

LIST OF ABBREVIATIONS

CO₂	Carbon dioxide
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
IEE	Initial Environmental Examination
Ltd.	Limited
LTI	Loss Time Injury
LWI	Loss Work Injury
m³	Cubic meter
m³/h	Cubic meter per hour
MW	Megawatt
M/S	Messrs

NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPC	Pakistan Environmental Protection Council
PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SMART	Self-Monitoring and Reporting
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
WAPDA	Water and Power Development Authority

EXECUTIVE SUMMARY

INTRODUCTION

The executive summary presents an overview of the main findings of Environmental Impact Assessment (EIA) report for the Construction and Installation of 500 m³/day Waste Water Treatment Plant (ETP) by **M/s National Foods Limited**, located at Plot # 346/347, M-3 Industrial Estate FIEDMC, Sahianwala, Tehsil Chak Jhumrah, District Faisalabad.

The organizational structure of the proponent comprises of ATC Holdings as the parent company, with its subsidiary National Foods Limited (NFL), specializing in offering convenient, healthy, and delicious food choices. NFL is a leading Pakistani multi category food company operating since 1970 with three state-of-the art manufacturing facilities in the country. The plant located at M3 Industrial City Faisalabad (MIC), established in 2023, is the largest among them. NFL produces different categories of tomato ketchup, mayonnaise, recipe mixes, spices, pickles, desserts, jams, jellies etc. NFL plant at MIC generates process and domestic wastewater which does not comply with the Punjab Environmental Quality Standards (PEQs). This wastewater is disposed of in the main drain of the MIC without any treatment.

NFL management is planning to install wastewater treatment plant at its facility at MIC to treat process and domestic wastewater prior to its disposal to comply with the PEQs. NFL has hired wastewater treatment plant design consultancy firm and its design is being prepared. As per the requirement of the Punjab Environmental Protection Act 2012, clause 12 that 'No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or, where

the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof' NFL is submitting Environmental Impact Assessment (EIA) of the proposed wastewater treatment plant at MIC for the purpose of acquiring construction and operational phase approval from the Punjab Environmental Protection Agency.

The wastewater treatment plant will be located inside the NFL facility located at MIC, Faisalabad. MIC is located along motorway M4 and its area spreads between M4, Canal Express Way and Faisalabad Sangla Hill Road. It can be approached from Canal Express Way (West Canal Road) by exiting from the Sahianwala interchange of M4.

M/S **EHS Services (Pvt.) Limited** has been engaged for conducting Environmental Impact Assessment (EIA) of 500 m³/day Waste Water Treatment Plant (ETP) of **M/s National Foods Limited**.

The main objectives of this EIA are to establish baseline environmental conditions, identify potential impacts and suggest suitable mitigation measures for the execution of the said project. This study has been accomplished in line with the provisions – guidelines and directives of Punjab Environmental Protection Agency.

This executive summary presents an overview of the main findings of the EIA Report for the aforesaid project i-e Waste Water Treatment Plant (ETP) of **M/s National Foods Limited**.

PROJECT OUTLINE

This report is related to the Installation of 500m³/day Wastewater Treatment Plant. Total area reserved for treatment plant is 600 m². The said site lies at 31.591139, 73.192583. The technology used for the proposed wastewater treatment plant is the 'Complete Mix Activated Sludge'. Total

area of the plant is 600 m². The components of the proposed wastewater treatment plant include Equalization Tank (Existing Holding Tank), Aeration Tank, Secondary Sedimentation Tank, and Sludge Belt Press. The power requirement for the operation of the plant will be 160 kW. This power will be supplied by the Faisalabad Electric Supply Company (FESCO). Electricity consumed on daily basis to operate the plant will be 3,500 KWh. The tentative implementation schedule of the proposed wastewater treatment plant will be as under:

Completion of the designing of the plant	January 2026
Completion of tendering process for the civil contractor	March 2026
Acquisition of approval for the construction phase from Punjab EPA	May 2026
Completion of civil work	July 2026
Completion of mechanical and electrical work	August 2026
Commissioning of the plant	September 2026
Operation of the plant	October 2026

The capital and O&M cost for the construction and operation of the plant will be as under:

Capital cost Rs. 120 million

O&M cost (annual) Rs. 18 million.

Salient features of project:

Sr#	Salient Features
1	Project Title Installation of 500 m ³ /day Waste Water Treatment Plant at M/s National Foods Limited.
2	Project Location Plot # 346/347, M-3 Industrial Estate FIEDMC, Sahianwala, Tehsil Chak Jhumrah, District Faisalabad.
3	Proponent Mr. Muhammad Aamir Khan S/o Khan Bahadur

		Khan
4	Consultant	EHS Services (Pvt.) Limited
5	Total Area	Approx. 600 m ²
6	Cost of Project	Capital cost Rs. 120 million O&M cost (annual) Rs. 18 million
7	Capacity of project	Approx. 500 m ³ /d
11	Technology	Anaerobic and Aerobic Treatment
12	Sludge Handling	Waste Management Contractor

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Impacts	Mitigation measures
Construction	
Dust emissions	Most of the dust generating activities during construction lasts for a brief period. Thereafter, vehicular movement generates most of the dusts. Dusts will be suppressed using water bowser to spray exposed land surfaces and particularly areas likely to be disturbed by trucks and other vehicles during the construction of the factory premises. Vehicular speed limits of 20 km/h will be ensured in order to minimize dust generation. Further mitigation measures will be: Covering haulage vehicles transporting aggregate, soil and

	cement • Covering onsite stockpiles of aggregate, cement, soil, etc. • Providing workers with the necessary Personal Protective Equipment (PPE) e.g. dust masks and ensure that they are worn • Operating well maintained vehicles and equipment
Wastewater	• As the project is only of extension by addition of Waste Water Treatment Plant so existing toilets will be used.
Impacts of accidental spillages	• The integrity of storage facilities will be ensured • Drip pans will be made available where necessary
Safety	• Safety signage will be put in relevant places within the construction site • Reckless driving by construction workers will be prohibited and monitored. • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, safety goggles, safety jackets, harnesses etc. and its use will be strictly enforced • Workers will be trained on regular basis regarding personal safety

	Incidents will be reported directly to the concerned authority
Solid waste management	- Recycling or reuse of waste wherever possible. - Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site - Integrated waste management system will be adopted for the proper management of the waste at site - At the end of the construction phase, left-over waste will be removed as per practices of area - All the idle machinery and equipment will be immediately removed from the site - Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material
Operation Phase	
Solid Waste Generation	- Training will be provided to personnel for identification, segregation, and management of waste. - Provision of Separate waste bins. - Sludge will be handled by waste contractor.

	Quantities of waste disposed will be logged on a Waste Tracking Register.
Air pollution	- No machinery will be left unattended, particularly in running condition. - All equipment used during the construction and operation will be tuned and maintained in good working condition in order to minimize emission of pollutants. - Odor emissions from the treatment plant will be controlled by proper design.
Noise & vibration	- Reducing equipment noise at source by proper design, maintenance and repair of machinery and equipment - Use noise-abating devices wherever needed and practicable. - Selection of appropriate technology and proper enclosure of machinery.
Health and Safety	- All accidents and incidents should be recorded, reported and reclaimed. - Various safety tools should be brought into use. - Preventive approach will be preferred to corrective approach. - Standardized Personal Protection Equipment (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles and

	Masks will be provided to the employees to ensure their safety at work place. • First Aid Box will be kept, which will be within easy approach of all in case of any injury or mishap. • To avoid any chance of fire, a comprehensive firefighting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and fire fighting Vehicles.
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PROPOSED ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

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:

☐ **Ambient Air**

Monitoring for ambient air should be conducted on regular basis during construction phase of the project and report should be submitted to EPA Punjab.

☐ **Noise**

Regular monitoring for noise level should be maintained periodically during construction phase of the project and report should be submitted to EPA Punjab.

☐ **Water quality**

Regular monitoring of water quality should be conducted on monthly basis during construction phase of the project and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption

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1 **CHAPTER 1:** INTRODUCTION

1.1 GENERAL

The organizational structure of the proponent comprises of ATC Holdings as the parent company, with its subsidiary National Foods Limited, specializing in offering convenient, healthy, and delicious food choices. To enhance global presence, National Foods DMCC, a Dubai-based subsidiary formed in 2012 for the Middle East, has helped expand the global footprint. National Epicure Inc. Canada, National Epicure Inc. USA, and National Foods Pakistan UK Limited are also part of the company. In 2017, National Epicure Inc. Canada made a significant move by acquiring 60% stakes in A-1 Bags and Supplies Inc., a company situated in Canada. A-1 Bags and Supplies Inc. specializes in the distribution of restaurant, industrial, and retail supplies

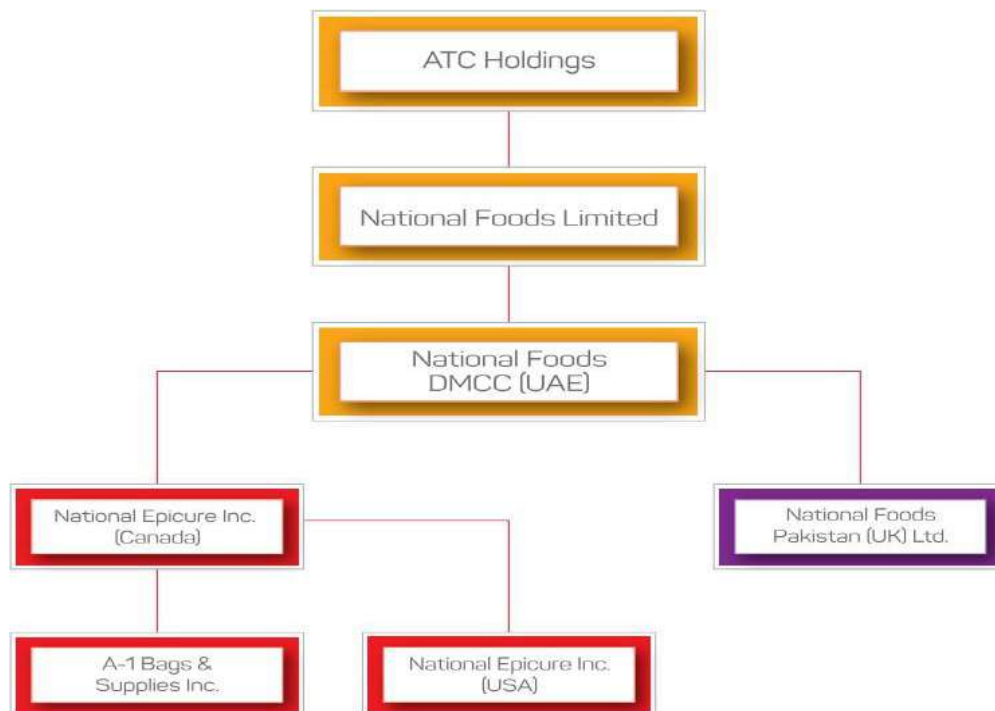


Figure-1-1: National Foods Limited Subsidiaries Organizational Chart

National Foods Limited (NFL) is a leading Pakistani multicategory food company operating since 1970 with three state-of-the art manufacturing facilities in the country. The plant located at M3 Industrial City Faisalabad (MIC), established in 2023, is the largest among them. NFL produces different categories of tomato ketchup, mayonnaise, recipe mixes, spices, pickles, desserts, jams, jellies etc.

NFL offers 250 products across 13 categories - enabling local and international consumers to enjoy traditional dishes and tastes. Exporting to 40 countries across 5 continents, NFL has subsidiaries in the UAE, UK, and Canada as well as its manufacturing facility in Sharjah as mentioned above. The company remains committed to highest quality underpinned by innovation, taking pride in multiple international certifications to uphold the highest standard products and operations.

NFL plant at MIC generates process and domestic wastewater which does not comply with the Punjab Environmental Quality Standards (PEQs). This wastewater is disposed of in the main drain of the MIC without any treatment.

NFL management is planning to install wastewater treatment plant at its facility at MIC to treat process and domestic wastewater prior to its disposal to comply with the PEQs. NFL has hired wastewater treatment plant design consultancy firm and its design is being prepared. As per the requirement of the Punjab Environmental Protection Act 2012, clause 12 that 'No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof' NFL is submitting Environmental Impact Assessment (EIA) of the proposed wastewater treatment plant at MIC for the

purpose of acquiring construction and operational phase approval from the Punjab Environmental Protection Agency

As per PEPA 2012 and the IEE/EIA Regulations, 2022 it is mandatory for the proponent of any development project to obtain Environmental Approval from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This Report presents the Environmental Impact Assessment (EIA) for aforesaid plant. For this purpose, the proponent has engaged environmental consultants, **M/s EHS Services**. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management Plan (EMP) for implementation of the project in environment-friendly manner.

The report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental Approval.

1.2 THE PROPONENT

The detail of the contact person and detail of the proponent of the project is as under:

Mr. Nadeem Ashraf

Head of Projects National Foods Limited

Plot No: 346/347, M3 Industrial City FIEDMIC Sahianwala Chak Jhumra, Faisalabad

Mobile: 0321-4376193

Email: nadeem.ashraf@nfoods.com

Website: www.nfoods.com

1.3 THE PROJECT

1.3.1 Nature of Project

The Said Project is the Installation of Waste Water Treatment Plant (ETP) of **M/s National Foods Limited**. Its salient features have been described later in this Chapter, Chapter 2 and briefly in Executive Summary of this EIA Report.

1.3.2 Location of Project

Said project will be located within vicinity of **M/s National Foods Limited**, located at Plot # 346/347, M-3 Industrial Estate FIEDMC, Sahianwala, Tehsil Chak Jhumrah, District Faisalabad Pakistan.



Figure 1-2: Location Site

1.3.3 Total area

Total area of land is approx. 600 m².

1.4 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of the said project, the proponent has hired the services of the environmental consultants; **M/S EHS Services**. Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists has worked on this report. EHS Services is one of the pioneers Environmental Consultancy Companies in Pakistan with an unrivalled reputation for providing expert, tailored services and solutions. EHS Services provides the environmental services, litigation and consultancy to clients both industry and government.

EHS Services is providing quality services in various environmental sectors i.e.

