate. Due to the construction activities dust and gases will generate which may affect ambient air quality. To counter with the negative impacts Environmental Management plan is formulated which will be ensured by the project proponent. Beside this Environmental monitoring plan is also formulated for Environmental monitoring of various parameters which will be also implemented by the proponent.

Operational Phase															
Magnitude / Importance			Actions											Total Score of Impact	Average Score of Impact
			Transportation of raw material	Production Activities	Operation of generators	Water consumption	Wastewater generation	Storage of raw materials	Social activities	Public welfare	Economic activities	Employment	Infrastructure improvement		
PHYSICAL	Soil	Soil Quality	2 / 1	3 / 2	0 / 0	1 / 1	5 / 2	4 / 4	1 / 1	0 / 1	1 / 1	1 / 3	4 / 6	22 / 22	2 / 2
		Erosion	2 / 1	6 / 6	0 / 0	0 / 0	2 / 2	1 / 1	2 / 1	0 / 0	1 / 1	1 / 1	3 / 4	18 / 17	1.6 / 1.5
		Geomorphology	0 / 0	5 / 5	0 / 0	4 / 2	5 / 3	2 / 1	0 / 0	0 / 0	1 / 1	2 / 1	4 / 6	23 / 19	2.09 / 1.7
	Water	Surface Water	0 / 0	0 / 0	0 / 0	6 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	6 / 0	0.5 / 0
		Subsurface Water	1 / 2	1 / 1	0 / 0	7 / 8	5 / 7	1 / 1	0 / 0	0 / 0	1 / 1	0 / 0	2 / 2	18 / 22	1.6 / 2
	Air	Air Quality	2 / 1	6 / 6	0 / 0	0 / 0	2 / 2	1 / 1	2 / 1	0 / 0	1 / 1	1 / 1	3 / 4	18 / 17	1.6 / 1.5

		Odors	1 1	1 1	3 3	0 0	5 7	4 6	1 1	0 1	0 1	1 1	1 1	17 23	1.5 2.0
		Noise	5 6	9 10	7 8	0 0	5 4	2 2	5	0 1	5 6	4 6	4 6	46 55	4.1 5
BIOLOGICAL	Fauna & Flora	Crops	2 2	5 6	3 2	0 0	4 6	2 2	2 3	4 3	5 7	3 3	3 3	33 37	3 3.3
		Birds	2 2	7 7	5 5	2 1	4 4	1 1	5 4	0 0	5 5	3 4	4 4	34 37	3.4 3.3
		Mammals	5 4	6 7	2 2	2 1	4 3	2 1	3 3	0 0	4 3	3 4	3 3	34 31	3.3 2.8
SOCIO-ECONOMIC	Social	Industrial	5 6	7 7	5 5	4 6	6 7	4 5	6 6	5 6	8 8	9 9	7 7	66 72	6 6.5
		Recreational Use	2 3	3 4	2 3	3 3	3 3	1 1	3 4	4 5	4 5	2 1	4 3	31 35	2.8 3.1
		Historical / Cultural	2 2	7 7	2 2	2 1	4 4	1 1	5 4	4 4	5 5	3 4	4 4	39 38	3.5 3.4

4.2.1 Consultation/Case Studies

To study the impacts of the project on physical and biological environment, site visits were conducted by the environmental practitioners and experts and possible physical and biological impacts which may arise due to the subject project were identified through consultations and case studies and their mitigation measures were suggested accordingly.

4.2.2 Meetings

For the identification of the social impacts of the project, meetings and group discussions were held with the local people, stakeholders, nearby residents and passerby because social acceptability of the project and the area is a key to success. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and built understanding by actively involving individuals, groups and organizations, which have stake in the project. This involvement increases project‘s long term viability and enhances its benefits to locally affected people and other stakeholders.

To identity the different types of stakeholders and ascertain their perceptions about the project, an initial environmental examination was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following.

The EIA team carried out public consultations at various locations around the Project Site. The stakeholder‘s consultation during this phase of the work targeted the project area, administrative and private offices, Govt. offices, shops, etc. near the Project area:

- Selection of the stakeholders for consultation, reconnaissance of the proposed project site and initial discussions with the neighboring , shopkeepers, drivers etc.

- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

4.3 Characteristics of Impacts (nature, magnitude, extent and location, timing, duration, reversibility, risk)

4.3.1 Impact Assessment Criteria

The impacts were assessed in the light of criteria given as under:-

- Magnitude or degree of impact
- Time and duration of impact
- Likelihood of impact occurrence
- Sensitivity of impact
- Risk related to impact

Table 12: Impact Assessment criteria

Rating of Consequence of Effect on Environment	Rating of Frequency of Occurrence				
	A. Very low: Not heard of but could occur	**B. Low:** Has occurred in other industry	**C. Medium** Has occurred in oil and gas industry	**D. High:** Occurs several times a year in oil and gas industry	**E. Very high:** Occurs several times a year in PDO
Slight effect: Local environmental damage. Within the fence and within systems. Negligible financial consequences	LOW RISK				
Minor effect: Contamination. Damage sufficiently large to attack the environment. Single exceedence of statutory or prescribed criterion. Single complaint. No permanent effect on the environment.		MEDIUM RISK			
Localized effect: Limited loss of discharges of known toxicity. Repeated exceedence of statutory or prescribed limit. Affecting neighborhood.					
Major effect: Severe environmental damage. The company is required to take extensive measures to restore the contaminated environment to its original state. Extended exceedence of statutory limits		HIGH RISK			
Massive effect: Persistent severe environmental damage or severe nuisance or nature conservancy extending over a large area. In terms of commercial or recreational use, a major economic loss for the company. Constant, high exceedence of statutory or prescribed limits				EXTREME RISK	

4.4 Analysis of Impacts and recommended mitigations

4.5 Environmental Impacts due to project location

If the project proponent maintains HSE conditions and comply with the PEQS limits than, there will not be any significant impacts of the project on the environment because subject project site is present within purchased land of M/s Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited existed in RYK-IE.

If the mitigation measures are effectively implemented, the residual impact of the Subject project activities on the area's geophysical environment is expected to be insignificant.

Impact significance: Low to moderate
Nature of impact: Direct
Duration: Long-term
Timing: Construction & Operation phase
Reversibility: NA
Likelihood: Low
Consequences: Mild or may be positive

Mitigation Measures

- Project site will have good and efficient road infrastructure
- Location can be considered as the positive impacts due to enhanced infrastructure.
- The project will also have positive socioeconomic impacts because of provision of jobs to the local residents of the area.
- No human settlement within the radius of the study area
- There would be no issue of congestion of traffic due to presence of good road network in the area.
- Provision of embankments, designed by considering the Geotechnical investigation studies.

4.6 Environmental Impacts due to project design

Area for parking, Septic tank and solid waste management will be present in design of building. Firefighting plan, health & safety plan, tree plantation plan, emergency response plan will be the part of unit.

Following are the major Environmental impacts due to the development related to the design:

- Low utilization of available space
- Soil structure and soil bearing capacity
- Improper road infrastructure design
- Firefighting system
- Electricity hazards
- Low social acceptability & functionality of design

Impact significance: moderate to high
Nature of impact: direct
Duration: Long-term
Timing: Designing Phase
Reversibility: NA
Likelihood: moderate to high
Consequences: moderate to high

4.6.1 Mitigation measures and recommendations

Following are the mitigation measures and recommendations to minimize the anticipated impacts:

- Industrial unit will incorporate all HSE measures regarding the design of project.
- Structure stability of the building should be ensured.
- Emergency exist points should be marked within the project building and in overall plan.
- Firefighting system should be designed for the emergency situations.
- Electricity system should be design safe and sound.
- Electricity wires should be covered by thick plastic/electricity resistant covers.
- Design should be professional which accommodate the maximum space and has high social acceptability & functionality.

4.7 Environmental Impacts due to construction phase

4.7.1 Impact on Physical Environment

4.7.1.1 Topography

In the proposed area, there are herbs and shrubs and excavation and leveling will be involved in this construction.

Impact:

- Change in topography due to excavation
- Land filling of the area
- Construction of roads

Impact significance: Low
Nature of impact: Direct

Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Very Low

Mitigation:

- Cuttings of trees will be avoided
- Use of existing paved tracks as many as possible.
- Working should be in such a way that minimum excavation is involved

4.7.1.2 Air Quality

Air quality will be affected by fugitive dust emissions from construction machinery; dust from the unpaved surface and construction vehicles. The critical sources of dust pollution during the construction phase will be

- Unpaved road surface
- Transportation of materials and other construction activities that create dust emissions

Impact significance: Low
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Very Low

4.7.1.2.1 Impacts

Air quality deterioration, particulate matter/dust emissions due to construction activities; stand by generator (if any) equipment‘s and vehicle.

4.7.1.2.2 Mitigations

- Sprinkling of water on track will reduce dust pollution
- Provision of dust masks for workers.
- Air quality monitoring is recommended on regular base
- Proper paved road infrastructure is recommended
- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions
- Blowing of dust and particulate matter from stockpiled loose materials (e.g. sand, soil) should be avoided either by sheeting them with tarpaulin or plastic sheets or by sprinkling them with light shower of water
- Open burning of solid waste from the Contractor‘s should be strictly banned;

4.7.1.3 Noise

Noise is a by-product of human activity, and area of exposure increases as function of mobility and construction activities. Sources of noise during construction are heavy machinery such as bulldozers, excavators, stabilizers and other equipment. Noise generated by construction machinery is likely to affect sensitive receptors located within 50 meter of the proposed Project.

4.7.1.3.1 Impacts

- Persistently higher noise levels can produce psychological effects of distraction of attention, irritation and short temperedness in the exposed persons
- Noisy settings and higher background levels can cause temporary threshold shift and the consequent habit of speaking loud, which may cause damage to vocal cords in the persons exposed
- Noise produced from moving construction vehicles and blowing of pressure horns, at times, could be intolerable particularly during quiet hours of night.

Impact significance:	Low
Nature of impact:	Direct
Duration:	Short-term
Timing:	Constructional phase
Reversibility:	NA
Likelihood:	moderate
Consequences:	Low

4.7.1.3.2 Mitigations

- Selection of up-to-date and well-maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices
- Confining excessively noisy work to normal working hours in the day, as far as possible
- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use
- Preferably, restricting construction vehicles movement during night time
- Vehicles and equipment used should be fitted, as applicable, with silencers and properly maintained

- Use of low noise machinery, or machinery with noise shielding and absorption
- Contractors should comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures

4.7.1.4 Water Resources

There will be no impact on surface water quality during the construction of the project area. Persistent and prolonged withdrawal of groundwater higher than the safe yield limits of the aquifer can initiate early depletion of aquifer. This situation can result in reduced water supplies for other users who share the same groundwater resource. Abstraction of the groundwater over and above the safe yield limit can produce serious hydrological and environmental consequences.

4.7.1.4.1 Impacts

- Early depletion of the aquifer resources
- Persistent lowering of the water table
- Reduced availability or non-availability of the groundwater to the neighboring communities sharing the same aquifer

These impacts are temporary and minor negative in nature

Impact significance: Low
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Low

4.7.1.4.2 Mitigations

- Water required for construction must obtain in such a way that the water availability and supply to nearby communities remain unaffected.
- Regular water quality monitoring according to determined sampling schedule.
- Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond.
- Continuous withdrawal and over pumping of groundwater should be avoided. Instead, intermittent pumping be carried out to conserve the groundwater resources.

4.7.1.5 Soil

The project area is open land with no paved area. Soil erosion and contamination may occur on site due to the following likely impacts.

4.7.1.5.1 Impacts

- Excavation of earth/cutting operations
- Land leveling activities
- If the excavated area will be left unfilled for long, which may lead to rainfall induced soil erosion.
- The unspent materials and debris produced from consumed up materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils and may render them unfit for plantation later on.
- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants.
- Washing of the gadgets, machinery and equipment without proper drainage of the washout water can adversely affect the soil quality. This impact is, however, temporary.

Impact significance: Low to Moderate
Nature of impact: Direct
Duration: Short-term
Timing: Constructional phase
Reversibility: NA
Likelihood: moderate
Consequences: Low

4.7.1.5.2 Mitigations

- Non-bituminous wastes from construction activities will be dumped in designated sites, in line with the legal prescriptions for dumpsites, and covered
- As applicable and needed, plantation of grasses and shrubs will be done at appropriate place where required

- Unnecessary excavations should be avoided

- Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire.
- All machineries and materials should be stored at the designated areas and compounds.
- All the unspent and left over materials should be completely removed offsite upon completion of construction.

4.7.1.6 Wastewater

4.7.1.6.1 Impacts

Wastewater generation due to construction activities

4.7.1.6.2 Mitigations

- Wastewater generated during construction and domestic activities will be treated in septic tank, from where it will be routed to local drain present near the project.
- Waste segregation measures will be employed to minimize entry of solid waste into the wastewater stream.

4.8 Solid Waste

Due to construction activities, waste will be generated at construction and contractors camp site. The construction waste will include wastewater, oil spillage from machinery, domestic waste and solid waste etc. This will result in unhygienic conditions, health risk to work force and public at the camp site.

4.8.1 Impact

- Insecure and unhygienic disposal of the solid wastes generated at the worksite, particularly garbage and trash may cause degradation of soil and land
- Insecurely disposed of heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents
- Throwing away of solid wastes into water channels and the wastewater network can result into choking of the latter.

Impact significance:	Low
Nature of impact:	Direct
Duration:	Short-term
Timing:	Constructional phase
Reversibility:	NA
Likelihood:	moderate
Consequences:	Moderate

4.8.1.1 Mitigations

- An efficient and responsive solid waste management system should be devised for the entire duration of the construction phase. Such a system should provide for separate collection of different categories of constructional wastes. Training of working force in the storage and handling of materials and chemicals that can potentially cause soil contamination.
- Solid waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites or handed over to the contractor.

4.8.2 Health and Safety

Health risks and work safety problems may result at the workplace if the working conditions provide unsafe and/or unfavorable working environment and due to storage, handling and transport of hazardous construction material. Workers should be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in project area. As a preventive measure, regarding risk of spreading corona virus contingency plan and emergency preparedness and response procedure proposed.Mitigation measures will include:

Impact significance:	Low to Moderate
Nature of impact:	Direct
Duration:	Short-term
Timing:	Constructional phase
Reversibility:	NA
Likelihood:	moderate
Consequences:	Moderate

4.8.2.1 Mitigation:

- Providing basic medical training to specified work staff and basic medical service and supplies to workers.
- Layout plan for site, indicating safety measures taken by the contractor, e.g. firefighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents
- Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for laborers
- Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines.
- Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction.
- Provision of protective clothing for laborers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc.
- Ensure strict use of wearing these protective clothing during work activities
- Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites

4.8.3 Impact on Biological Environment

Different birds were observed at the project site during the site visit including sparrow, crow, pigeon and dove etc. Other than that, no fauna was observed at the site during the site visit. Few herbs and shrubs were there.