- Environmental Assessment Reports i.e. IEE/EIA
- Environment Management Plans (EMP)
- Designing of Emission Control Equipment
- Waste Water Treatment Plant (WWTP) Designing
- WWTP Construction Supervision, Commissioning and Operations
- Establishing Bottled Water Plant based on RO or UF
- Lab testing (Drinking Water & Waste Water Analysis , Soil Analysis, Sludge Testing, Petroleum/ Lube Oil Testing, Fertilizer Analysis, Pesticides in Water, Soil, Fertilizer, Coal, Coke Analysis)
- Monitoring and inspection
- Environmental modeling

Contact Details:

Focal Person	Engr. Muhammad Asif
Address	House No.#12, Street No.#06, V-Lane Cavalry Ground Extension, Lahore Cantt
Contact No.	0304-4404111, 0345-3122696

Study team:

The following table lists the names of experts involved in the making of EIA report:

Table 1-1: List of Experts

Sr. #	Name	Qualification	Role
Engineers			
i.	Engr. M. Asif	M.Sc. Chemical Engineering	Monitoring and Testing
ii.	Engr. Muzna Manzoor	M.Sc. Environmental Engineering	Designing and report review
iv.	Engr. Fahad Nazir	M.Sc. Chemical Engineering	Socioeconomic Survey
v.	Engr. Rida Azhar	B.Sc. Environmental Engineering	Report preparation
vi.	Mahtab Alam	M.Sc. Chemical Engineering	Collection of baseline data
vii.	Saad Khattak	B.Sc. Chemical Engineering	Site survey and analysis of impacts on surroundings

1.5 PURPOSE OF REPORT

The development of any Project leads to positive and adverse changes in environmental and change in 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. The

development and commencement of said project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states "No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination (IEE) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof." Later on, Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2000 provided the guidelines for categorizing the Projects. The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Said Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.

- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.6 Structure of Report

This EIA reviews information on existing environmental attributes of the Study Area. Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included. The report predicts the probable impacts on the environment due to the said project. This EIA also proposes various environmental management measures. Details of all background environmental quality, environmental impact/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided in this report. The structure of the assessment report will be as follow;

- Description of the Project
- Description of Environmental and Social Conditions
- Assessment of Environmental Impacts and Mitigation Measures
- Mitigation Measures for Identified Impacts
- Public Consultation
- Environmental Management and Monitoring Plan (EMMP)
- Recommendations and Conclusions

SCREENING & SCOPING

Screening

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 the Said ETP Installation falls under F Category of projects “**Water Supply and Treatment**” stating “Water supply schemes and treatment plants with total cost of Rs. 25million and above” mentioned in Schedule II requiring EIA

Scoping

Temporal and Spatial Boundaries:

Temporal Boundaries:

Construction period of said project is approx. 6 months. Operation Lifespan will be more than 25 years.

Spatial Boundaries:

Said project will have positive and negative impacts at local and national level. The establishment of the said project will help to reduce pollution load on environment. Positive changes in lifestyles will occur due to availability of income when the natives take up Company jobs.

Important issues and concerns raised during consultation

- Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured
- HSE plan should be enforced strictly
- Preventive measures should be adopted to avoid any unfortunate incident
- Tree plantation must be ensured
- Local employment should be ensured
- Proponent shall work for betterment of community

- Wastewater should be discharged after meeting PEQs

Significant Impacts identified in scoping:

Construction Phase	Operation Phase
Dust emissions	Odor emissions
Wastewater	Degradation of surface water quality due to discharge after improper or no treatment
Impacts of accidental spillages	Work injury/hazards/incidents/accidents
Safety	Disturbance of communities
Solid waste management	Sludge management

ALTERNATIVES

Site Alternatives

Said project is the installation of ETP of M/s National Foods Limited. The selected site is within premises of industrial estate and no other alternative site is considered for the said project. The site is well located in regard to the following:

- Within vicinity of existing unit in industrial estate
- Easy road access to the market
- No settlements in close vicinity
- No ecologically sensitive or declared protected area within safe radius of the selected site

In view of these facts, it can be concluded that the Selected Site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

Distance of selected site from different receptors is as follows:

Receptors	Name	Distances
Residence	Chak jhumra	2.93 km
	Govt. School	1.51 km
Educational Institute		
Hospital	THQ Hospital	2.73 km
	Khushi Industry	9.38 km
Industry		
Road	Sangla Hill Road	0.62 km

Considering the facts that said site is at a safe distance from sensitive receptors. The said site has advantage of not only to be environment friendly but also potentially sound to enhance sustainable development in

the region. Therefore, given site is the most suitable for establishment of said project.

✓ **Process/Technology Alternative**

Keeping in view all the environmental consideration the project site is located in an industrial area using the best suitable technology for air emission and for the treatment of wastewater. Best suited technology has been proposed for the said project including no air emission. Water mitigation techniques also considered at their best including Activated Sludge Process for wastewater treatment.

✓ **Environmental Alternative**

The unit site is located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area. Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the said Project site.

✓ **Economic Alternative**

Selected land is under ownership of proponent and no cost is required to purchase other land so it is viable and economic option for proponent to enhance the business of said unit. The cumulative effect of this types project would result in noticeable economic growth. The project will also make a positive consideration to the industrial growth

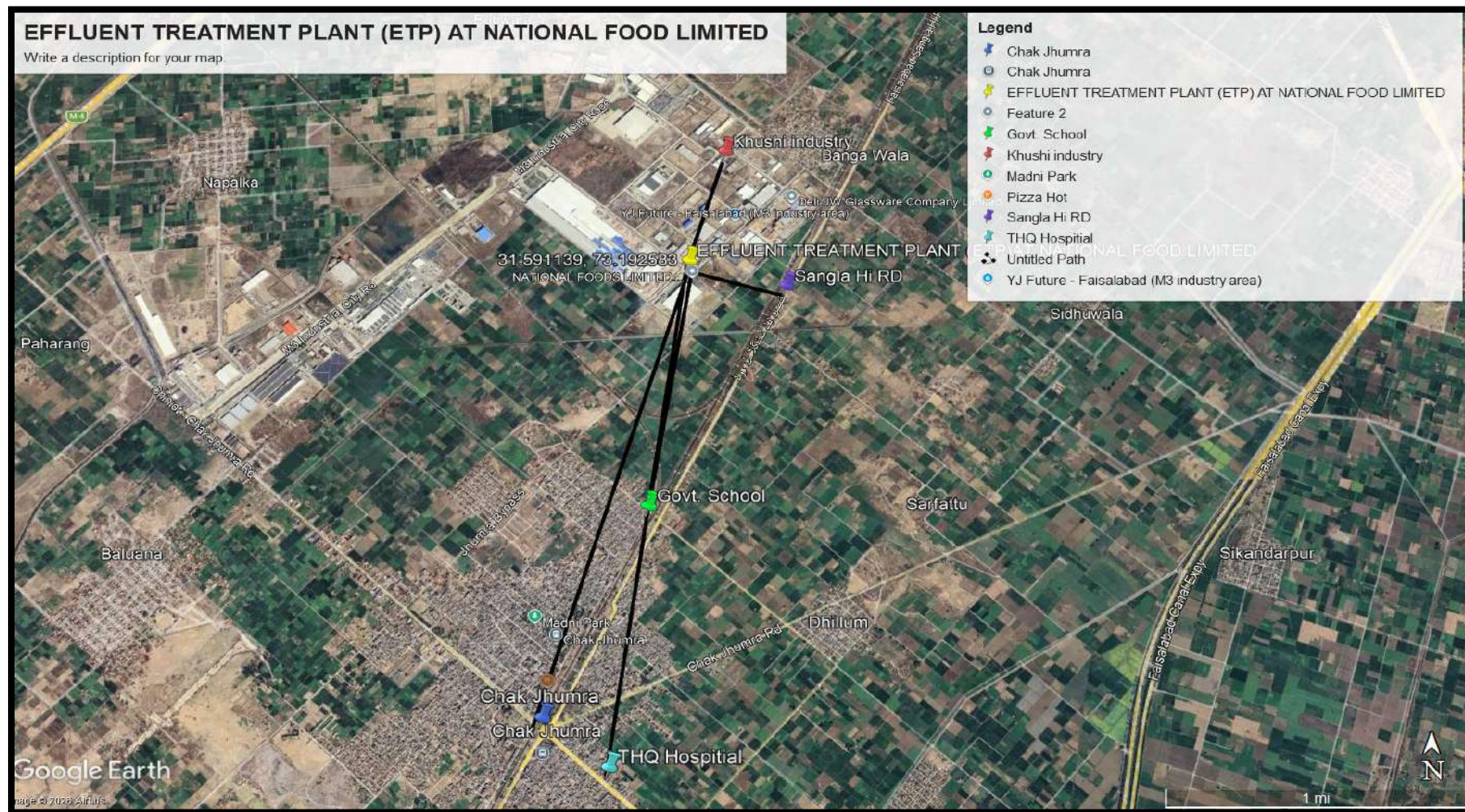


Figure 1-3: Distance of site from nearest receptors

2 CHAPTER 2: DESCRIPTION OF PROJECT

2.1 GENERAL

This section of the study concentrates on details of the project and its salient features; such as location, site layout, objectives, selection of alternatives, cost and magnitude of operation and various phases. Inputs and discharges relevant to different phases of the project, such as electricity & materials, etc. have also been examined as a response to possible environmental concerns.

2.2 TYPE AND CATEGORY OF PROJECT

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Said ETP Installation falls under F Category of projects "**Water Supply and Treatment**" stating "Water supply schemes and treatment plants with total cost of Rs. 25million and above" mentioned in Schedule II requiring EIA

2.3 OBJECTIVES OF PROJECT

The main objective of Waste Water Treatment Plant (ETP) is to cater all the wastewater of NATIONAL FOODS LIMITED (FAISALABAD PLANT. Other objectives include the reduced pollution load on Environment and to meet the effluent permit requirements.

2.4 LOCATION AND LAYOUT OF PROJECT

2.4.1 Location of the Project

Said project will be located within vicinity of M/s National Foods Limited, located at Plot # 346/347, M-3 Industrial Estate FIEDMC, Sahianwala, Tehsil Chak Jhumrah, District Faisalabad Pakistan. The said site lies at 31.591139, 73.192583.

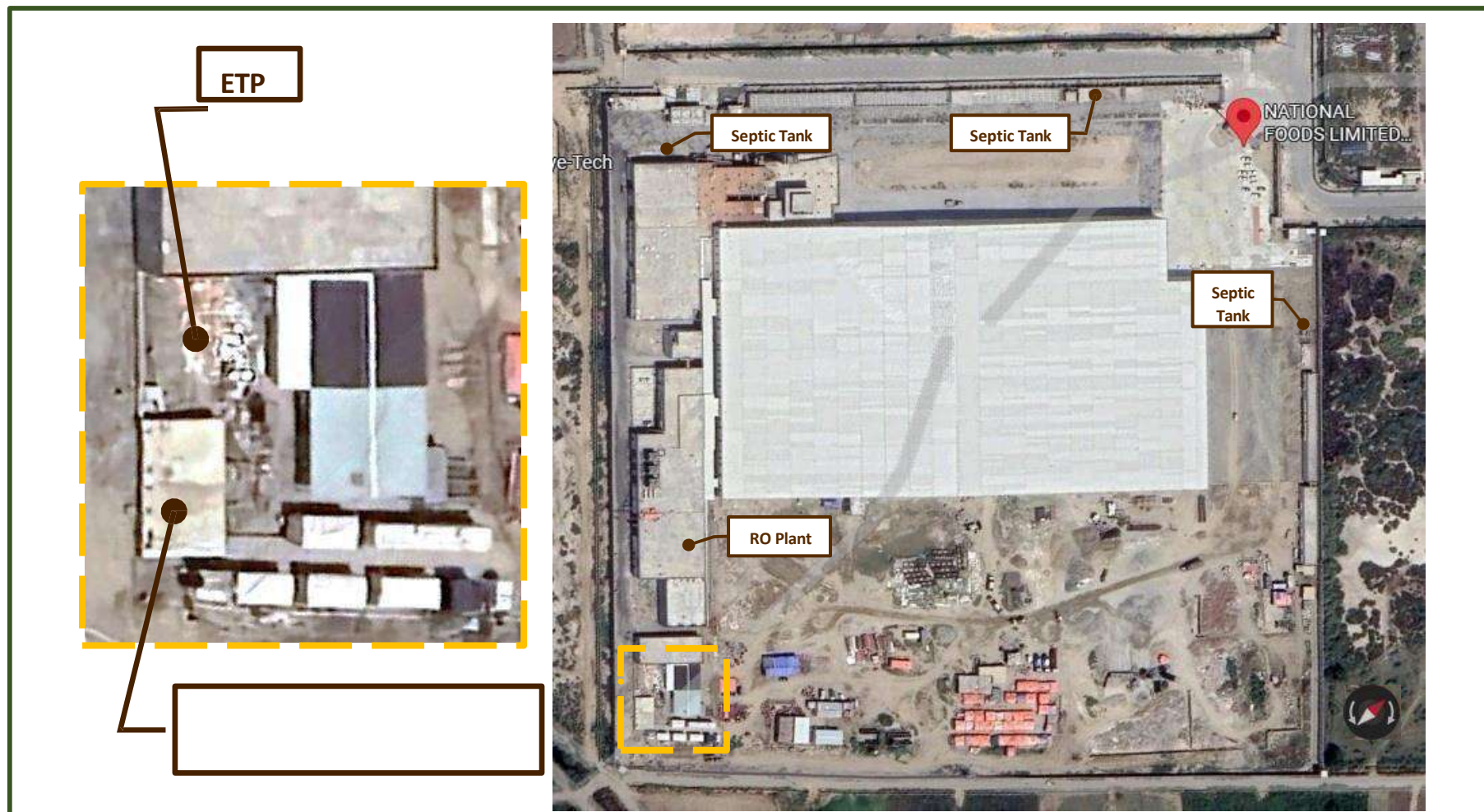


Figure 2-1: Location Map of the Site

2.5 GOVERNMENT APPROVALS

No approval is required as said project is only establishment of ETP within premises of industry.

2.6 LAND USE ON SITE

M/s National Foods Limited is already constructed at site, said project is installation of ETP within premises of industry.

2.7 ROAD ACCESS

The site is approachable via Sangla Hill Road at 0.62 km.



Figure 2-2: Road Access

2.8 VEGETATION FEATURES OF SITE

Various local plants are grown at the project site in the open areas, and along the boundary. Also the treated water will be used for cropping and irrigation purpose in nearby land.

2.9 RESTORATION AND REHABILITATION PLANS

The main areas to be considered for site restoration include the construction area, temporary tracks; land used for vehicle and material stores, material excavation pits etc. These areas should be restored to its original condition with the maximum possible effort. The restoration work comprises the removal of temporary construction works and removal of any fence installed, leveling of areas (wherever required), etc. The following procedures will be adopted for the restoration of the site:

- All temporary construction built for the site development will be removed.
- Any debris from construction activities should be removed properly from the site.
- All fencing and gates will be removed and pits will be backfilled.
- Whole of the site will be covered with the original soil to the original levels and grades and re-vegetation will be done, where required.

There exists no human settlement within safe radius of the selected project site to be displaced owing to the commencement of the said Project. No structure of any significance stands at the site to be relocated or dismantled. Nearest residence from project site is:

Residence	Distance
Chak Jhumra	2.93km



Figure 2-3: Distance of site from nearest residence

2.10 DESCRIPTION OF PROJECT

The wastewater treatment plant will be located inside the NFL facility located at MIC, Faisalabad. MIC is located along motorway M4 and its area spreads between M4, Canal Express Way and Faisalabad Sangla Hill Road. It can be approached from Canal Express Way (West Canal Road) by exiting from the Sahianwala Interchange of M4.

2.11 Design Aspects

This section describes design parameters for the proposed wastewater treatment plant and its different components. The technology used for the treatment plant is the Complete Mix Activated Sludge. Total area of the plant

is 600 m². Table 1 presents the design parameters on which the proposed wastewater treatment plant is designed

Table-1: Design Parameters for the Proposed Wastewater Treatment Plant

Parameters	Unit	Value
Influent Data		
WW flow, average daily	m ³ /day	500
Temperature	°C	33
pH	-	6.5
BOD ₅ , Total	mg/L	500
COD, Total	mg/L	1,100
TSS	mg/L	150
TDS	mg/L	4,500
Treated Effluent Data for Disposal		
TSS	mg/L	50
BOD ₅	mg/L	30
COD	mg/L	150
Treated Effluent Data for Reuse		
TSS	mg/L	< 5
BOD ₅	mg/L	< 10
Fecal coliform	count /100mL	ND
Chlorine residual	mg/L	1.0

ND Not Detectable

2.11.1 Project Components

Following are the components of the proposed Complete Mix Activated Sludge Wastewater Treatment plant:

2.11.2 Water Line

- Equalization Tank (Existing Holding Tank)
- Aeration Tank
- Secondary Sedimentation Tank

2.11.3 Sludge Line

Sludge Belt Press .

The detail of the above components is as under:

a) Equalization Tank (EQT)

First component of the plant is the equalization tank (EQT). The wastewater from production is needed to be held in the equalization tank at the beginning of the treatment process. The objective of equalization is to control fluctuations in wastewater flows and characteristics. In general, industrial wastewater with highly variable flows and fluctuating characteristics requires 12–24 hours of equalization retention to smooth out peaks and protect downstream treatment processes. For a food-processing facility, this retention range is recommended because the wastewater experiences irregular batch discharges, cleaning pulses, and other operational fluctuations. A minimum 12-hour EQT ensures that these variations are evened out and it maintains stable conditions for downstream treatment while keeping tank sizing practical for a 500 m³/day plant.

At NFL, there is an existing large holding tank, in which wastewater from production processes and reject from RO plant are mixed and stored. To ensure suspension of solid in wastewater, the equalization tank shall be equipped with either an Aeration System or mechanical agitator. Currently, the existing tank does not have any means to maintain solid suspension.

b) Aeration Tank (AT)

Second component of the plant is aeration tank (AT) i.e., two in numbers. In aeration tank, microorganisms in the presence of oxygen convert the dissolved and colloidal biodegradable organic matter in the wastewater to

mineralized products. The current worldwide practice is to base the design of activated sludge process on Solids Retention Time (SRT) and Mixed Liquor Suspended Solids (MLSS). Same is adopted here.

The type of activated sludge process employed here is “extended aeration type” because of the high COD. In extended aeration system, the SRT is high as compared to the conventional system, i.e. 20 days. In this type, a more stabilized sludge is produced accompanied by a relatively low oxygen requirement.

At startup, the MLSS concentration in the aeration tank will be significantly lower than the design requirement. During this period, 100% of the secondary settled sludge will be recirculated to optimize the aerobic biological treatment process. As operation will continue, the microbial population will gradually increase until the system reaches the desired MLSS concentration.

c) Secondary Sedimentation Tank (SST)

The third component of the plant is the secondary sedimentation tank (SST) i.e., two in numbers. The effluent from aeration tank will flow to the sedimentation tank, where mixed liquor will be allowed to settle under quiescent condition. Settled sludge will then be removed from the bottom, whereas clarified wastewater will overflow from the top peripheral weirs. A part of the settled sludge will be returned to the aeration tank, in order to maintain the mixed liquor concentration, whereas remaining sludge will be sent for sludge dewatering

a) Sludge Filter Press (SFP)

The fourth component of the plant is the sludge filter press (SFP). Sludge wasted from SSTs shall be carried to the sludge dewatering unit. Belt Filter

Press shall be provided for sludge dewatering. Polymer will be dosed inline for conditioning to achieve desirable solid sludge cake

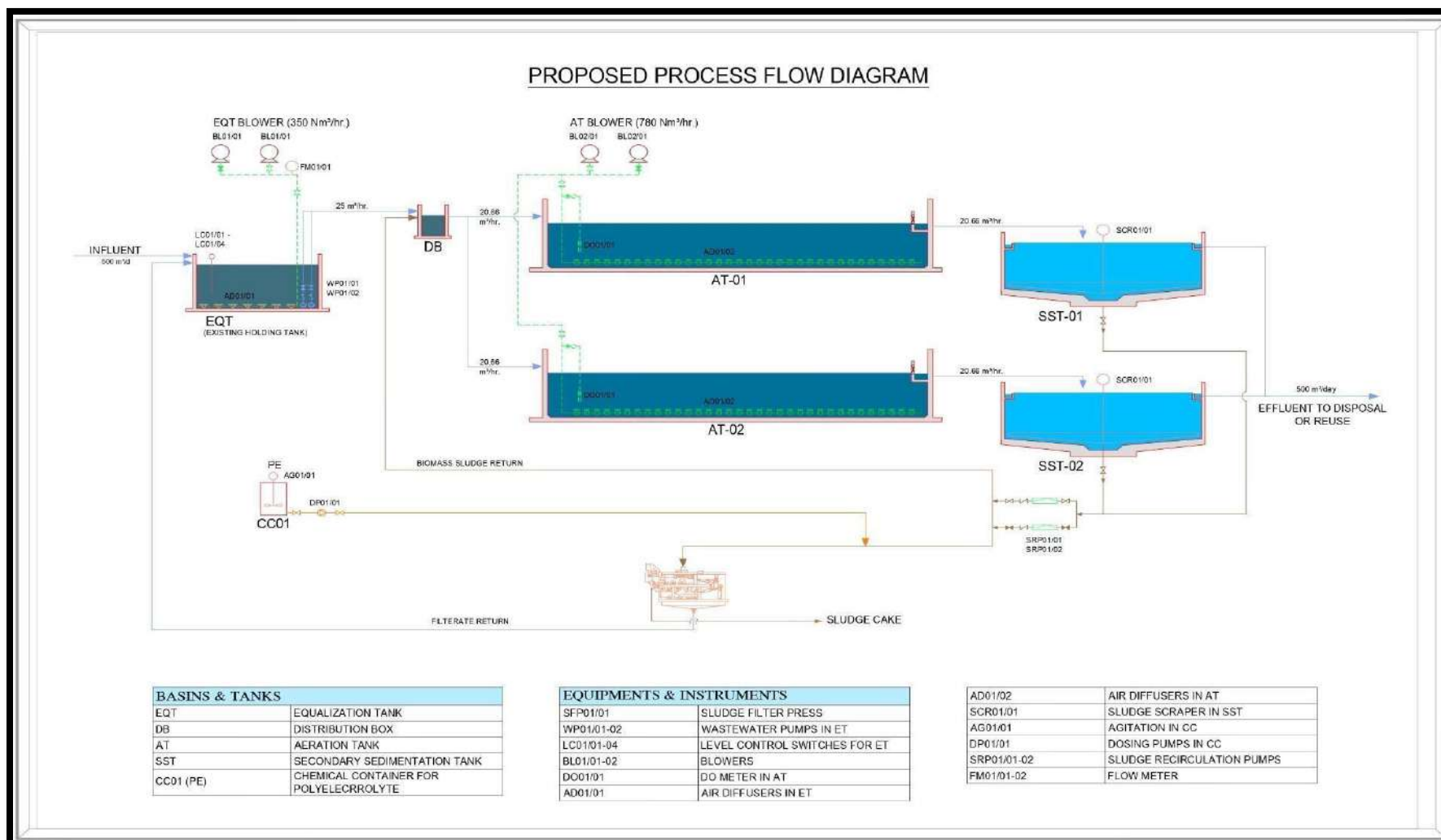


Figure2-4: Process Flow Diagram

2.12 SUPPLIES

2.12.1 Manpower (Direct & Indirect)

The Project requires manpower during both the construction and operational phases. During construction phase 30 workers will be involved. During operation phase 5-10 workers will be hired. The profile of the personnel is as follow.

- Operating staff with engineering or scientific background
- Maintenance staff, including craftsmen, with skills in one or more area (e.g. electrical, mechanical and instrumentation)
- Clerical and administrative staff.
- Locally based staff as guard and for cleaning.

2.12.2 Firefighting, evacuation plan, Health & Safety and HVAC plan

The fire-fighting system includes water and gas devices / extinguishers. Plant will establish a proper fire-fighting system. A proper evacuation plan will be formulated to cope with any emergency situation.

2.12.3 Electricity

WAPDA will be the main source of electricity for this plant. Stand-by generator will provide electricity for this Unit in load-shedding conditions.

2.13 Detail of Raw Materials, Product & Equipment

2.13.1 Actual Measurements of site

Parameters	Unit	Value
Influent Data		
WW flow, average daily	m ³ /day	500
Temperature	°C	33
pH	-	6.5
BOD ₅ , Total	mg/L	500
COD, Total	mg/L	1,100
TSS	mg/L	150
TDS	mg/L	4,500
Treated Effluent Data for Disposal		
TSS	mg/L	50
BOD ₅	mg/L	30
COD	mg/L	150
Treated Effluent Data for Reuse		
TSS	mg/L	< 5
BOD ₅	mg/L	< 10
Fecal coliform	count /100mL	ND
Chlorine residual	mg/L	1.0

2.13.2 Chemicals

Following chemicals will be used in the whole process:

- Diammonium Phosphate
- Urea

2.13.3 EQUIPMENT AND MACHINERY

No.	PFD Code	Unit / Equipment	Description	Scope	Unit	Total Amount
1	T-100	Screen Channel	Reinforced Concrete W: 0,50 m, L: 5,00 m, H: 2,00 m	Client	Pcs	1



2	S-100	Inlet Screen	Mechanical Type Material: SS 304 Cleaning: Automatic Opening: 20 mm	Yeditepe	Pcs	1
3	T-200	Equalization Basin	Reinforced Concrete W: 10,0 m, L: 10,0 m, H: 4,0 m	Client	Pcs	1
3	M-200	Mixer	Type: Submersible Make: Grundfos, Wilo or Flygt	Yeditepe	Pcs	1
4	P-200/A-C	Lift Pumps	Capacity: 50 m ³ /h @ 15 mWC Power: 3,7 kW Type: Submersible Make: Wilo, Grundfos or Flygt	Yeditepe	Pcs	2+1
5	FM-200/A-B	Flowmeter	Dimension: DN100 Type: Electromagnetic Make: Krohne (Germany) or Siemens (Germany)	Yeditepe	Pcs	2
6	S-200/A-B	Rotary Drum Screen	Material: SS 304 Cleaning: Automatic Opening: 1-2 mm	Yeditepe	Pcs	2
7	P-201	DAP Dosing System	5000 L PE Solution Tank Rapid Mixer (200 rpm) Dosage Pump (200 L/hr)	Yeditepe	Pcs	1
8	P-202	pH Adjustment System (Alkalinity)	5000 L PE Solution Tank Rapid Mixer (200 rpm) Dosage Pump (2000 L/hr)	Yeditepe	Pcs	1
9	T-300/A-B	Anaerobic Reactors	Reinforced Concrete Area: □ □ 0 m², H: 6,5 m	Client	Pcs	2



10	Z-301	Biogas Flare System	Custom Made	Yeditepe	Pcs	2
11	Z-302	Biogas Collection System	Custom Made	Yeditepe	Pcs	2

2.13.4 WASTEWATER

Wastewater after treatment will be used for cropping and irrigation purpose in proponent own land. Wastewater characteristics after treatment will be as follows:

PARAMETER	AMOUNT	UNIT
Biochemical Oxygen Demand (BOD₅)	<30	mg/L
Chemical Oxygen Demand (COD)	<150	mg/L
Total Suspended Solids (TSS)	<50	mg/L
pH	6-9	Unitless

2.13.5 AIR EMISSIONS

Air emissions are insignificant in said project. Dust emissions can occur during the construction phase. In the proposed project operation, no gaseous item is involved and hence no gaseous emission is likely to occur. Odor emissions will be controlled by installing treatment technology based on aerobic treatment. Further plantation will be done to enhance air quality.

2.13.6 Solid Waste Generation

The sludge generated from the clarifiers will be given to **the EPA Certified waste contractor for safe disposal**. Quantities of waste disposed will be logged on a Waste Tracking Register.



2.13.7 Noise

Noise emitting from the unit may have a significant impact on the local environment; especially on the health of the staff working on or near the heavy machines. As the proposed unit will be constructed within the premises of M/s **National Foods Limited**, the impacts of noise on the surrounding community will be minimum; rather negligible. Even then, administration of the unit will take the precautionary measures to avoid the noise emission that can be generated from the normal operation of the machinery. Use of hooter or vehicular horn will be restricted to only emergency uses. The administration has considered a plan for tree plantation in order to reduce the noise and make the unit environment friendly. For staff, provision of standardized PPEs (ear plugs, ear muffs) has also been planned and the unit administration will ensure their use by workers at all times.

2.13.8 COST AND MAGNITUDE OF OPERATION

Chemicals, Operation and maintenance of the machinery are the costly activities involved in the operation phase of the project. Equipment safety will be assured if these operations are carefully managed. No separate fund allocation is required. However, budget will be allocated for purchase and maintenance of standardized PPEs for workers and for waste management and environmental enhancement. Despite these costs, this project was found to be financially feasible in the feasibility report.

Cost breakup

Total cost of project is estimated at PKR 138-Million.

Amenities	Cost in PKR (Million)
Construction	
Machinery and Construction Cost	120

Operation & Maintenance Cost	18
Environmental Budget	
Ambient air monitoring	200,000/-
Noise monitoring	10,000/-
Water quality monitoring	100,000/-
Health & safety	200,000/-
Tree Plantation/Green Belts Development	250,000/-
Solid Waste Management	250,000/-

2.13.9 SCHEDULE OF IMPLEMENTATION

The project intends to take 6 months from start to completion.

Sr. #	Activities	6 Months			6 Months			6 Months			6 Months		
		2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Construction Period												
4	Peak Construction Period												
6	Installation of machinery												
7	Installation of firefighting equipments & emergency exits												

M=Month

3 CHAPTER 3: DESCRIPTION OF THE ENVIRONMENT

3.1 GENERAL

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This chapter of Initial Environmental Examination (IEE) encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

A social survey in the Project Area was also carried out through consultation with the various communities. Local residents living in the Project Area were interviewed to obtain their feedback regarding the construction of the proposed Project and its impacts on their daily life/future in the short and long term.

3.2 PHYSICAL ENVIRONMENT

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the Project site but also the city as a whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of Faisalabad city and the project site is presented in the following sub sections.