4.8.4 Impact on Socio-economic Environment

4.8.4.1 Economic Activity

Due to the construction of the proposed Project, economic activity will be generated in the project area as the laborers and semi-skilled staff will have an opportunity to work for the construction of the proposed project. This will help in developing their skills and capacities. This is a moderate positive impact.

4.8.4.2 Lifestyle and Culture

There are chances of arising of issues related to cultural differences/conflict between the Contractor‘s workforce and the local inhabitants, conflicts arising due to the mix of local and migratory job seekers as the use of local resources and products will be increased. In this situation, local residents may resist contractor‘s workforce attitudes, cultural clashes particularly when local/international contractors are engaged, social disturbance and dissatisfaction with employing outsiders may arise. This impact is temporary and minor negative in nature.

4.9 Impact during operational phase

The positive and negative impacts of subject project, during its operation are discussed below:

4.9.1 Impact on Physical Environment

4.9.2 Solid waste/Sludge Management

In the operation of proposed project proper solid waste management system will be adopted for the prompt, timely and efficient disposal of solid waste & sludge for the reduction of its impacts. Impacts due to solid waste & sludge may be temporary and minor in nature.

Nature of impact:	Direct
Duration:	Short term
Timing:	operation
Reversibility:	Not applicable
Likelihood:	Low (unlikely) if mitigation measures will ensure that Solid waste management in efficient way.
Consequences:	Mild, as it will be removed from site within few hours
Impact significance:	Low, based upon low likelihood and mild to moderate consequence.

4.9.2.1 Mitigation Measures

- Devise plan & develop guidelines for the safe handling, storage & disposal
- Sludge will be placed at the site after cleaning of Septic Tank
- PPEs will be strongly recommended for workers for the handling of sludge
- Separate bins at various places must be present for solid waste collection and segregation;
- Waste will be handed over to waste contractor;
- Solid waste will be recycling at maximum level;
- Industrial ecology practices will be implemented wherever possible;

4.9.3 Wastewater

Waste water will be produced only from domestic activities. In operation, no activity is place to used water and wastewater produced from it.

Nature of impact:	Direct
Duration:	Short term
Timing:	operation
Reversibility:	Not applicable
Likelihood:	Low
Consequences:	Mild
Impact significance:	Low.

4.9.3.1 Mitigation Measures

- Wastewater that is finally disposed of, will be in limits of PEQS
- Water conservation approaches will be follow to reduce its wastewater
- Wastewater treatment facility i.e. Septic Tank will be installed to treat the domestic wastewater prior to disposal into nearest drain.

4.9.4 Gaseous emission

Emissions can be produced by vehicles and equipment will similar to those produced by generators in terms of the resulting pollutants (SO_2, NOX, PM, etc.). However, the extent to which they can produce would keep considerably lower, since much smaller engines will use in vehicles and construction machinery.

Nature of impact:	Direct
Duration:	long term
Timing:	operation
Reversibility:	irreversible
Likelihood:	moderate if mitigation measures will be ensured.
Consequences:	moderate, if pollutant levels in the ambient air will be control within acceptable limits by adopting proper mitigations.
Impact significance:	moderate, based upon low likelihood and mild to moderate consequence.

4.9.4.1 Mitigation Measures

None of the potential effects discussed above will be exceeded to acceptable limits. The mitigation measures given below used to reduce their impact, and ensure that they remain within acceptable limits.

- All equipment and vehicles during the operation of project will be properly tuned and maintained in good working condition in order to minimize exhaust emissions.
- Vehicle speed will be reduced on track passing through or close to shops
- Speed limits will be imposed and encourage more efficient journey management worked to reduce the dust emissions produce by vehicular traffic. Water sprinkling will be done where necessary.
- Management make sure process will be environment friendly

4.9.5 Energy Requirement

Energy consumption in industrial area is usually very high. Machinery work runs all the day in different industries. Energy conservation technique should be in mind and conduct an energy review. The energy review shall be updated at defined intervals, as well as in response to major changes in facilities, equipment, systems or energy-using processes.

4.9.5.1 Mitigation Measures

- Do not waste the energy/electricity when there is no need of it.
- Use energy efficient machinery and equipment
- Use energy saving products
- Conduct and maintain records for energy audits
- Do not leave the machinery in running form when there is no working being done

- Machinery must never be left unattended It is recommended to save and conserve the energy and adopt energy efficient technologies during the construction phase.
- Improve energy by checking and keeping balance of monthly usage energy of plant.
- Ensure about turn off and run equipment only when required.
- Regularly clean and maintain electrical and mechanical equipment which optimizing its performance and life span, which can translate to energy efficiency savings.
- install solar power system for plant in future to save the energy.
- Regularly check and maintain the electric equipment for the long life so the energy will be saved

4.9.6 Noise level

Noise is the major concern during the operation phase. It can be generated from the traffic on the road and from the machinery used for operations.

Nature of impact:	Direct
Duration:	long term
Timing:	operation
Reversibility:	Not applicable
Likelihood:	low
Consequences:	slightly significant
Impact significance:	moderate, based upon low likelihood and mild to moderate consequence.

4.9.6.1 Mitigation Measures

- Machinery and vehicles will be tuned and maintained
- Limits will impose on unnecessary use of horns
- Safety signs will be displayed ,public & drivers will be aware of them

4.10 Impact on Biological Environment

4.10.1 Natural Vegetation

Project activities will not impose any potential impact on the area‘s natural vegetation and plantation.

Assessment of Impact: A significant impact can be caused due to the unnecessary or excessive removal and burning of plants for fuel wood (If any)

Nature of impact:	Direct
Duration:	long term
Timing:	construction phase
Reversibility:	irreversible
Likelihood:	moderate
Consequences:	Mild, as no rare plant species were present in the areas.
Impact significance:	significant

4.10.1.1 Mitigation Measures

The following mitigation measures will reduce the impact on vegetation:

- Prohibition to park vehicles on green belts/ grass;
- Unnecessary damage to vegetation is strictly avoided;
- Proponent will plant trees and other species after construction phase;
- Proponent will plant 10 trees if he removes a single plant during the construction/ development of the project.

4.10.2 Fauna

The fauna including wildlife specially endangered species do not exist at the project site**.**

Nature of impact:	Direct
Duration:	short term
Timing:	construction phase
Reversibility:	not applicable
Likelihood:	low
Consequences:	Nil, as no rare animal species are present in the areas.
Impact significance:	not significant

4.10.2.1 Mitigation Measures

- Maximum plantation is recommended
- Fauna will be preserved by different conservation strategies (in-situ and ex-situ), if any.

4.11 Potential Environmental Enhancement Measures

The proposed project will be constructed with all precautionary measures to enhance and safe the environment. Following necessary measures will be adopted during construction and operational phase of the project:

- Sprinkling of water will be done on dusty roads and tracks.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Local people will be informed in advance when work is about to start in an area.
- Machinery will never be left unattended.
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during construction.
- Machinery will be kept maintained.
- Waste water will be treated through septic tank that will be installed within the premises of the subject project.
- Proper SOPs will be followed with proper schedule along with the HSE conditions.
- Area will be restored with native plants. A proper tree plantation plan will be formulated to save the environment.
- Solid waste will be handed over to contractors and agreement will be made.
- Noise will be controlled by adopting proper measures.
- PPEs will be provided to workers during working.
- Firefighting equipment‘s and system will be installed.
- Safety signs will be placed at all locations where required.