3.2.1 Topography

Faisalabad (Urdu: شورکوٹ), (Punjabi: شورکوٹ), is a city in the Punjab, Pakistan. It is also a capital city of Faisalabad Tehsil in Jhang district. It is located at 30°30'N 72°24'E with an altitude of 131 metres (433 ft). The city is famous for the tombs of Sufis Sultan Bahoo's Father and Mother known as **Mii Bap**, Syed Bahadur Ali Shah, Shah Mehmood Ghazi (also known as "Ghazi Pir") and Syed Mehboob Alam Shah Gilani. The tomb of the latter is in the centre of the town. He was sent to the Faisalabad by the Mughal Emperor Shah Alam, to spread Islam. Faisalabad is situated along the banks of river Chenab. The city is agricultural but mostly barren land. The city occupies around 404 square kilometers of land and is still expanding. The proposed project site is located near agricultural land. Commercial establishments are the main topographic features of the area. Bhango, an irrigation canal is crossing in the front proposed land.

Nearby Cities and Towns			
West	North	East	South
Darbar Shah Khalil (1.4 nm)	Chah Dalalanwala (0.8 nm)		Darban Ghazi Pir (0.4 nm)
Tekuwala (1.6 nm)	Basti Nuwani (1.3 nm)	Bihari Colony (1.6 nm)	Kotla Muhammad Zarif Khan (1.2 nm)
Faizwala (1.6 nm)	Dabbanwala (1.5 nm)	Khokhar (1.8 nm)	Haiderabad (1.7 nm)
Bastiwala (2.0 nm)	Mangan (2.0 nm)	Basti Nanak (2.0 nm)	Basti Mubarakabad (1.9 nm)
	Kallarwala (2.3 nm)		Kukranwala (2.3 nm)
	Darbar Jani Pir (2.3 nm)		Chak Eight Ghagh (2.4 nm)

Distance	Title
0.4 nm W	Chenab College. Shorkot
8.7 nm NE	Qaim Bharwana
10.7 nm N	West Punjab
11.5 nm SE	PAF Base Rafiqui
14.5 nm N	Rodu Sultan
14.9 nm N	Haveli Bahadur Shah

3.2.2 Hydrology

The sub soils and sub strata encountered in the area have been formed by alluvial deposits transported by ancient streams of the Indus River System. The unconsolidated sediments are to a depth of about 50 feet. The groundwater recharge is mainly derived from the seepage of unlined canals, watercourses and from irrigation practices. Recharge directly from rainfall is small. Also, some recharge takes place from ponds, water supply and sewerage systems.

Groundwater is the major source of water in the study area, which is extracted with the help of pumps and motors. The groundwater extracted is used to fulfill various domestic & irrigation needs. Unfortunately, the ground water of the city is quite saline, hence, not acceptable for human intake. A limited quantity of potable water is accessible to the citizens from different scarce resources. In the absenteeism of proper sweet water sources, the TMA Faisalabad city has proposed water supply to proposed land because study area exist in 2nd development area. Fortunately underground water is fit for drinking. Ground water depth is 20ft.

3.2.3 Soils

Soils form major relation with environment. They influence environment by their special qualities and more so through fertility. Types of soils besides providing food, clothes or housing population serve with special food and lumber products, medicinal plants etc.

Soil should not be taken as a lifeless residual layer but it is a very dynamic element of environment in which very complicated physical, chemical and biological activities are constantly proceeding. In this

way it is a dynamically changing and developing body. Soil scientists restrict the word soil or slum merely to the surface material, which has come to have distinct layers or horizon over the extended period of time.

Soils have different meanings for different people. To a soil scientist it means the upper a few layers created through weather effect in which plants are grown. The solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal materials.

The soils of the adjoining project area are fertile and rich in both organic and inorganic mass because the project site lies on bank of Bhango Canal used for irrigation of area.

The adjoining rural area gives higher yields of crops through the use of synthetic fertilizers and pesticides. Their irrational use is adding to pollution of soil, and water bodies.

3.2.4 Seismicity

Seismic Zoning Map of Pakistan showing Proposed Project site area is presented as

Figure - 3.1, indicating zones according to the Building Code of Pakistan - 2007. The city of Faisalabad, the project site falls in Seismic Zone 2A according to the Seismic Zoning Map of Pakistan.

Figure - 3.2 presents the WHO Seismic hazard map of Pakistan prepared for Peak Ground Acceleration (PGA) for 500 years return period, with intensity level at "medium category".

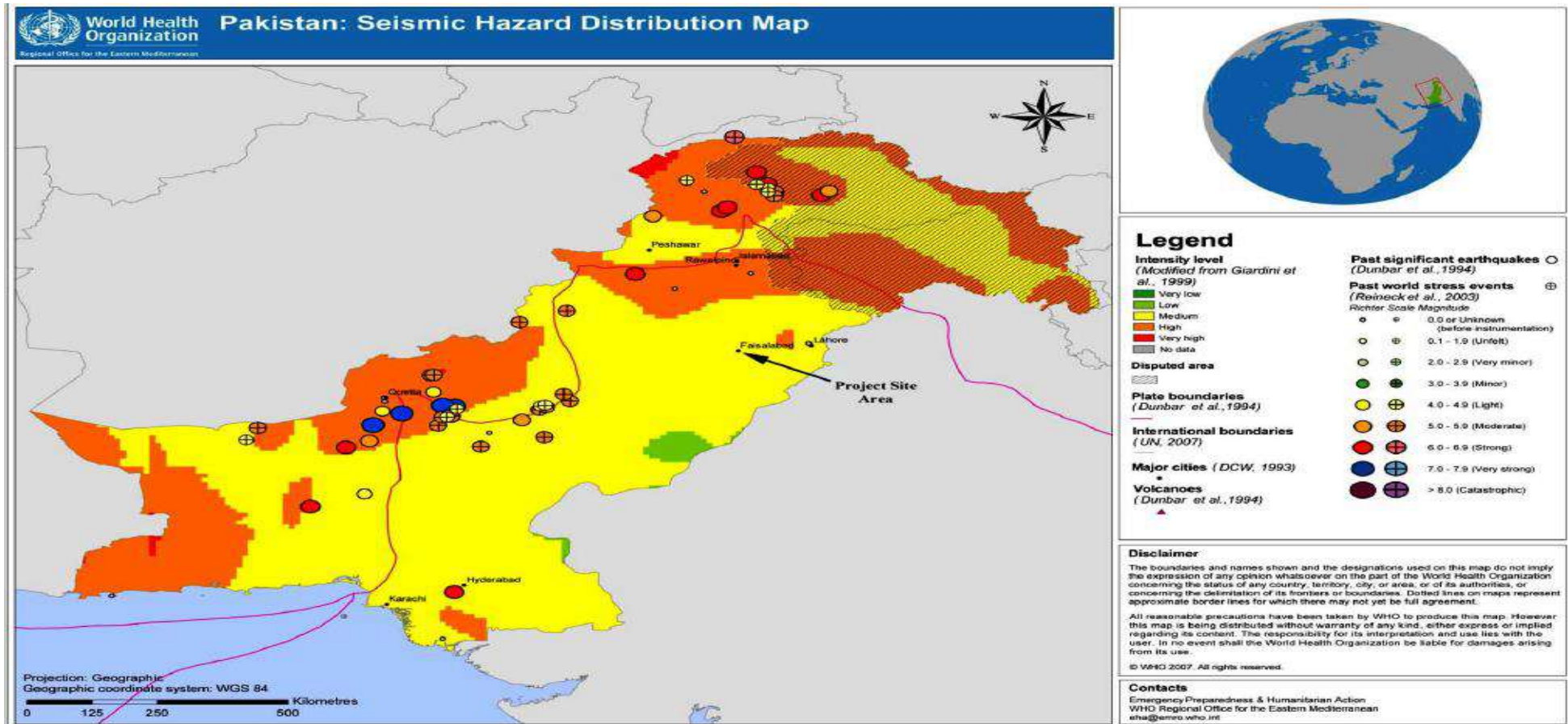


Figure 3.1: Seismic Zoning of Pakistan

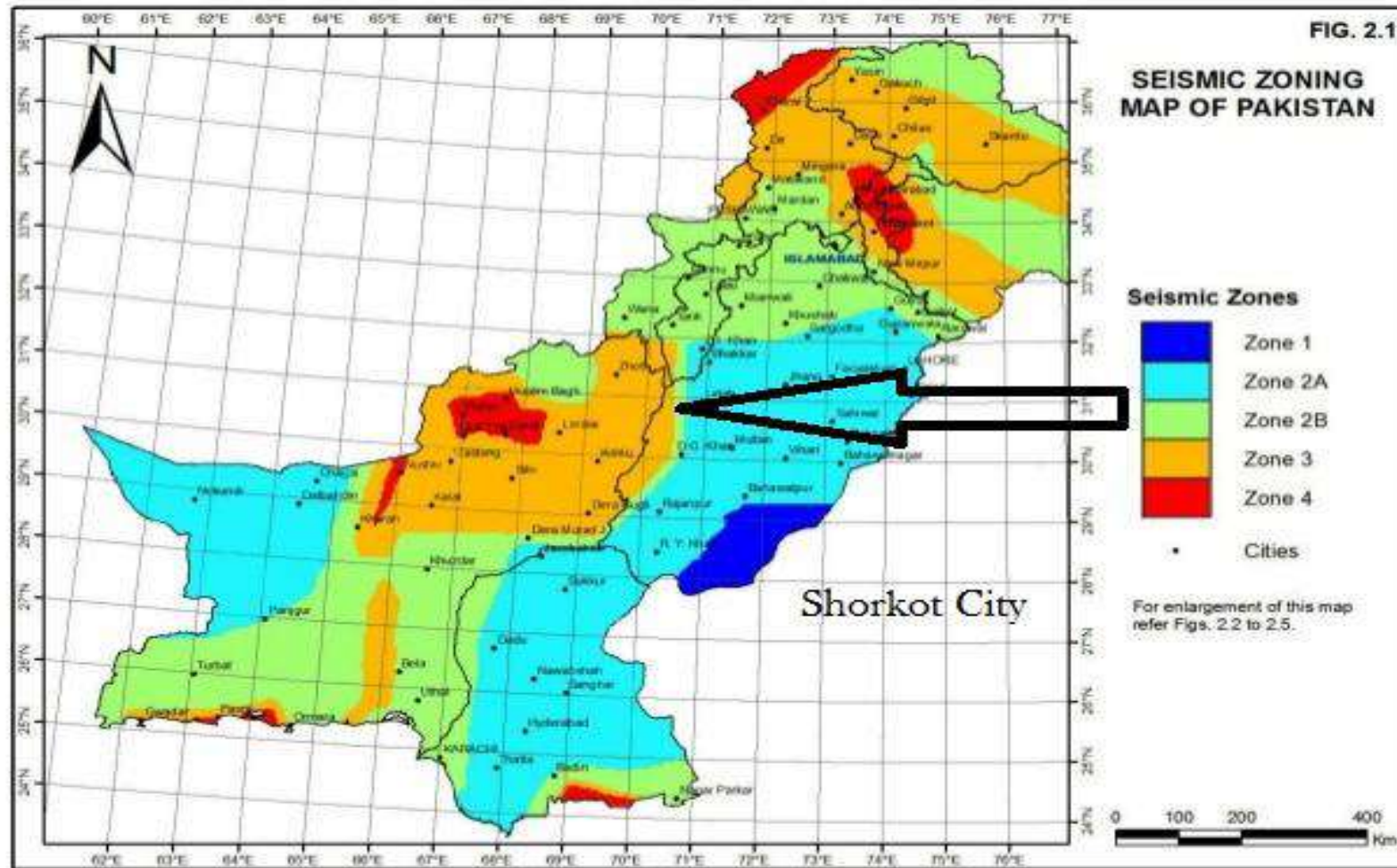


Figure 3.2: Seismic Zoning of Pakistan

3.2.5 Geography

Faisalabad City stands in the rolling flat plains of northeast Punjab, between longitude 30°30'N 72°24'E with an altitude of 131 metres (433 ft). The Faisalabad city proper covers an area of approximately 1,230 square kilometers (470 sq mi), while the district Jhang covers more than 8,809 square kilometers. The soil of City comprises of alluvial deposits mixed with loess having calcareous characteristics, making it very fertile.

3.2.6 Temperature

Due to its high evaporation, Faisalabad features a hot desert climate in Köppen-Geiger classification. The climate of the district can see extremes, with a summer maximum temperature 50 °C (122 °F) and a winter temperature of –2 °C (28 °F). The mean maximum and minimum temperature in summer are 39 °C (102 °F) and 27 °C (81 °F) respectively. In winter it peaks at around 17 °C (63 °F) and 6 °C (43 °F) respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season starts from November and continues until March. December, January and February are the coldest months.

Detail description of the seasons is as under:

- Winter (October to February): Moderate to extreme and dry
- Spring (March & April): Pleasant and moderately cold
- Summer (May to September): Very hot to humid
- Monsoons (June to August): Wet. Although the temperatures are milder but due to appreciable humidity, the heat is oppressive; and

- Post-Monsoon Summer (September & October): Moderate and slightly humid

Given below are the maximum and minimum temperatures of Faisalabad throughout the figure.

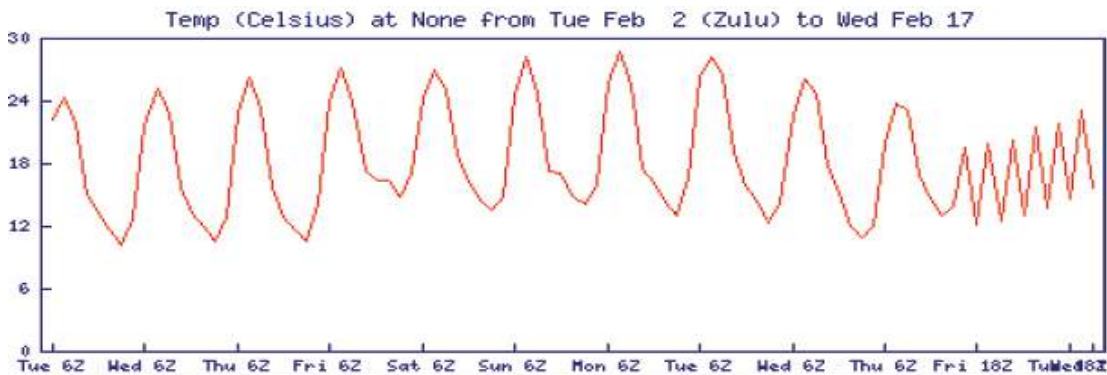


Figure 4: Temperature in Faisalabad City

3.2.7 Rainfall

The average yearly rainfall lies only at about 300 mm (12 in) and is highly seasonal with approximately half of the yearly rainfall in the two months July and August.

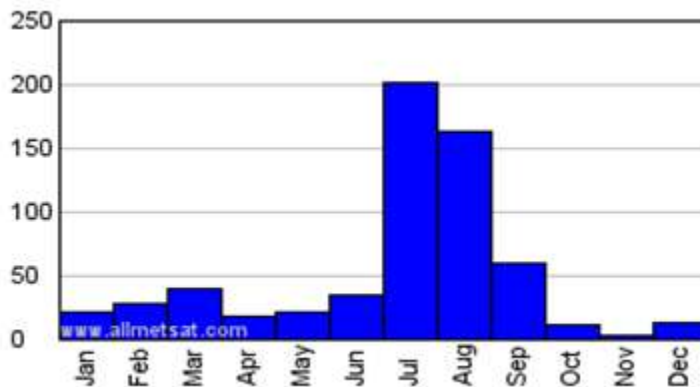


Figure 5: Average Yearly Precipitation in Faisalabad City

Relative humidity in Faisalabad varies between 31.9% and 69%. The higher humidity during summer is due to the higher rates of evapo-

transpiration, as the monsoon rain, irrigation and Kharif cropping pattern favor its rise.

3.2.8 Wind

The Faisalabad City region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months. The prevalent wind speed ranges from 10-25 km/h, however on some days, there appear storms of 60 km/h.

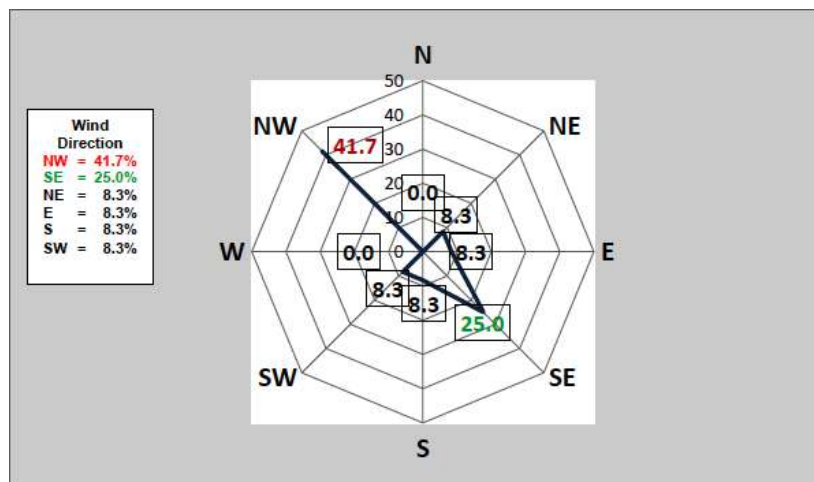


Figure 6: Direction of Winds (%)

3.2.9 Noise Level

The affluent areas of Faisalabad city are quieter than rest of the city. The noise level in these areas is still far higher than the standards set by the World Health Organization and the Pak-EPA as the safe noise level; i.e. 60-85 dB(A).

Noise is described as an unwanted sound emitted from un-avoidable sources of anthropogenic activities. Daily based natural induced sources of noise are rare to none but human induced noise sources are plenty and un-avoidable. Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech, low altitude aero plane flying etc. Environmental noise is a common cause of hearing loss of people indulged in industrial activities. Noise pollution in the city is on the rise with most residents complaining that the noise is becoming a public nuisance.

3.2.10 Ambient Air Quality

The degradation of air quality in all the cities is a major environmental concern these days. Air pollution levels in urban centers have either crossed safe limits given in the NEQS or have reached the threshold values.

About 60 to 70 % of the deterioration in the air quality is due to the vehicular emissions. The parameters which have proved to be the major threat are particulate matter and concentration of oxides of nitrogen that are relatively higher in all the large cities of Punjab.

Atmospheric pollution particularly in urban area has a strong impact upon daily life. Faisalabad is the third largest city of Pakistan. Its economic growth, industrial progression & transport have risen to grounds responsible for growing energy consumption leading ultimately to the consequences of increase in air pollution. The main sources of air pollution are exhaust from motor vehicles and industries. The main exhaust gases include SO₂, NO₂, CO, etc. Particulate Matter (PM) and noise which are inspected as the pollution indicators.

It was observed during the visit that Petrol and Diesel operated vehicles are emitting smoke and exhaust gasses in excessive quantity which are the

leading sources of environmental pollution and responsible for the air quality worsening. In fact, exhaust emissions (including dangerous gases such as carbon monoxide, oxides of nitrogen, hydrocarbons and particulates) and Evaporative emissions (including vapors of fuel which is released into the atmosphere, without being burnt) are the prime reasons of deterioration of air quality. It was however observed during the visit that environment of the project area is clean.

3.2.11 Water Resources

Surface Water

There are no surface water resources like ponds or wetlands near the project area.

Ground Water

Discussions with TMO revealed that it is hard to convince people not to draw water from shallow depths. But, the results from recent tests revealed that in Darbar Mai Bap area the water is contaminated. Union councilors also were of the view that people are starting to realize importance of good public water supply scheme. There is a need to educate citizens about health hazards of drawing contaminated water from shallow depths.

Adequate quantity of ground water of potable quality is available in the area. Ground water is the present source of water supply. The depth of water table is about 20 feet.

A water supply scheme was constructed by PHE Department. A network of distribution from 3" – 10" dia was laid down in one part of the town. A rising main 8" diameter was also constructed. An R.C.C OHR of 20,000 was

also constructed on mound from where the potable drinking water was supplied by gravitational flow.

3.2.11.1 *Drinking Water Quality*

Water scheme has been abandoned as people didn't pay for their bills. Sweet potable water is available. Most of the people have installed motors or hand pumps.

Two tube wells of the following are operating: ½ cusec used for office lawns and ½ cusec for water sprinkling in the town. None of the tube well is used for supply to the consumers. The consumers have made their own water supply arrangements through privately installed hand pumps or shallow tube wells/ pumps.

3.3 BIOLOGICAL ENVIRONMENT

Faisalabad is enriched with the presence of natural flora and fauna, although with the growing population and development activities, the presence of the some has been somewhat affected.

There are however no significant or well-shaped trees and shrubs on the project site. There are some trees only along the main roads.

3.3.1 Flora

Trees, also called the 'lungs' of the earth, are important for the restoration of the ecosystem. People can benefit incalculably from their survival and existence. Trees have also been a source of medicine for thousands of years and a refuge for various species of birds. No threatened or endangered species and medicinal plants are present anyhow in the project area.

Sr. No	Common Name	Scientific name	Picture
1	Sufeda	<u>Eucalyptus obliqua</u>	
2	Jaman	<u>Syzygium cumini</u>	

3	Ficu Tree	<u>Ficus</u> <u>Benjamina</u>	
4	Mango, Aam	<u>Megnifera</u> <u>indica</u>	

5	Paper Mulberry	<u>Broussonetia</u> <u>papyrifera</u>	
6	Kikar	<u>Vachellia</u> <u>karroo</u>	

7	Beri	<u>Ziziphus</u> <u>mauritiana</u>	
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3.3.2 Fauna

With an increase in the rate of urbanization, the ecology of city has been considerably less affected but there is no threatened or endangered species found in the project site. Similarly no wildlife is present within the project corridor.

Sr. No	Common Name	Scientific Name	Picture
1	Buffalos	<u>Bubalus</u> <u>hubalis</u>	

2	Cows	<u>Bos</u> <u>taurus</u>	
3	Dog	<u>Canis</u> <u>lupus</u>	
4	House Sparrow	<u>Passer</u> <u>domestic</u> <u>us</u>	

5	Crow	<u>Corvus</u>	
6	Pigeon	<u>Columbi</u> <u>dae</u>	
7	Snake	<u>Thamno</u> <u>phis</u> <u>sirtalis</u>	

3.4 SOCIOECONOMIC ASSESSMENT

Socioeconomic Assessment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the general public and neighbors.

3.4.1 Demographic Profile

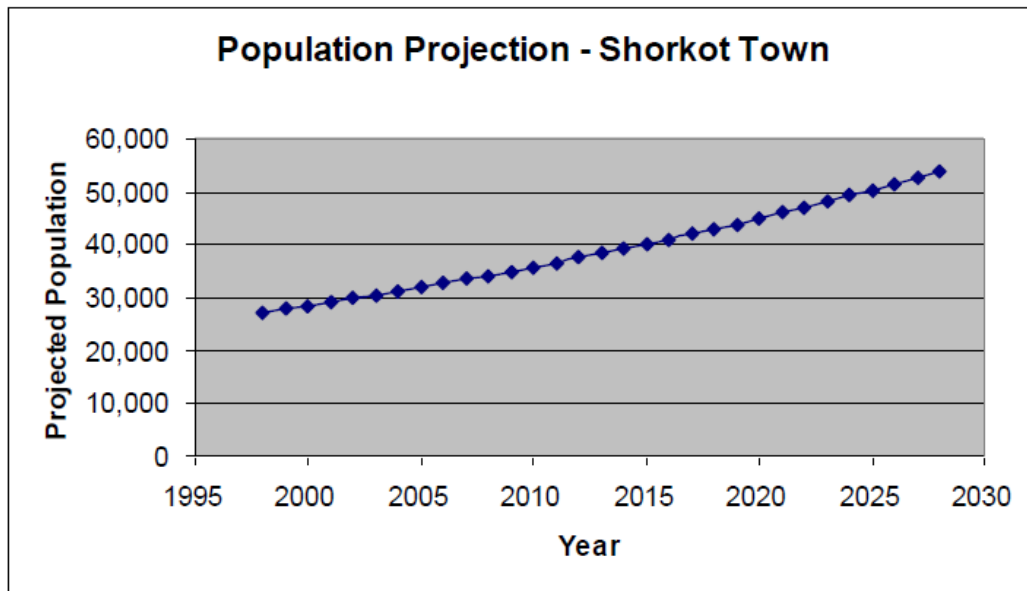
The city of Faisalabad carried out a census in March 1981 which showed the population of Faisalabad city as 1,092,000, which indicates that growth rate of Faisalabad city is only

3.37 percent per annum. In April 1981 the survey was carried out again which recorded the population to 1,232,000 which made the growth rate approximately 4.6%. Given this growth rate, the population at the end of 1981 was estimated to be 1,240,000.

The emergence of Faisalabad as a major agriculture and industrial center created a great increase in the city's population. From a population of 69,930 in 1941, it rose to 179,000 in 1951, an increase of 152.2% this was mainly due to the settlement of Muslim refugees from East Punjab and Haryana who came from India and settled in Faisalabad. The population rose to a future figure of 425,248 in 1961, an increase of 137.4%. Faisalabad became a record in the demographic history for Pakistan by registering an overall population increase of 508.1% between 1941 and 1961. This record has never been matched by the largest city of Pakistan. In the 1998 census the city population was recorded as 2,009,000, growing at a rate of 21.3% per annum. According to the World Gazetteer, the estimate of the city is expected to have reached 5,000,000 in 2010.

The religion of a majority of Faisalabad is Islam with small minorities of Sikhs, Christians and Ahmadis. Majority of Muslims belong to Sunni Hanafi school of thought with a significant minority of Shiites-

3.4.2 Population Growth:



3.4.3 Health Facilities

Hospitals exist in the project area. There is a government hospital or Basic Health Unit (BHU) available in city. People also access to private hospitals in city and sometimes to nearby private dispensaries. Fever, malaria and chest congestion, Hepatitis-C were reported as the common diseases of the project area. In the project area, health conditions are much developed. One male doctor with other staff handlers the population. Health care services are provided to the citizens by both Public and Private sector Hospitals. The Government run hospitals are THQ Hospital. The Private sector also operates Hospitals, Clinics and Laboratories notably National Hospital, Faisal Hospital & THQ.

Nearest health facilities of the area are:



National Foods Limited



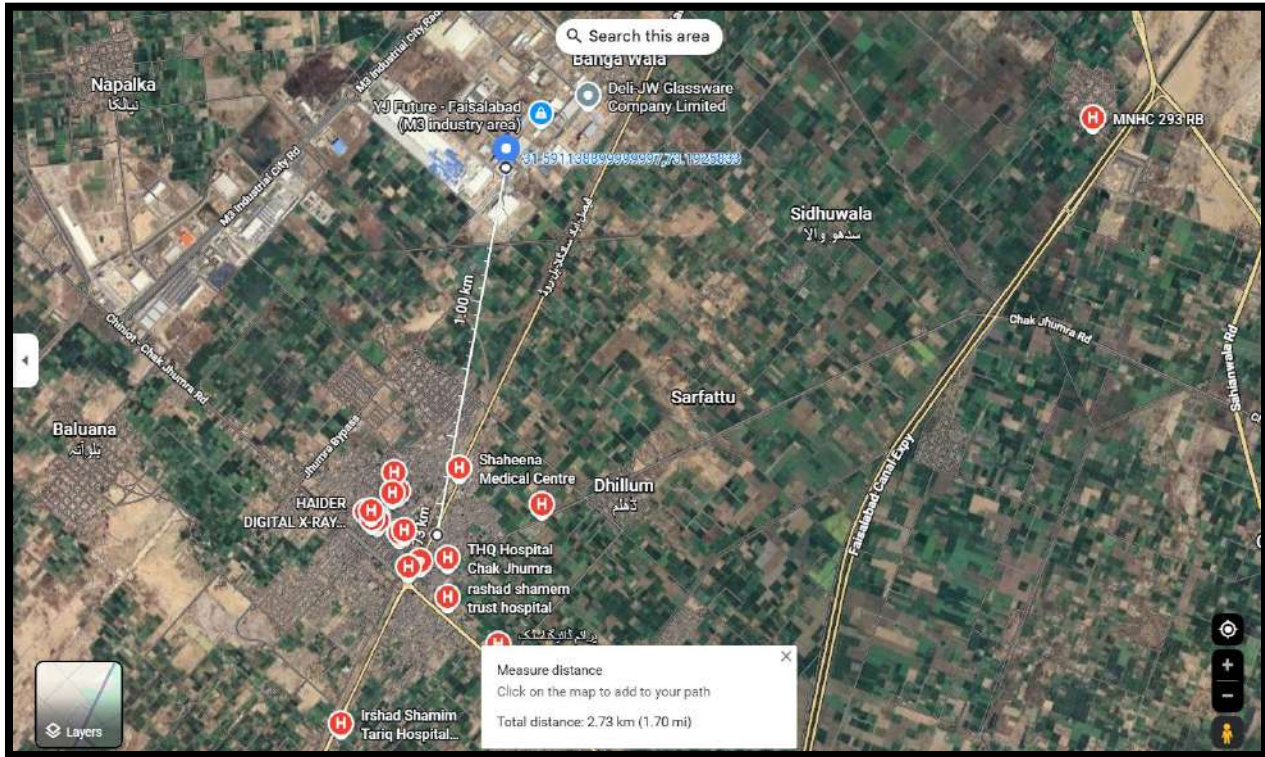


Figure 6: Nearby Health Facilities

3.4.4 Educational Facilities

Faisalabad city is located in Punjab Province; the educational institutes are not in a large number in its territorial area. The overall literacy rate is quite satisfactory; the educational bodies are contributing their efforts to increase the literacy rate in this region by offering elite educational services. Colleges/Universities in Faisalabad such as Govt. Institute of Commerce, Govt. Vocational Training Institute are offering diverse courses for the students. The students who are located in Faisalabad and want to get the admission for their career education then they can choose their aspiration. Among the list of colleges/Universities in Faisalabad the educational institutions are offering leading educational services for the students. Numerous other educational government and private institutions are also certifying their role in education zone to develop the vigorous nation.