- Hygienic conditions will be ensured and proper quality will be maintained by quality control testing.
- First aid facilities will be made available.

4.12 Purpose of Mitigation Measures

4.12.1-What is the problem i.e. in terms of '' Major Environmental Influences "which may arise by the subject project activity?

The major impacts which may arise by the subject project are air, water and noise pollution. Other impacts are of minor importance. These impacts may arise during operational phase of the project because the constructional phase of the project includes the construction of boundary walls, roads and offices, so they will not cause any major harmful impacts on the environment and during the operational phase of the subject project, as different industries will be installed in the industrial estate, they may cause the issues of air, water and noise pollution if proper precautionary measures to avoid this pollution will not be taken but it will be ensured that precautionary measures will be adopted prior to start the activity, during the activity and post activity to cause minimum impacts to the environment.

4.12.2 When the problem will occur and when it should be addressed?

Negative impacts may arise during the constructional phase of the project if proper precautionary measures and procedures will not be followed. If proper precautionary measures and procedures will be implemented, there will not be any major problem. If any impact would arise due to the subject project activity, it will be addressed on site. Trainings will be conducted on site prior to start work while other precautionary measures will also be adopted to make the project safe and environmental friendly.

4.12.3 Where and how the problem should be addressed?

The problem should be address at the site and immediate response should be provided to address the problem which may arise. Institutional capacity responsible for the implementation of EMMP will be responsible for addressing such problems if arise. They will assess any impact that could be arisen during both phases and they would also be responsible to address the problem and to mitigate it.

4.13 Why of achieving mitigation measures

4.13.1 Changing in planning and design

By adopting proper mitigation measures, any anticipated major or minor environmental impacts could be controlled or mitigated. The details of impacts and mitigation measures have been discussed in previous chapters.

4.13.2 Improved monitoring and management practices

Management shall take appropriate measures to provide pollution free and safe environment during the proposed project activity by implementing improved management practices and monitoring techniques suggested in EMP.

4.13.3 Compensation in money terms

Site proposed for the subject project is the property of the M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited and free of any activity that's why there is no need of money in terms of

land cost or any other mean. However, rehabilitation will be done in the vicinity of the project site to restore the beauty of the area.

4.13.4 Replacement, relocation and rehabilitation

Subject project site is the property of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited there is no need of replacement or relocation of a single person or economic activity. Management will develop Restoration/ reclamation or tree plantation plan to restore the project area after the construction phase of the project. Maximum Plantation will be done with native species within and outside the premises of the industrial estate, along the boundary wall and road side if directed. Also, in-front of main area, horticulture plan will be formulated and area for this will be kept reserved.

CHAPTER No: 05

5 Environmental Management and Monitoring program

The primary objectives of the EMMP are to:

1) Facilitate the implementation of the mitigation measures identified in the EIA.
2) Define the responsibilities of the project proponent.
3) Define a monitoring mechanism and identify monitoring parameters in order to:
4) Ensure the complete implementation of all mitigation measures.
5) Ensure the effectiveness of the mitigation measures.
6) Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
7) Identify training requirements at various levels.

5.1 Intuitional Capacity

The overall responsibility for compliance with the environmental management plan rests with the project proponent. He will appoint a HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage all HSE conditions at the PEQS.

A certain degree of redundancy is inevitable across all management levels, but this is in order to ensure that compliance with the environmental management plan is crosschecked. Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE Officer
- In-Charge Administration
- Supervisor of project

5.2 Training Schedule

Trainings will be conducted at unit after completion of constructional phase; It will be imparted by a team of experienced trainers.

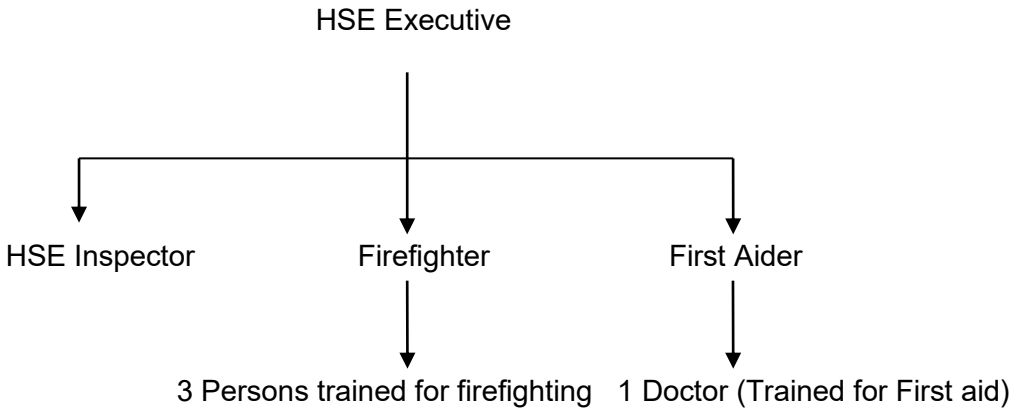


Figure 9: Institutional Capacity for the implementation of EMP

Management will hire HSE officer, HSE officer will be responsible for conducting the training of the labor, which will be organized either by the management of industry or by the contractor. Following schedules of training will be implemented:

Table 13: Training Program

Sr. No.	Description of program	Labor/ Personnel involved	Time/ duration
1.	General HSE Training	Trainers and whole labor	Quarterly for 1 hour
2.	Instrument use/ workplace specific items	Trainers and whole labor	Quarterly for 1 hour
3.	PPEs use and safe work practices at work site.	Trainers and whole labor	Quarterly for 1 hour
4.	Reporting and investigating accidents/ incidents	Trainers and whole labor	Quarterly for 1 hour
5.	Emergency procedures	Trainers and whole labor	Quarterly for 1 hour
6.	Medical and first aid	Trainers and whole labor	Quarterly for 1 hour
7.	Health and safety promotion	Trainers and whole labor	Quarterly for 1 hour
8.	Awareness regarding COVID-19 and Preventive Measures of COVID-19.	Trainers and whole labor	Quarterly for 1 hour

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. HSE/Project Manager should play a key role in this respect and arrange the training programs. HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the construction site and affective implementation of the EMMP. The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS), Usage of personal protection equipment‘s, and health and safety related issues on the construction site.

The HSE/Project Manager will train all workers & staff in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of Sexually Transmitted Infections (STI) HIV/AIDS and in general health and safety matters, and on the specific hazards of their work. Training should also consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation.