Colleges/Universities in Faisalabad are offering their unique educational services for the students to build the healthy sound mind nation.

Nearest education facilities of area are:



Figure 7: Nearby Education Facilities

3.4.5 Transportation and Communication

The project area is rich in the means of transportation. Main and side roads are metallic so transportation is properly available inside the residential colonies. Chingchi (four seated vehicle supported by bike), Rickshaw, bikes and some buses are the main means of transport for the residents of the area. To fulfill the remaining needs of transport, there are hundreds of

rickshaws and taxis which run on compressed natural gas to reduce pollution in the city and of course about 50 percent of the residents have their own conveyances.

Nearby Airports

3.4.6	Code	IATA	Kind	Name	City	Distance	Bearing	Airlines
	OPRO		Medium	Rafiqui Air Base	Shorkot	11 nm E	113	
	FR4395		Small	VELHARI	Velhari	44 nm S	174	
	OPMT	MUX	Medium	MULTAN INTL	Multan	50 nm S	222	flydubai, Air Indus, Shaheen Air , (one of "Pakistan In or Riau Air)
	OPFA	LYP	Medium	FAISALABAD INTL	Faisalabad	56 nm E	55	Air Indus , (one of "Pakistan In or Riau Air)

home furniture and pharmaceuticals.

3.4.7 Sites of Historical Significance

Faisalabad city has a rich history. The mound of Faisalabad though now of little importance, is of antiquity. The mound appears to have been the citadel of an old town. It is said that this town was destroyed by some raiders about 1300 years ago.

It is learnt that it was built many times in history which raised its elevation even up to 200 ft above ground level. The elevated ruins even exist now called as "Bhirr" in local language and it spreads at about 8 acres. Coins of the reign of Ashoka (a Hindu Emperor) were found from this mound. The existing town has now grown up in East, South and North of this hump.

Faisalabad is also known by Hazrat Sultan Bahu, a great scholar and sufi poet. He was born in Faisalabad in 1039 Hijri. He had written in Urdu, Persian and Punjabi. It is said that he has written 140 books. An annual Urs in the month of January is held in which thousands of people from far flung places came to pay homage to this great saint.

3.4.8 Water Supply

The project has an independent water supply system comprising storage tank of sufficient capacity. Water is supplied to office and works through motor pump.

3.4.9 Electric Supply

FESCO Power supply will be available at the proposed site. Design and specification of electric poles is attached herewith. Faisalabad electric supply company will be contacted for location of poles with respect to the house and means of transportation. Their professional team (FESCO) know the health and safety Rules.

3.5 QUALITY OF LIFE VALUES

Majority of people in project area are working in shops and some are doing jobs. The locals of proposed area are provided with basic facilities like electricity, roads, transport etc. If we talk about educational facilities then education up to primary level are available in almost all the localities and are easily approachable. They are also provided with health facilities including dispensary and hospital where basic health facilities are provided to workers and community. Common diseases observed in that area were diabetics and heart diseases.

3.6 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

Testing of different parameters was done from an EPA certified Qarshi laboratory to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis) is given in annexure.

3.7 SUITIBILITY OF SITE

Said project is the installation of ETP of M/S NATIONAL FOODS LIMITED (FAISALABAD PLANT) . Selected site is within premises of industry and no other alternative site is considered for Said Project. The site is well located in regard to the following:

- Within vicinity of existing unit
- Easy road access to the market
- No settlements in close vicinity
- No ecologically sensitive or declared protected area within safe radius of the selected site

In view of these facts, it can be concluded that the Selected Site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

Distance of selected site from different receptors is as follows:

Receptors	Name	Distances
Residence	Chak jhumra	2.93 km
	Govt. School	1.51 km
Educational Institute	THQ Hospital	2.73 km
Hospital	Khushi Industry	9.38 km
Industry	Sangla Hill Road	0.62 km
Road		

Considering the facts that said site is at a safe distance from sensitive receptors. The said site has advantage of not only to be environment friendly but also potentially sound to enhance sustainable development in

the region. Therefore, given site is the most suitable for establishment of said project.

4 CHAPTER 4: STAKEHOLDER CONSULTATION

4.1 GENERAL

Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, public consultation is mandatory for any socio-environmental study.

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the said project development. The consultation process was carried out in accordance with the guidelines laid by EPA. The objectives of this process were to:

- Share information with stakeholders on said project installation and operation
- To access the impacts on the physical, biological, and socio-economic environment
- Understand stakeholder concerns regarding various aspects of the project
- Understand the perceptions, assessment of social impacts and concerns of the communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the said project
- To invite people to express their views about the positive/negative impacts on their life styles and environment

This report includes all the comments, which were taken into account in preparing the definitive development concept for the establishment of said project.

4.2 OBJECTIVES OF CONSULTATION

Public consultation plays a vital role in studying the impacts said project on stakeholders in its successful implementation and execution. It provides an opportunity to exchange knowledge with the all stakeholders. 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 overall objective of the consultation with the stakeholders is to help verify the environmental and social issues, besides technical ones, that have been presumed to arise and to identify those which are not known or are specific to the project. In fact, discourse with many who have thoroughly observed the site conditions in the pre-developmental phase, goes a long way in updating the knowledge and understanding.

4.3 IDENTIFICATION OF STAKEHOLDERS

All the people who are directly or indirectly affected or concerned with the project are the stakeholder. Besides the living population of the surrounding areas, some other stakeholders were identified and contacted. They are the key players including; shops owners, vendors, public offices, school, university, hospitals,. Not only published material (Both brief and comprehensive literature were obtained on request) but also noted their views and the concerns. Following stakeholders are identified for this project:

Project stakeholders include the settled families, either property owners or the tenants, businessmen (land owners, traders, shopkeepers, vandors, transporters, restuarent owners etc.), employees of the commerical entities.

PAPs are of two types, for instance:

4.3.1 Direct

In this case, the PAPs are those who will be benefited directly by project. No disturbance on the local community is being foreseen due to the installation of the said plant.

4.3.2 Indirect

Indirect impact will occur on those who are living or doing business within project area of influence. Indirect respondents include;

- ✓ Government agencies responsible to deal with the project related activities
- ✓ Government Agencies directly, indirectly or widely involved in the execution and monitoring of the said project
- ✓ Workers of political, cultural, religious or social scientific bodies, directly or indirectly related

4.4 PUBLIC DISCLOSURE

Public disclosure is the outcome of all such activities where public is involved at least in the information sharing process. This is an integral part of that process so before the proponent applies for NOC to the EPA, this disclosure will be distributed properly among all stakeholder. It is the responsibility of the proponent and the consultants to display public disclosure document at prominent places where community has easy access.

4.5 CONSULTATION PROCESS

Information disclosure, public consultation and discussion regarding the various aspects of the project with the people of the area are necessary. This process is intensified during the EIA Studies, and separate rounds of public consultations were held. Surveys were carried out in order to investigate physical, biological and socio-economic resources falling within the immediate area of influence of the project. Primary data collection included:

- Data collection regarding the socio-economic condition of the study area
- Pretesting of socio-economic survey tools in the field
- To consult the locals for collection of information on biological environment

Various meeting with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities
- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback

4.5.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

4.5.1.1 Consultation Material

The main document for distribution to stakeholders during the consultations was Social Impact Assessment Interview.

4.5.1.2 Consultation Mechanism

Primary stakeholders were consulted during informal and formal meetings held in the project area. The consultation process was carried out in the Urdu language. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the said project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis, and interpretation.

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIA in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues.

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder

consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

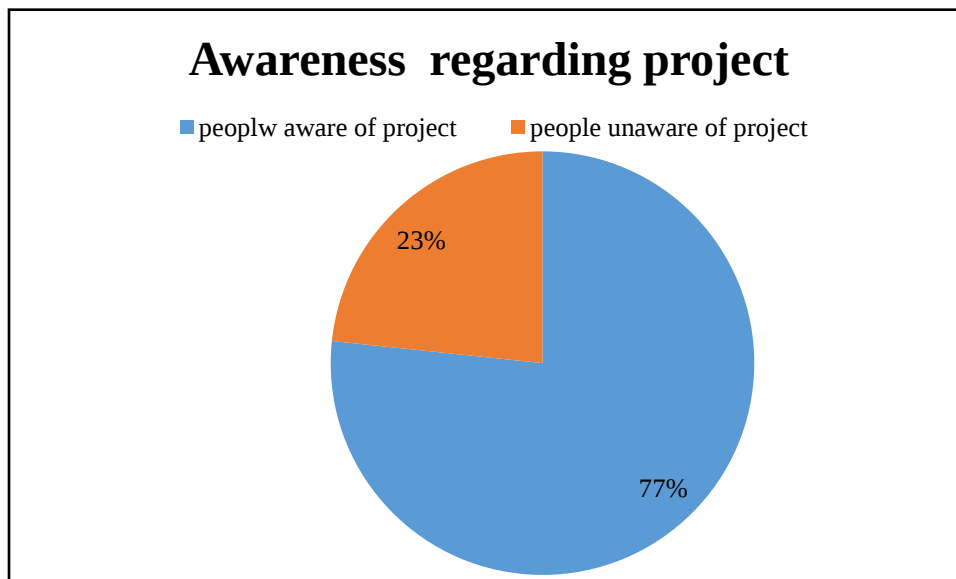
4.5.2 Primary Stakeholders Consultation

The community consultations were conducted with the community members outside their settlements to encourage and facilitate their participation. Consultation was done for 1 day.

4.5.2.1 STAKEHOLDER CONCERNS AND RECOMMENDATIONS

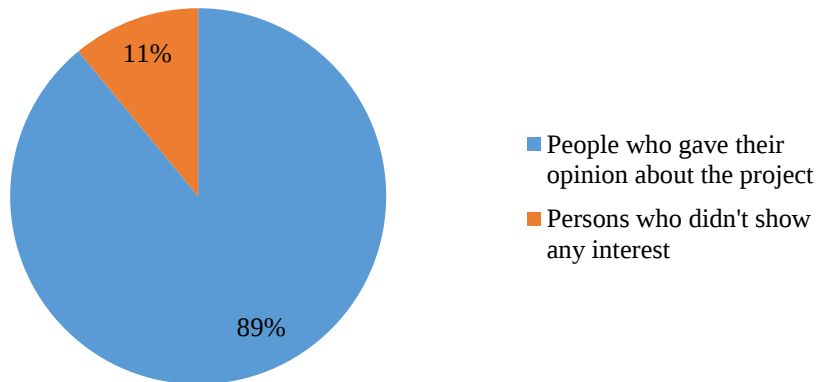
The finding of the community consultation has been addressed in various sections of EIA. Mitigation plan has been incorporated into EMP. The summary of consultation with various stakeholders is given below

Out of total respondents of, 77% knew about the project whereas 23% were not aware of the project planning and implementation. All people were then briefed about the project.



89% commented their views about the project and 11% didn't respond.

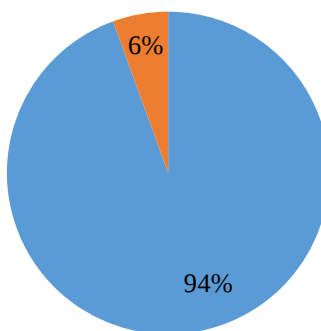
% of people who showed perspective



Out of 89%, majority of the people (about 94%) favored the construction of the project keeping in view its importance and 6% people showed pessimistic views in general but mitigation measures and solutions to their concerns were provided.

% of people in favor of project

■ people in favor of project ■ people against project



Majority of people were in favor of project. They said that project will result not only in direct jobs opportunities for locals but also will enhance

subsidiary business, trade, education, and community development. The people were of the view that industry might also elevate education standards, struggle for career enhancement besides improvement in standard and quality of living in area. People were also of the view that industry may also be instrumental in connecting the local people with major cities and will result in increase in GDP. People had opinion that said plant will help in reducing pollution load caused by food industries.

Very few near to 6 % only shows concerns over odor problem and health impacts. Majority of the concerns were changed in the favor of installation after communicating the participants proper solutions and mitigation measures

4.6 **STAKEHOLDERS CONSULTED**

Names and CNIC of consulted stakeholders along With Feed Back Comments are given in table below:

Table 4-1: List of consulted stakeholders

Sr. No	Stakeholder name	CNIC Number	Feed Back Comments
1.	Muhammad Adeel	32301-0899669-5	Environmental Enhancement measures should be taken
2.	Abdulghafoor	32302-8865076-7	Tree plantation should be ensured
3.	Akbar Ali	32301-6707794-1	Waste management should be done properly
4.	Kashif Ullah	32301-1042443-9	Local people should be preferred for employment opportunities

5.	Parvez Ahmed	31304-3641875-7	Tree Should be planted
6.	Muhammad Nadeem	32301-7769904-3	Air pollution should be controlled
7.	Muhammad Zulfiqar	32302-1923668-3	jobs should be provided at priority
8.	Muhammad Waqar	32301-2286586-7	Dust emission should be controlled
9.	Muhammad Arif	32301-3560885-7	Wastewaters from should be treated
10	Muhammad Javed	32301-2306631-7	Local native should be facilitated
11	Muhammad Jalal	32301-3712974-7	Plantation of trees should be ensured
12	Muhammad Tofail	31301-1430910-3	Air Quality must be ensured
13	Syed Barat Hussain	32301-0911865-5	Dust emission should be controlled
14	Arif Khan	32302-9944089-5	Wastewater parameters should be in PEQS
15	Basheer Hussain	32301-1072234-5	Product should be sold at lower price to locals
16	Saddam Hussain	32302-6563777-9	No water Pollution
17	Muhammad Javed	32301-6984887-3	No water Bodies Should be effected
18	Muhammad Aslam	32302-	Environmental Enhancement

		1531131-3	measures should be taken
19	Hameed Ahmad	32301-5823956-3	Tree plantation should be ensured
20	Muhammad Zafar	32302-8161811-7	Waste management should be done properly
21	Muhammad Maqsood	32301-6784699-1	Local people should be preferred for employment opportunities
22	Muhammad Aslam	32301-8661151-9	Tree Should be planted
23	Muhammad Akram	32301-5319694-7	Air pollution should be controlled
24	Muhammad Aslam	32301-7149972-1	jobs should be provided at priority
25	Muhammad Arshad	32301-0750673-3	Dust emission should be controlled
26	Muhammad Amir	32302-4496559-7	Wastewaters from should be treated
27	Muhammad Hashim	32301-0899299-1	Local native should be facilitated
28	Muhammad Tariq	32302-4890073-5	Plantation of trees should be ensured
29	Muhammad Parvez	32301-4365044-1	Air Quality must be ensured
30	Syed Irfan Mehdi	32301-2072338-5	Dust emission should be controlled
31	Sajjad Ahmed	32302-4578228-1	Wastewater parameters should be in PEQS

32	Muhammad Waqas	32303-1119009-9	Product should be sold at lower price to locals
33	Hafeezullah	32301-0269175-5	No water Pollution
34	Bahadur Abbas	32301-9404522-9	No water Bodies Should be effected

4.6.1 Secondary Stakeholders Consultation

The consultations were carried out with the local government officials and officials of the following departments:

1. District Office Environment, Bahwalnagar
2. Livestock Department

Comments and recommendations of all government representatives are presented in table below:

S #	Participant	Designation	Concerns/Remarks
Responsible Authority			
1	Muhammad Aslam	Inspector Environment Department	• EHS plan should be enforced strictly • Proponent should install and operate wastewater treatment plant properly • Should work for local people benefit • Preventive measures should be adopted to avoid any unfortunate incident • Environmental enhancement measures such as; Tree plantation,

			monitoring and safety should be ensured
Departments and Agencies			
Livestock Department			
1	Dr. Muhammad Afzal Khan	Assistant Director Livestock	• There are no endangered species present at site • He also expressed that local people should be first preference for jobs and CSR works.
Proponent Environment Management Team			
1	Proponent Environment Management Team	Proponent Environment Management Team	• Local employment will be ensured • Tree plantation will be done to make project environment friendly • Effective technology treatment plant will be installed • No waste will be dumped improperly
Environmental Practitioners and Experts			
1	Dr. Muhammad Faqir Irfan	PhD. Environment Lawyer	• Wastewater treatment should be operated properly to minimize pollution load
Affected and Wider Community			
1	Mr. Khurram	NGO (Parho Barho Punjab)	• Local employment should be ensured • Proponent shall work for betterment of community

5 CHAPTER5: POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 GENERAL

This chapter describes the potential environmental and social impacts of the proposed activities, predicts the magnitude of the impact and assesses the significance. The main intention of this section is to provide the mitigation measures that need to be adopted wherever necessary, to reduce, minimize, or compensate for the negative impacts.

5.2 IDENTIFICATION OF POTENTIAL IMPACTS

In the first step, potential impacts of the project are identified by desktop screening exercise, using checklists during field visits for collection of baseline data, professional judgment, published literature on environmental impacts of similar projects and standard environmental guidelines. Potential impacts are also identified through discussion with project proponent, consultation with stakeholder and community to identify their concerns. The main aspects associated with potential impacts are as follows:

- Water resources
- Ambient Air Quality
- Waste discharges
- Noise pollution
- Ecology of the area, including flora and fauna
- Vehicle movement
- Socio-economic conditions
- Archaeology

5.3 CLASSIFICATION OF IMPACTS

According to the type of potential receptors, the potential impacts are classified. The following receptor categories were used.

Category of Receptor	Description
Community	People their social and cultural values, aspirations and archaeological sensitivity
Land and Soil	Land resources, soil resources
Air Quality	Ambient air quality
Water Resources	Ground and surface water resources
Ecosystem	Vegetation, wildlife and biodiversity

5.4 SCOPING CRITERIA FOR IMPACTS

The identified potential impacts of the project are evaluated on the basis of following criteria;

- The present baseline condition, the change in environmental parameters likely to be affected by the project related activities;
- Is there any impact that environmental standards or environmental guidelines applicable to the project will be breached?
- Is there a high risk of permanent, irreversible, and significant change to environmental condition due to particular project activity?
- Did the community express any concern about this aspect?

5.5 METHODOLOGY FOR IMPACT ASSESSMENT

5.5.1 What is the problem?

The project is about installation of ETP. The major impact associated with the construction and operation of unit includes solid waste management, noise emissions, tree plantation and fire-fighting arrangements.

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

The impacts from the unit mainly occur during the construction and operational phase of the project. These issues include; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

5.5.3 Where problem should be addressed?

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

5.5.4 How the problem should be addressed?

Proper mitigation measures will be provided according to the nature of the impacts/problems.

5.5.5 Ways of Achieving Mitigation Measures:

Following ways will be adopted to reduce the impacts of the proposed development:

5.5.5.1 Changing in Planning Design

The design of unit is developed considering environmental risk and hazards. Moreover, there is no endangered and threatened species present in the project area. Any human settlement or infrastructure was not dislocated or dismantled due to the project development. Hence, there is no need to change the design of the project.

5.5.5.2 Improved Management and Monitoring Practices

The anticipated impacts will be reduced significantly by adopting better management activities, as it will be carried out for the betterment of

the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

5.5.5.3 Compensation in Money Terms

Due to the development of the project, no tree cutting is involved, however, there is no protected or environmentally sensitive area present within 5.0 km vicinity of the project that could be impacted. Hence, no compensation in the monetary terms is required.

5.5.5.4 Replacement/Relocation/Rehabilitation

The project site is owned by the proponent and reserved for the said unit. No replacement, relocation and rehabilitation is required for the commencement of the aforesaid project.

5.6 IMPACT ASSESSMENT

Evaluation of impacts signifies the potential impacts in terms of its likelihood nature as per the following criteria:

- The impacts are further classified based on their spatial distribution, i.e. *local*, when impacting an area of approximately 1 km radius from the project area, *moderate spread*, when impacting an area of 1 to 2 km radius and *regional* beyond 2 km.
- The impacts are classified as *short term*, *moderate term* and *long term* in terms of their existence in temporal scale. Impacts less than 1 year existence as *short term*, while those with 1 to 3 years as *moderate term* and more than 3 years as *long term*.
- The negative impacts are termed as *adverse impacts* while positive impacts as *beneficial*.

The significance of environmental impacts of various involved activities has been evaluated based on the criteria outlined in Table 9.

Table 5-1: Impact Significance Criteria

Impact	Criteria
Long term	When the impact is of high intensity with high spread and high duration
Moderate term	When the impact is of moderate intensity with high-moderate spread and high-moderate duration
Short term	When the impact is of low intensity but with moderate spread and moderate duration or of
Insignificant	When the impact is of low intensity, low spread and low duration
Beneficial	When the impacts are positive

Based on the above-specified criteria, Matrix method has been used to describe potential environmental impacts due to project as shown in Table below. It is important to note that one activity may have varying impacts on different receptors i.e. different components of the environment. To avoid repetitions, this section describes various activities, which may have wide impacts on many receptors.

For example, waste generation and disposal will have impacts on land, water bodies, odour nuisance etc, therefore, the impacts of waste generation and disposal have been considered as one of the key areas of impacts. Similarly, gaseous emissions may be adverse to air quality; which on exposure may impact upon health of individuals and ecology in the surroundings.

Table 5-2: Impact Screening Checklist (Construction Phase)

Environment al	Nature of Likely Impacts	Impact Significance
---------------------------	---------------------------------	--------------------------------

	Low Intensity	Moderate Intensity	High Intensity	Low Intensity	Moderate Spread	Regional	Beneficial	insignificant	Short Term	Moderate	Long Term
Air Quality		✓		✓							
Noise	✓			✓							
Water Quality		✓			✓						
Land Environment			✓		✓						
Flora		✓		✓							
Fauna	✓			✓							
Local Economy			✓		✓						
Social Impacts			✓	✓							
Health & Safety		✓		✓							

Table 5-3: Impact Screening Checklist (Operational Phase)

Environmental	Nature of Likely Impacts						Impact Significance				
	Low Intensity	Moderate Intensity	High Intensity	Low Intensity	Moderate Spread	Regional	Beneficial	insignificant	Short Term	Moderate	Long Term
Air Quality		✓			✓						
Noise		✓		✓							
Water Quality			✓		✓						
Land Environment	✓										
Flora	✓			✓							
Fauna	✓			✓							
Local Economy			✓		✓						
Social Impacts			✓	✓							
Health & Safety		✓		✓							

5.7 IMPACTS DUE TO PROJECT LOCATION

The said project site is located within premises of existing industry. The project site is devoid of any forest; hence the site clearance from Forest Department is not involved. Further, the project site is devoid of any human habitation hence evacuation of the project-affected persons is not involved in this project. Thus, no resettlement and rehabilitation issues are involved in the said project. This project will be developed while undertaking minimum cutting for making terraces for construction while making minimum modifications in the terrain conditions and implementing environmental measures.

The topsoil removed from the site will be restored in dumps during construction period and in the post construction phase. The top soil will be spread on the unbuilt area of the plot and tree plantations and green belt development will be taken up. As the top soil removed from the site will be reused for the growth of plants, no adverse impact will be envisaged due to removal of topsoil from the site.

5.8 DESIGN PHASE

In general, the design of the said project optimized the use of best available technology in order to prevent or minimize potentially significant environmental impacts associated with the project as well as to ensure high level business and environmental performances. In pre-construction / design phase, a management system will be provided at design level for the reduction of impacts. Design of the said project will be adhered to all standard technical requirements in order to avoid adverse impacts on the environment and human health. Efficient infrastructure will be developed. Procurement of construction materials from approved dealers will be ensured.

5.9 IMPACTS ASSOCIATED WITH CONSTRUCTION PHASE

This section explains how said project affected different environmental aspects and its mitigation measures to manage the impact. The impacts during construction phase will be temporary and localized. Even though, the proper mitigation measures will be followed to minimize such impacts.

Sr. No	Aspect	Impacts	Mitigation Measures
1	Economy Improvement	During construction/extension phase, employment opportunities for local people will be generated.	No mitigation measure are required.
2	Air Quality	During construction/extension phase, suspended particulate matter will be the main pollutants. Fugitive emissions will be observed due to vehicular movement. But it will be negligible or temporary phenomenon.	Dust emissions will be minimized through strict enforcement of onsite speed controls. The routes will be sprinkled with water regularly to reduce the amount of dust generated by construction vehicles. All vehicles and construction machinery will be properly tuned, serviced and monitored on regular basis.
3	Water Quality	During construction/extension phase, water will be	During this phase, water conservation practices will be given proper

		required for sprinkling on roads for dust suppression, domestic uses of construction workers	consideration.
4	Relocation of Utilities	The project site is already near other industries. The construction will not relocate the existing public utilities.	No mitigation measure will be required.
5	Solid Waste Generation	During excavation of the site for foundation works and landscaping, solid waste will be generated. The waste consisted of metal cuttings, rejected materials, surplus material, paper bags, cement bags, empty cartons and broken glass pieces.	Recyclable material will be separated at source. The cement bags and other such items will be handed over to approved contractors on weekly basis.
6	Noise Pollution	During construction phase, the major sources of noise are due to operation of construction equipment. The anticipated noise will be mostly confined to the facility itself.	Several mitigation measures will be considered. For this purpose, most of the extension works will be done in day time.
7	Ecology	The project site is located in industrial zone. It is devoid of thick forest and	Tree plantation will be done to act as pollution barrier as well as to

		vegetation.	enhance the aesthetic beauty of the area.
8	Worker's Health, Safety and Environment	The construction activities have the potential to pose negative impact on the health and safety of workers in case of unfavorable working conditions.	The contractor will ensure that the workers and labors will be trained in safety procedures for all relevant aspects of the construction. Workers will be provided with proper safety equipment which will be required on the basis of nature of the work. First aid kits will be kept available on the site to ensure safe working environment for the labors and workers. As per the requirement warning signs will be displayed in local language. Proper fencing will be done around the site.

5.10 IMPACTS ASSOCIATED WITH OPERATION PHASE

In this section, the environmental and socio-economic impacts associated with the said project operation activities are discussed. The impacts that are discussed are as follows:

1. Environmental Impacts

- Air emissions
- Noise
- Traffic
- Solid waste and by-products
- Wastewater
- Resource Consumption
- Abnormal conditions
- Occupational Health and Safety

2. Socioeconomic Impacts

- Employment Opportunity
- Community Development

5.11 ENVIRONMENTAL IMPACTS**5.11.1 Noise Emissions**

During the operational phase, the noise may affect the community but is definitely the area of utmost concern for the employees. Noise is an issue of high significance, as it can cast stressful effect on the ears, nervous system and heart; especially to workers exposed to above 85 dB (A) noise for long period of time. Noise, if emitted during the project operation, can potentially be a nuisance for the workers at site. In this project, noise will be emitted from generators; but this noise will be confined in the working areas.

Mitigation

Following mitigation measures are adopted to reduce the impacts from Noise emissions:

- Controlling noise at its source is the best method of noise control. Therefore, silencers will be put on the machines.
- Preventive maintenance and regular servicing and tuning of the equipment will be assured.

- Workers are provided with and encouraged to use PPEs (ear plugs or ear muffs).
- Proper enclosure of generator.
- Selection of less noise producing technologies and proper enclosure will reduce noise pollution.

5.11.2 Air Emissions

Air emissions are insignificant in said project. The source of emissions will be from generators, which will be controlled by proper enclosure and tuning. Particulate matter emission is however can be expected to result from various operations, which can impact breathing and hinder vision.

Mitigation

Following mitigation measures are adopted to reduce the impacts of Air emissions:

- Regular monitoring
- No waste should be burnt at the premises.
- Odor from ETP will be controlled by proper design and maintenance.
- Workers are provided with PPEs including masks and use will be ensured.

5.11.3 Wastewater

Potential Issues

The untreated effluent from the project can potentially affect the water resources if it is discharged into fresh water channel, canal, pond etc. wastewater will be used in proponent own land for cropping purpose after treatment.

Mitigation

- Effluents from all units will be treated in ETP and will be used in proponent own land for cropping purpose after treatment.

5.11.4 Solid Waste Management

The sludge generated from the clarifiers will be treated and then the residual material will be handled by solid waste contractor.

The waste will be segregated and recyclable materials will be separated and quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.

Mitigation

Following mitigations should be adopted to reduce the issues related to the solid waste:

- Separation of recyclable material.
- Training will be provided to personnel for identification, segregation, and management of waste.
- Provision of Separate waste bins.
- Sludge will be handled by waste management contractors.
- Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.
- Appropriate in-housekeeping and solid waste management practices should be adopted.

5.11.5 Health and Safety

Health and safety are gradually gaining high worth for all the persons involved with some business in any way since any occupational activity can pose various health and safety risks for the workers and general public. This is the reason why nowadays, standard procedures are established for all the tasks to be performed in any project keeping in mind that no health and safety issue may arise from the performance of that task, termed as "Safe Operation Procedures".

Impact Analysis

Operation of the project may cause some concerns for safety, public health and nuisances within the project area if the activities involved are not performed in a safe way; i.e. following SOPs.