5.2.1 Training of building contractor

Training of building contractor & workers will be the part of the TORs regarding the construction of the scheme. TORs will be including the training and submission of reports in the following area:

1) Handling of Machineries in a safe way
2) Use of PPEs
3) Maintenance of vehicles and submission of Environmental Monitoring Reports
4) Maintenance of Water Consumption records
5) Testing of water and waste water and submission of Environmental Monitoring Reports
6) Placement of safety signs/boards during construction
7) Sprinkling of water on the roads and dusty tracks
8) Monitoring of generator emissions

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

5.3 Summary of impacts and their mitigation measures

Table 14: Summary of Impacts and their Mitigation Measures

Impacts	Mitigation Measures
Project Location	
▪ Acquisition of land ▪ Loss of environmentally sensitive areas ▪ Changes in traffic pattern ▪ Potential conflicts with stakeholders ▪ Resettlement issues	✓ There is not any sensitive area near the project site. ✓ Many other industries are also expected near the project site. ✓ The project proponent will achieve the PEQS at the boundary walls of the subject project to avoid the environmental impacts on the nearby industrial unit. ✓ There is no need to change the traffic pattern due the development of the subject project because few industries have been developed at the same road. ✓ It is recommended to settle the issues through scoping and specific group discussions. ✓ No resettlement issues. ✓ It is recommended for obtaining of approval from other relevant departments.
▪ Soil structure and soil bearing capacity ▪ Road infrastructure design ▪ Emergency exits ▪ Firefighting system ▪ Wastewater disposal system design ▪ Electricity hazards	✓ Safe road infrastructure design should be provided at the project site. ✓ Emergency exit points should be marked at the project site. ✓ Firefighting equipment must be maintained at the site in good working condition to cope with any emergency situation. ✓ Efficient wastewater disposal system should be designed for proper treatment of wastewater. ✓ Electricity system should be designed safe and sound.
Construction and Operation phase	
Land & Soil	
▪ Land or Soil Erosion during the construction phase ▪ Habitat destruction ▪ Scarring of the landscape and aesthetic beauty. ▪ Clearing of native plants will disturb the complexity of the ecosystem of the proposed area. ▪ Leakage of oil from storage area may contaminate soil	✓ Sprinkling of water is recommended ✓ After construction phase, the project proponent will restore the land by plantation. ✓ All spoils will be disposed of as desired and the site will be restored back to its original conditions Aesthetics of the area will be maintained. ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire.

Air pollution and Dust emission	
▪ The transportation of the project machineries and material also may cause dust. ▪ Un-metaled roads may cause dust. ▪ Dust raised on dirt tracks by project-related vehicles. ▪ Dust from drilling of deep holes. ▪ Combustion products from vehicles used for project-related activities	✓ Air emissions controlled devices must be installed to control the air pollution (if any) ✓ Water the construction site periodically to minimize fugitive dust generation while laying foundation. ✓ Store all construction materials in a manner to minimize generation of dust and spillage on roads. ✓ During excavation works drop heights will be minimized to control the fall of materials reducing dust escape. ✓ Sprinkling of water must be done to control the dust or PM ✓ Vehicle emissions inspection should be done on regular basis ✓ Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. ✓ Vehicles/ trucks should be serviced regularly ✓ All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke.
Noise	
The major sources of the noise at proposed project site are project related machinery.	✓ Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff of the subject project.
▪ High noise level cause hearing loss, deafness, high blood pressure, headache, depression and mental disturbance. ▪ Noise level will not exceed 75 dB(A) at the distance of 2 km radius, activity site is located at a safe distance from the nearest human settlement . ▪ Noise from construction activities from site preparation, earth works, foundation and plant equipment installation	✓ Proper maintenance and tuning of the vehicles should be done. ✓ Sound proof room should be built for generator (if any) to control the noise. ✓ A speed restriction of 40 km/h will be imposed on all construction vehicles.
Waste Water	
▪ Domestic waste water from the camp ▪ Minor generation of waste water from construction activity. ▪ Water Contamination due to improper storage of construction material, ▪ Water contamination due to improper debris disposal, ▪ Spread of diseases, underground water contamination	✓ Domestic waste water will be drained out in nearby local drain after treated in septic tank which will be installed within facility of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited. ✓ Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which

	should be safe from rainfall.

Solid waste	
▪ Solid waste may generate from construction activity, domestic and packing material of project related machineries. ▪ Solid waste may generate from operation of project.	✓ A solid waste management division should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. ✓ Solid waste generated from the construction activity as sand, stones residues etc. that should be utilized in restoration of the quarry area whereas solid waste from the domestic sources should be disposed of properly ✓ Proper solid waste management system is recommended for industrial unit. ✓ Industrial ecology practices will be adopted wherever possible. ✓ 7 R's of sustainability is recommended ✓ Sludge will be removed and dispose of in scientific way. ✓ Solid waste related to the operation will also manage in scientific way.
Health and Safety	
▪ Health and safety issues will be arose during construction activity, handling of material, machinery and improper practices of work ▪ Health and safety issue may arise during regular operations	✓ Use of PPEs should be implemented at workplace. ✓ First aid measures/medical facility should be provided to project related employees. ✓ Safe drinking water must be provided to workers, staff, and poor people of the area. ✓ Water consumption records should be maintained. ✓ Safety signs & boards should be placed at during construction activity. ✓ Construction site should be fenced properly to avoid any damage to nearby settlements. ✓ Smoking or any drugs should be prohibited during working hours or performing work. ✓ At the time of earthwork, fencing will be ensured for the area under the exploration.

5.4 Equipment Maintenance Detail

The management of the subject project will maintain records for Health, Safety & Environment and will hire Environmental / unit manager to check and deal with the unit issues. All mobile equipment is to be inspected and maintained according to the following Equipment Inspection Schedule as a minimum. Records of all inspections and maintenance are completed and maintained for review and approval. Maintenance of equipment, release of lubrication fluids, etc., is performed only in approved areas. Spills and leaks from equipment are cleaned up promptly.

Table 15: Equipment Inspection Detail

Type of Equipment	**Type of Inspection**	**Schedule**
Cranes – Crawler, Truck, Hydraulic, etc.	Complete inspection and certification	Before put to work and annually
	Critical items, controls, overall functioning	Daily
	Safety device, hooks, cables, electrical	Monthly
	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer‘s recommendation
Heavy Equipment	Complete inspection	Before put to work
Dozers, Backhoes	Complete inspection	Every 3 months
Compactors, Trucks	Repair	When failure occurs
	Preventative maintenance	Manufacturer‘s recommendation
	Operator‘s checklist	Daily
Miscellaneous	Complete inspection	Before put to work
Compressors, Welding Machines, Generators	Complete inspection	Every 3 months
	Repair	When failure occurs
	Preventative maintenance	Manufacturer‘s recommendation

5.5 Environmental Budget

The cost which is required to effectively implement the mitigation measures is important for the sustainability of the Project in operation stage of the Project. Management will allocate 2% of total cost of the project as Environmental Budget for meeting the following purposes:

Table 16: Allocation of Environmental Budget

HSE training	On quarterly basis
Maintenance and management of environment	On regular basis
Maintenance of equipment	On regular basis
Restoration	As per requirement
Plantation	During the operation phase
Availability of PPEs	During construction and operation
Strategic planning to cope with any emergency	As per policy
Formulate the disaster management plan to cope with natural disaster	As per policy

Implementation of all these parameters will be included in the environmental budget. Any equipment failure will not be included in this budget.

5.6 Environmental Management Plan for M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited

Table 17: Environmental Management Plan

Sr. #	Aspects	Impact & Mitigations to be taken			
		Impacts	**Mitigation measures Construction/Operation**	**Responsibility**	**Monitoring**
Land acquisition for the proposed project					
1	Land acquired for the subject proposed project	Nil	The site proposed for the subject project is the property of the M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited.	Proponent	Environmental Consultant/ EPA PUNJAB
Land use & soil erosion					
2	Land Use & Soil	Particulate Matters (PM) pollution, Clearing of the vegetation Undulated patches. Scarring of the landscape and aesthetic beauty. Clearing of native plants will disturb the complexity of the ecosystem of the proposed area. Dust emissions will be generated during the construction. Flue gases will be generated due to the involvement of generators and other machinery.	Measures will be taken to avoid soil erosion and dust pollution. Restoration and reclamation plan will be developed to restore the natural landscape of the area. Plant nursery, garden will be developed to rehabilitate the native plants of the area. Project proponent will make all possible efforts to limit the impact on flora and fauna. The Management has serious concern and will take measures to preserve the environment and natural aesthetic beauty of the site.	HSE Department	Environmental Consultant/ EPA PUNJAB
Ambient Air Quality					
3	Air Quality	Particulate matter and fugitive dust emissions. Dust emission due to vehicles on un-metaled roads. Dust due to Construction. Dust raised on dirty tracks by project-related vehicles. Dust	Sprinkling of water is recommended on dusty roads and unpaved tracks to control the generation of dust and PM. Water the construction site periodically to minimize fugitive dust generation while laying foundation. Store all earthwork and construction materials in a manner to minimize generation of dust and spillage on roads.	Manager Operation	Environmental Consultant/ EPA PUNJAB

		emission during earthwork Gaseous emissions from the vehicles Air pollution due to site visiting vehicles/ transporting trucks, hauled trucks, machinery.	During excavation works drop heights will be minimized to control the fall of materials reducing dust escape: Temporary cover may be provided for earthwork if necessary. Vehicle emissions inspection should be done on regular basis. Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. Vehicles/ trucks should be serviced regularly. All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. Regular monitoring is recommended to check the compliance with PEQS as per EPA PEQS Rules.		
Noise & Vibration					
4	Noise	The major sources of the noise at site are project related machinery. High noise level cause hearing loss, deafness, high blood pressure, headache, depression and mental disturbance. Noise level will not exceed 75 dB (A) at the distance of 2 km radius, project site is located at a safe distance from the nearest human settlements. Noise from construction activities from site preparation, earth works, foundation and plant equipment installation.	Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff of the subject project. Proper maintenance and tuning of the vehicles should be done. Sound proof room should be built for generator (if any) to control the noise. A speed restriction of 10 km/h will be imposed on all construction vehicles. Regular monitoring is recommended to check the compliance with PEQS as per EPA PEQS Rules. Noise level monitoring was conducted at different location and results are attached with the report.	HSE department	Environmental Consultant/ EPA PUNJAB
Soil Contamination					
5	Soil contamination	Contamination of soil due to oil and other chemicals leakage or spillage Soil	SOPs will be developed for the storage of oil and other chemicals handling and transportations (if any) Soil contamination must	HSE Department	Environmental Consultant/ EPA PUNJAB

		contamination due to waste water generated from the project activities	be controlled by adopting mitigation measures such as storage of oil, fuels etc. under paved area, by maintaining leakage record of construction vehicles, and by regular inspection (admitted by proponent). Septic Tank should be installed during construction and operational phases of the project to treat the wastewater. Water from Septic tank must not be injected into the sub soil. Tarpaulin sheets should be placed under generators and other leaching substances (if any) Treated water will be used for plantation. Proper storage of oil, fuel etc. is recommended under paved area.		
Health and safety					
6	Health and safety	Health & safety issues of workers and nearby community.	Trainings of the workers is recommended for health & safety, first aid and firefighting. Proponent must provide First aid facilities to workers in case of any injury or accident. Safe drinking water must be provided to workers, staff, and poor people of the area. Water consumption records should be maintained. Provision of Proper PPEs must be ensured at workplace. Assembly point and exit points must be available at workplace. Electric wires, D.Bs must be kept covered & closed to avoid any electric hazards. Smoking or any drugs should be prohibited during working hours or performing work. Safety signs & boards will be placed at the time of construction activity. Security guards will be appointed at the construction site. At the time of construction and earthwork, fencing will be ensured for the area under the exploration. Further proper housekeeping and safety arrangements must be ensured at the subject project.	HSE Department HSE Manager has already been hired Trainings have been conducted All documentary proofs are attached with this report.	Environmental Consultant/ EPA PUNJAB

Waste Water					
7	Waste water	Minor generation of waste water from construction activity. Water Contamination due to improper storage of construction material, Water contamination due to improper debris disposal, Waste water pollution, Spread of diseases, underground water contamination	Waste water generated from the constructional activity will be used as sprinkling on the dusty tracks or for restoration of the land. Waste water monitoring is recommended on regular basis. Waste water treatment facility is recommended for each individual industry to treat waste water. After the treatment in wastewater treatment facility, water will be disposed of in the wastewater collection system present at the project site and will be disposed into nearest drain.	Waste will be drained out into nearest drain after treatment in septic Tank	Environmental Consultant
Solid waste generation					
8	Solid Waste Generation	Land & soil contamination, aesthetic degradation, foul smell etc. Solid waste generation from the construction activity, domestic and project process sources	A solid waste management division will be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. Constructional waste must be utilized for road filling or maintenance purposes. Recycling of material should also be implemented up to possible extent. Existing Project related solid waste should be handed over to contractors. Sludge from the septic tank must be replaced on regular basis. It is recommended to ensure Proper housekeeping. It is recommended to adopt proper waste management system. Industrial ecology practice will be adopted wherever applicable and possible. 7 R‘s of sustainability is recommended.	HSE Department	Environmental Consultant/ EPA PUNJAB
Odor					
9	Odor	There will be no source of odor from the both construction and operation of the project	Nil	NA	

Energy requirement					
10	Energy requirement	Resource depletion	Do not waste the energy/electricity when there is no need of it. Use energy efficient machinery and equipment Use energy saving products Conduct and maintain records for energy audits Do not leave the machinery in running form when there is no working being done Machinery must never be left unattended It is recommended to save and conserve the energy and adopt energy efficient technologies during the construction phase	HSE Department	Environmental Consultant/ EPA PUNJAB
Socio economic impacts					
11	Resettlement	Resettlement issues	The proposed area under the investigation is devoid-off any human settlement and it is the property of the M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited.	NA	NA
12	Language	Change in cultural language	Maximum employment of Local people is recommended to preserve the local cultural language. It will help in communication with the local people to resolve any emerging issue near the project area	Proponent	NA
13	Education	Change in social behavior and economic gains	School and colleges exist in the area. The project proponent must initiate an educational awareness program with the coordinator of the local people.	Proponent	NGO survey
14	Health	Social performance of the individuals in the area	The project proponent shall assist the local impacted community for the improvement of health services Health clinic must be established for the project workers.	Proponent	Proponent
15	Culture and norms of the area	Change in culture by the influx of nomadic people	Maximum local employment should be ensured to preserve the culture of the area	Proponent	NGO survey/Environmental Consultant
16	Sewage and waste disposal	Diseases caused by improper sanitation	Subject project will uplift the economic status of the nearest human settlements. Awareness program will be initiated regarding the disposal of waste.	Proponent/ local NGO	NGO survey/ Environmental Consultant

5.7 Proposed Environmental Monitoring

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

Table 18: Environmental Monitoring

Sr. No.	Parameters	Monitoring Schedules	Monitoring Duration
1.	Ambient Air Monitoring (NOx, COx, SOx, PM10)	Quarterly	8 Hours
2.	Noise Level	Quarterly	Instant
3.	Water quality	Quarterly	Some parameters on site, Others in lab

6 Stakeholders and Public Consultation

The consultation process with various stakeholders of M/S Fayyaz Ghee & Cooking Oil Mills (Pvt.) Limited.has been carried out to involve community and other stakeholders at earlier stages. Information dissemination during public consultation is fundamental to successful conclusion of the Project. This chapter describes the objectives and details of the consultative process adopted; its outcome and the conclusions drawn thereafter. Public consultation has been done during the planning and design phases of the Project with line agencies and affected persons of the Project area; concerns and suggestions thereafter have been taken into account and included where appropriate. The consultative process to date has been effective in addressing the concerns over the Project construction and operational impacts.

6.1 Objectives of Consultation

Public consultation plays a vital role in studying the effects of any development project on stakeholders and in its successful implementation and execution. It affords an opportunity to exchange knowledge with those who as members of the society are concerned with the Project, immediately or remotely. Referring particularly to a Project related to environmental assessment, involvement of public is all the more essential, as it leads to better and more acceptable decision-making.

The objectives of the stakeholder and Public consultation conducted in Project Area were;

- To apprise the Project community and stakeholders about Project interventions and potential impacts.
- To record the community concerns and recommendations regarding the proposed Project.
- To address/incorporate those recommendations in the Project design to the extent possible and;
- To share the mitigation measures with the local communities.

6.2 Consultative Aspects

The proposed Project involves stakeholders from various segments of the society, who have direct or indirect interest in the developmental activity. The Environment and Social team has endeavored to hold consultative sessions with a number of prominent stakeholders (Project Proponent, line agencies, NGOs and affected persons of the Project Area) to evince their views on the proposed Project and their opinions, suggestions, understanding on various issues and concerns. The consultations aimed specifically at:

- Dissemination of Project information through discussions, education and liaison.
- Eliciting the comments and feedback on the proposed Project.
- Documentation of information narrated by the stakeholders.
- Documentation of mitigation measures proposed by the stakeholders.
- Incorporation of public concerns and their addresses in the EIA/EMMP.

6.3 Identification of main stakeholders

There are two types of stakeholders related to the project i.e. primary and secondary stakeholders. Primary stakeholders are those which are directly affected by the Project activities and secondary stakeholders are those which are affected indirectly.

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

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

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

6.4 Meeting with stakeholders

A series of consultation was carried out with stakeholders and general public in RYK-IE and nearby areas. Further list of official stakeholders and local people consulted is attached as Annexure-E.

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

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

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

6.5 Analysis of Stakeholders Consultations

6.5.1Sample Size

14 sample sizes were selected by the Team of consultants for conducting the socioeconomic survey. Neighbors near the project site were also consulted for the said survey; their names are mentioned in the list of respondents while most of them were not aware about the environmental issues.

6.5.2 Statistical Analysis

SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site through questionnaires.

6.5.3 Result and discussion

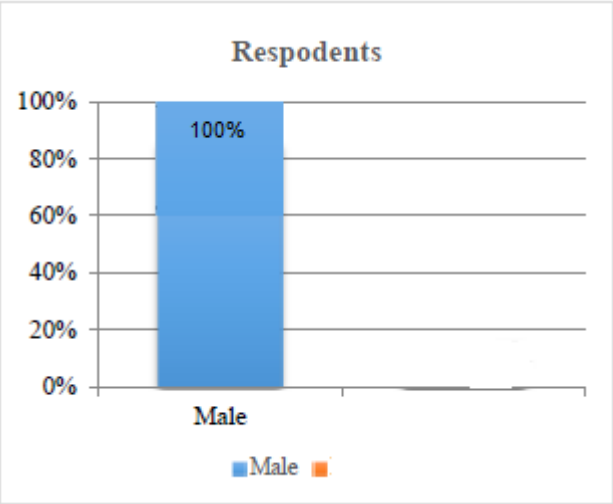


Figure 10: Gender Ration of Respondents

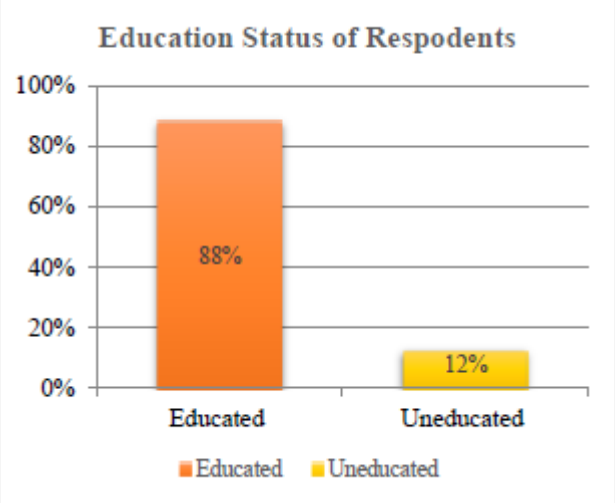


Figure 11: Education Status of Respondents

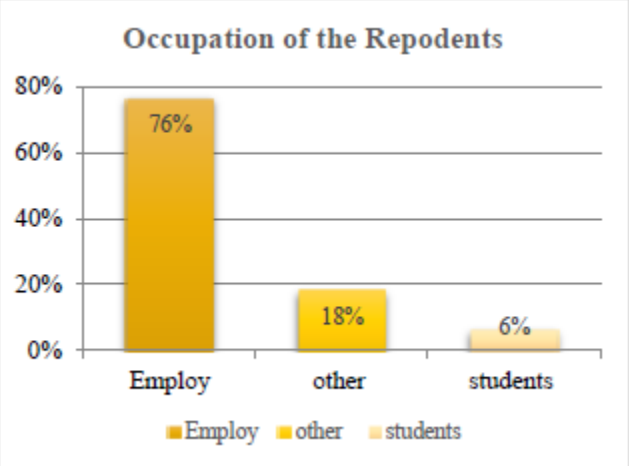


Figure 12: Occupation of Respondents

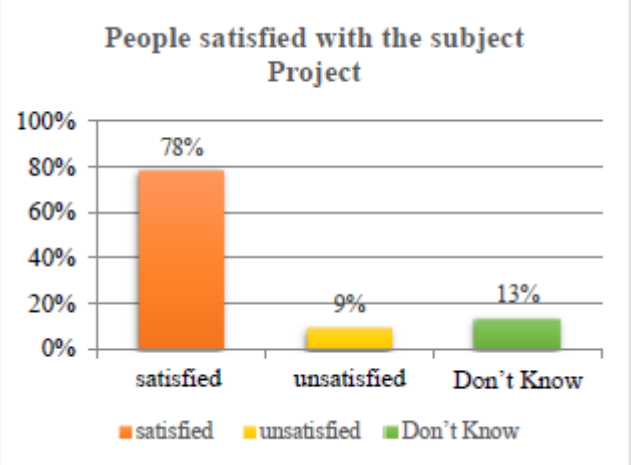


Figure 13: Satisfaction of Respondents

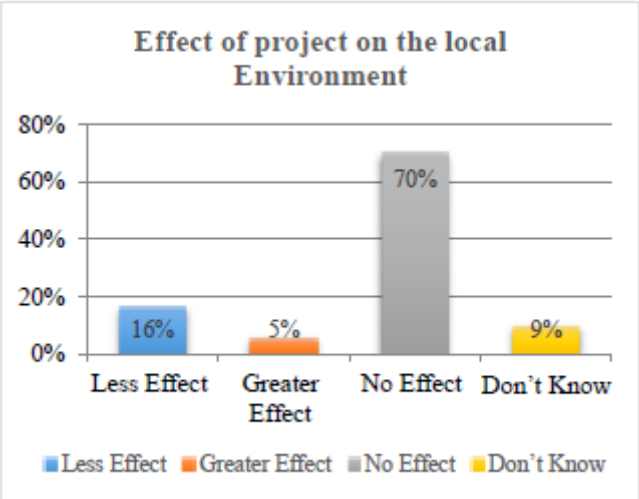


Figure 14: Effect of project on local Environment

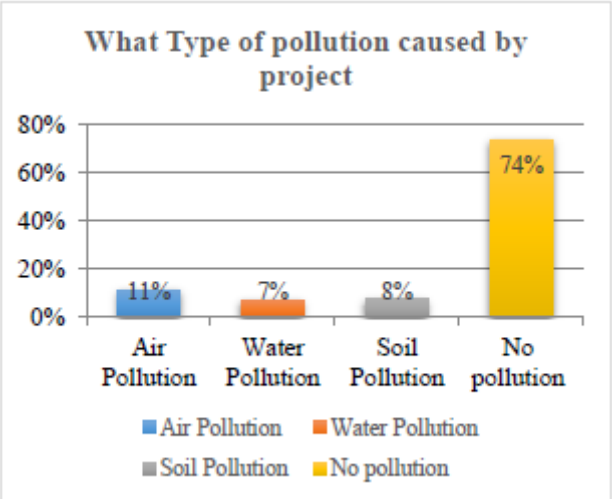


Figure 15: What type of pollution caused by project?

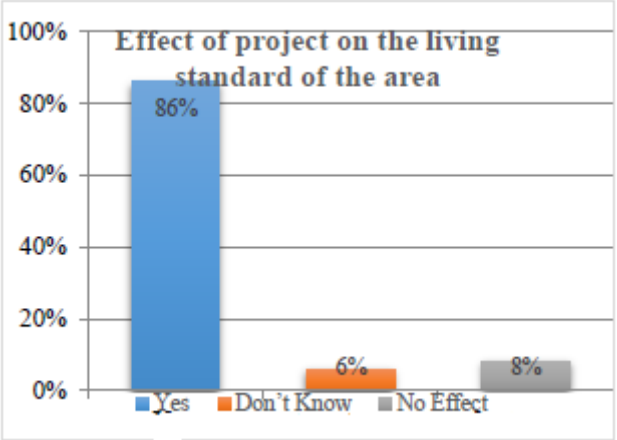


Figure 16: Effect of project on living standard of area.

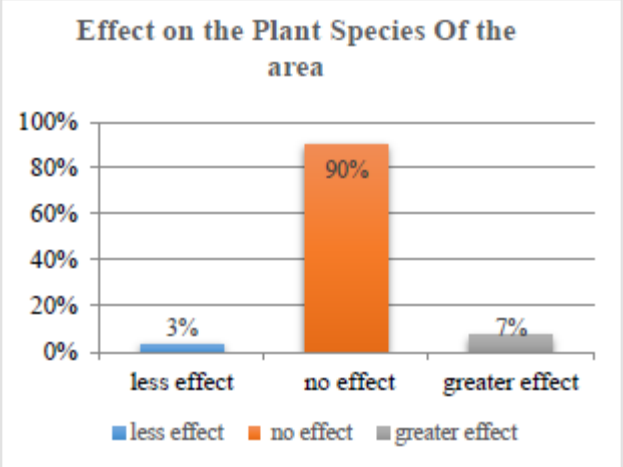


Figure 17: Effect of plant species of area.

According to graphical representation,100% respondents were male.88 % respondents were educated while 12% were uneducated. So, according to the survey overall education status of the area is good. As per survey, 78% people were satisfied with the proposed project and they gave positive remarks regarding proposed project as they got job over there, their living standard raise over working there. While 13% respondents were, have no opinion regarding the project and 9% respondents were not satisfied with the production unit due to their concern regarding the aesthetic degradation and no preference to local people for jobs. Majority were in favor that no effect will produce by this project.

6.6 Summary of issue raised by stakeholders

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

Table 14: Summary of issues and commitments by Proponent

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally, skill and unskilled labor will be prioritized and also there will be job in executive level. Around 80-90 person will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. Installation of training facilities in for worker of the company and students will also be accommodating.
Health & safety	Truck traffic is a main concern because the road used by the Project passes through a number of small communities and different industries and there will be a high volume of trucks transporting concentrate.	Traffic safety training. Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local businesses want to receive support in terms of finance and facilities to diversify their businesses. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation. Increased waste along project boundary and around economic zone.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A Participatory Environmental Monitoring Program will be launched to spread awareness.
Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program.

CHAPTER No: 07

7 Conclusion and Recommendations

Based on the study conducted for Environmental Impact Assessment (EIA) for the subject project, the following conclusions are made:

7.1 Conclusion

The EIA study reveals that the project is economically viable and socially acceptable and the management will implement the project in the environment friendly manner. Management will adopt all the necessary measures to control any impact if resulting from the project. Management will provide the safe drinking water, safe working environment, proper training and first aid facility to all workers and staff. The project will generate additional jobs during construction and operation phases.

7.2 Recommendations

- In view of the comprehensive screening process and findings of the present study, there is no need of conducting further investigations.
- Tree plantation inside and near the project, area is recommended.
- The Management of will continue to assist the local communities as a corporate/social responsibility (CSR).
- Any seepage and leakage will be controlled through proper mitigation measures (if any)
- Sound proof room should be constructed for generator to control its sound.
- Use of narcotics and smoking must be prohibited during working, filling or handling of fuel.
- PPEs must be provided to workers such as gloves, masks, etc.
- Proper solid waste management system must be adopted.
- Safety signs, safety board‘s etc. must be placed on site during various developmental stages.
- Machinery will never be left in running condition.
- First Aid measures, health & safety Equipment (PPEs) will be provided to workers.
- Fire Fighting station & system will be installed.
- The management of subject project will assist the local communities as a corporate social responsibility.
- Jobs and employment will be provided to the local area.

The present EIA report is enough to meet the administrative and legal framework. After the complete study of the project, it is concluded that project will not have significant adverse impacts on the nearby community and on environment. Overall the project will have positive impacts on the local population and country as a whole. Therefore, it is requested for the environmental approval for the subject project.

8 References

- https://www.epa.gov/sites/production/files/2015-10/documents/njmc-wpp-2.pdf
- Schedule I of Punjab Environmental Protection Act 1997 (Amended 2012)
- Section 12 of Punjab Environmental Protection Act 1997 (Amended 2012)
- Pakistan Environmental protection act 1997
- Punjab Environmental Protection Act 1997 (Amended 2012)
- Guideline for the Environmental Assessment
- Regulations of Environmental Assessment, Regulations 2000
- National Conservation Strategy- Pakistan
- Guideline for the public consultation
- National Resettlement Policy and Ordinance
- National Environmental Quality Standards (Self-monitoring and reporting by the industry)
- Labor laws
- Canal And Drainage Act, 1873
- National Environmental Policy 2005.
- The Land Acquisition act, 1894
- The Punjab local Governmental ordinance, 2001.
- Meteorological data from meteorological department and website
- Pakistan Biosafety rules 2005
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9 Glossary

Words	Dictionary
Aesthetic	Concerned with beauty or appreciation of beauty.
Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.
Construction Waste	Waste generated from the buildings and construction industry and includes material like bricks, concrete, tiles, debris, ceramics and more.
Compliance	Acting according to certain accepted standards
Demarcated	Separate clearly, as if by boundaries
Demographic	A single vital or social statistic of a human population, as the number of births or deaths.
Drainage	Natural or artificial removal of surface and sub-surface water from an area.
Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Flora	All the plant life in a particular region or period
Fauna	All the animal life in a particular region or period
Impact	The action of one object coming forcibly into contact with another.
Legislation	Law enacted by a legislative body
Mitigation	The action of lessening in severity or intensity
Proponent	A person who advocates a theory, proposal, or course of action.
Stakeholder	
Screening	The display of a motion picture
Substitutions	An event in which one thing is substituted for another
Regulations	An authoritative rule
Stakeholders	A person or organization with an interest or concern in something
Vulnerable	Susceptible to attack