Mitigation:

- SOPs will be established for all the project activities and will also be revised whenever required.
- Safety audits should be conducted.
- All accidents and incidents should be recorded, reported and reclaimed.
- Various safety tools should be brought into use.
- Preventive approach will be preferred to corrective approach.
- Standardized Personal Protection Equipment (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles and Masks will be provided to the employees to ensure their safety at work place.
- Workers' awareness and safety wall chart showing safety symbols will be displayed.
- First Aid Box will be kept in every department which will be within easy approach of all in case of any injury or mishap.
- To avoid any chance of fire, a comprehensive firefighting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and fire fighting Vehicles.
- Basic medical and safety training will be held from time to time to minimize the risk of health and safety issues in the industrial premises.
- Incidents should be reported directly to the concerned authority.

5.12 SOCIOECONOMIC IMPACTS

A summary of potential socio-economic impacts of the project is presented in Table below.

Table 5-4: Potential Socioeconomic impacts of the project

Impact	Beneficial	Adverse
Economic	Employment generation Procurement of equipment and services Local authority business tax / rates revenue Increase in property value	Negative economic impacts are not anticipated
Social	Indirect beneficial community impacts from employment Provision of training to employees and workers	Risks of occupational and environmental health issues.

By implementing the following mitigation measures, impact to community can be minimized.

- All vehicle drivers will be trained in community safety aspects.
- The company will maintain a social complaint register at the site to document all complaints received from local communities. The register will also record the measures taken to mitigate these concerns.
- It will be ensured that generators, vehicles, and other potentially noisy equipment used are in good condition. Noise from generators, vehicles and other equipment will be kept to the minimum through regular maintenance.
- Maximum number of unskilled and semi-skilled jobs will be reserved for the local communities.

EMPLOYMENT OPPORTUNITIES

The project is expected to have positive impact on economic condition of locals. Employment opportunities will be generated due to said project activities. The project will generate approximately 30-40 jobs during operation phase of the project.

Similarly, the operation of the project will create far greater number of indirect income resources for example income resource for transporters for the transportation of the raw materials, procurement of required goods from local market etc.

Overall the project will have a positive impact on the employment opportunities of Pakistan.

5.13 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

GREENBELT DEVELOPMENT

Apart from functioning as a pollutant sink, green belts provide other benefits like:

- Green belt helps in noise abatement for the surrounding area. Thus, it is recommended as noise barriers.
- Green belt helps in achieving bio diversity by providing possible habitats for birds and animals.
- Green belts increase the aesthetic value of the site.

Adequate number of small plants and trees are planted along the periphery of the unit and available open spaces.

6 CHAPTER 6: ENVIRONMENTAL MANGEMENT AND MONITORING PLANS

6.1 GENERAL

This EIA provides the Environmental Management Plan (EMP) of the project to keep it environment benign as well as the monitoring plan to ensure the compliance of the established EMP.

Outline and key features of the EMP for construction and operations phase is presented in sub-sections below. As per the environmental legislation in Pakistan, the EMP for the operations phase, along with other documents, is to be submitted to the environmental protection agency to obtain confirmation for compliance and Environmental Approval for project operation. Even after implementation of the suggested mitigation measures, the impact may remain significant, and require regular monitoring. This section also underlies the monitoring framework for both construction and operation phases to check compliance of the EMP and to take timely actions for correction in case any accident of significant criteria, requirements or goals are found.

6.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

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

- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

6.3 MANAGEMENT APPROACH

The organizational roles and responsibilities of the key players are summarized below:

Proponent: The project proponent will undertake overall responsibility for compliance with the EMP. Concerned Departments will carry out verification checks to ensure that the contractors are effectively implementing their environmental and social requirements.

Contractors: The contractors will implement the majority of environmental and social mitigation measures. The contractors will carry out field activities as part of the project. The contractors are subject to certain liabilities under the environmental laws of the country, and under its contract with proponent.

6.4 COMPONENTS OF THE EMP

THE EMP CONSISTS OF THE FOLLOWING:

- Management plan
- Monitoring Plan
- Communication and documentation
- Institutional capacity
- Environmental training

6.5 ENVIRONMENT MANAGEMENT PLAN(PROJECT SPECIFIC)

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during operational phase with the administrative framework involving all the responsible implementing

authorities who are required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environmental friendly.

Table 6-1: Environmental Management Plan/Proposed Mitigation Actions

Objective	Management Action	Responsibility	Time framework	Residual impact
Construction phase				
Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with company recruitment policy by contractors involved in construction	Contractor	On commencement of construction activities	Unemployed people of area will get job opportunities and their standard of living improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Contractor	On commencement of construction activities	Indirect job opportunities
Safety during construction				
To ensure safety on construction site	Safety signage will be put in relevant places within the	Contractor/Environmenta	On commencement	Safety of workers will be ensured by

	construction site • Construction drivers are subjected to public safety awareness • Reckless driving by construction workers will be prohibited and monitored • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. and its use will be strictly enforced • Workers will be trained on the regular basis regarding personal safety • Incidents will be reported directly to the concerned authority	I manager/EH S manager	of construction activities	implementing proposed mitigation measures
Construction waste management				
To prevent the contamination of	• The construction site has litter bins for waste collection	Contractor	Throughout construction	Waste will be disposed of/reused/ recycle or

soils and water resources due to inappropriate management and disposal of waste	• Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed by using the standard waste management procedures • All the idle machinery and equipment will be immediately removed from the site • Scrap and the debris will be removed from the site at the		stage	resale as per practices of area
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	end of the construction stage after appropriate segregation of the material			
Pollution control management				
To contain spillages	• Proper maintenance of construction vehicles and equipment will be undertaken • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols will be established and monitored for materials transport and handling whilst on the site.	Contractor	On-site establishment	Potential for accidental release of materials during transport and handling on the site will be minimized.
To manage sewage	Existing toilets will be used	Contractor	On commencement of construction	
Protection of biodiversity				

To avoid unnecessary disturbance of and quick recovery of biodiversity in the plant site	• Avoid destruction of biodiversity outside the designated factory construction site • Minimize clearing of vegetation during construction • Surface soil excavated during construction to be placed back on the sub-soil to fast vegetation recovery • Prepare and implement an appropriate landscaping programme to help in re-vegetation of affected project areas after construction • The flora of the site will be restored at the end of the construction phase by landscaping and planting native vegetation	Contactor	Throughout construction phase	Vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of planted trees will be provided
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Air quality & dust management

To minimize the dust entrainment during construction	• Regular surface wetting will be implemented on dusty sections in the factory construction site • Strict on-site speed controls will be enforced for construction vehicles • All trucks hauling soil, sand and other loose materials will be covered • No excavation activity will be carried out during windy days • Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions • Construction workers will be sensitized on measures to reduce air pollution	Contractor	On commencement of construction activities	Dust propagation was limited to construction area and did not influence local community. However workers will be supplied with dust masks especially on dry days.
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Noise

To minimize disturbance due to noise	• Loading and unloading of materials will be done carefully to reduce noise disturbances to surrounding households • Residences are at a safe distance from site so no disturbance is envisaged. • Drivers will be instructed to avoid unnecessary gunning of vehicles, hooting and buzzing. • Regular maintenance of the machinery will be done to reduce the noise • Vehicles will be tuned on regular basis	Contractor	On commencement of construction activities	Noise level will be within PEQs
Occupational health & safety				
To ensure healthy and Secure/safe environment in the construction site	• Management will ensure that fire extinguishers are located in strategic and visible places • All vehicles and construction	Contractor	Throughout construction phase	Record of all incidents will be maintained and reported to EHS manager.

for all workers	equipment will be under control of competent personnel • Inspection of material and harmonization to the occupational health and safety standards. • Adequate security for workers will be provided during construction • Sensitize workers to operate in teams			
Operation phase				
Wastewater management				
Degradation of surface waters quality due to direct disposal	Wastewater will be treated and then used for cropping purpose after meeting PEQs	Management of ETP of NATIONAL FOODS LIMITED (FAISALABAD PLANT)	Throughout project life cycle	None

Air quality management				
Air emissions	- No machinery will be left unattended, particularly in running condition. - All equipment used during the construction and operation will be tuned and maintained in good working condition in order to minimize emission of pollutants. - Odor emissions from the treatment plant will be controlled by proper design.	Management of ETP of NATIONAL FOODS LIMITED (FAISALABAD PLANT)	Throughout operation phase	Local air quality will be virtually unaffected and will be based on PEQs
Noise & vibration				
To minimize disturbance of communities due to noise	- Reducing equipment noise at source by proper design, maintenance and repair of machinery and equipment - Use noise-abating devices wherever needed and	Management of ETP of NATIONAL FOODS LIMITED (FAISALABAD PLANT) .	Throughout project life cycle	Noise level will be based on PEQs

	practicable. • Selection of appropriate technology and proper enclosure of machinery.			
Traffic & transport				
EHS				
To minimize loss work injury/hazards/incidents/accidents	• Training regarding EHS should be given on the regular basis • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority	Environmental manager/EHS	Throughout life cycle of project	Potential of injuries will be minimized
First aid				

To ensure safety and health	• First aid box will be available at the site • First aid training will be given to the employees on the regular basis • Numbers of all the concerned/authorized persons that will be contacted in the case of emergency will be displayed on-site	Environmental manager/EHS	Throughout life cycle of project	None
Fire hazard				
To prevent any disaster	• All the equipment will be placed at strategic locations where the risk of out-burst of the fire is high. • Smoking will not be permitted in the vicinity of the plant • Regular site inspection will be done to eliminate all the chances of the hazards • Checking and maintenance of	Environmental manager/EHS	Throughout life cycle of project	Potential of disaster will be minimized by suggested mitigation measures implementation

	the fire-fighting equipment will be carried out on the regular basis			
Employment				
To provide job opportunities and helping in improving living standard of people	• During this phase, skilled and unskilled labour will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. • Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for	Management of ETP of NATIONAL FOODS LIMITED (FAISALABAD PLANT) .	During construction and operation phase	Direct and indirect jobs

	the labour and after completion of construction phase serve as a permanent business opportunity.			
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6.6 ENVIRONMENTAL MONITORING PLAN

Environmental monitoring is a vital component of the Environmental Management Plan. It is the mechanism through which the effectiveness of the environmental management Plan in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions.

Table 6-2: Environmental Monitoring Plan

Env. Component	Project Stage	Parameters	Instrument	Standards	Monitoring			Institutional Responsibility
					Location	Frequency	Duration	
Air	Construction	PM ₁₀ , SO ₂ , NO ₂ , CO, SPM, O ₃	Air Quality Monitors/Gadgets	PEQS	Project site	Twice during construction	As per approved testing method	Contractor through approved monitoring lab
Noise Levels	Construction	Noise levels dB(A) scale	Digital Sound Meter	PEQs	Project site	Twice during construction	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Contractor through approved monitoring lab

	Operation	Noise levels on dB(A) scale	Digital Sound Meter	PEQs	Project site	Annually	Reading to be taken at 15 seconds interval for 15 minutes every hour and then averaged	Through approved third party/monitoring lab
Wastewater	Operation	BOD, COD, TSS etc	Through approved equipments	PEQs	ETP	Monthly	As per approved testing method	Through approved third party/monitoring lab

6.7 ROLES & RESPONSIBILITIES OF ENVIRONMENT MANAGEMENT TEAM

The organizational structure for the Environment Management Plan is outlined below:

6.7.1 Primary Responsibilities

The primary responsibility for implementing EMP lies with the owner of project.

6.7.2 Operation Management & Control

Conducting the operational activities in environmentally sound manner will be the responsibility of the concerned Manager; for which he will be trained.

6.7.3 Supervision & Monitoring

Senior Supervisor will be responsible for all environmental issues and for the implementation of EMP.

6.8 REPORTING & REVIEWING PROCEDURES

An effective mechanism to store and communicate environmental information during the project is an essential requirement of an EMP.

6.8.1 MEETINGS

Two kinds of environmental meetings will take place during the project:

- Kick-off meetings
- Weekly meetings

The purpose of the kick-off meeting will be to present the EMP to project staff and discuss its implementation and to discuss any event of environmental significance that has happened in the under-discussion

industry or a similar industrial unit to investigate its route causes and develop its solutions.

The purpose of the weekly meetings will be to discuss the conduct of the operation and environmental issues and their management. The proceedings of the meeting will be recorded in the form of a weekly environmental report.

6.8.2 CHANGES-RECORD REGISTER

A change-record register will be maintained at the site, in order to document any changes in project design. These changes will be handled through the change management mechanism.

6.9 ENVIRONMENTAL TRAINING

Environmental training will help to ensure that the requirements of the EIA and EMP are clearly understood and followed by all project personnel in the course of the project.

Table 6-3: Training Program

Target audience	Trainers	Contents	Schedule
Selected management staff	Contractors	Key finding of mitigation measure	After every five months
All personnel	EHS Officer	Mitigation measures	Monthly
Technical Staff	EHS Officer	Waste disposal or sale out status, vehicle movement	After every three month

		restriction and other mitigation measures	
Other staff	EHS Officer	Waste disposal, resource conservation and other mitigation workers	Monthly

6.10 EQUIPMENT MAINTENANCE DETAILS

The project is about installation of ETP. Machines/Equipment in unit will be maintained on the regular basis. The fire-fighting equipment that would be installed in the halls/buildings will also be checked and maintained on regular basis. Only fire safety equipment such as; portable fire extinguishers will be installed which will need regular maintenance and check in order to eliminate hazards of associated the fire risks.

6.11 ENVIRONMENTAL BUDGET

Treatment Plant itself is an environment protection/enhancement measure for which approx. 60 million PKR budget is reserved. Further, plantation has been done in surroundings of project site. It is planned to plant more trees in surrounding of project site and in open area of project site.

6.11.1 **SCHEDULE OF IMPLEMENTATION**

The project intends to take 6 months from start to completion.

Sr.		6 Months	6 Months	6 Months	6 Months
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#	Activities	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Construction Period												
4	Peak Construction Period												
6	Installation of machinery												
7	Installation of firefighting equipments & emergency exits												

M=Month

7 CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the said ETP.

EIA of Said Project is performed according to guidelines of EPA. It includes description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan is included in the study.

The performed EIA showed all anticipated impacts (both positive and negative), associated with the project. Appropriate mitigation measures as explained in the environmental study will strengthened the environment and promote sustainable development.

Based on overall assessment of the environmental impact of the project, it is concluded that the economic benefit from the project is not at the cost of environment. Further the project is not likely to cause any significant adverse impact on the physical and biological environment but positive impact on social development and economic prosperity of the area, provided that suitable mitigation measures as identified in this study are implemented.

It is accordingly recommended that Environmental Approval for the project may be issued by the Punjab Environmental Protection Agency, subject to payment of the requisite scrutiny fee by the proponent of the project.

7.2 RECOMMENDATIONS

The Environmental Impact Assessment study and survey results are finally evaluated to recommend the following:

- Implementation of EMP must be given top priority.
- Proper PPEs including ear plugs, ear muffs, mufflers, goggles, gloves and shoes etc. should be provided to workers
- Train workers to use PPEs
- Advise workers to follow SOPs.
- Equipment maintenance and efficiency must be checked.
- No compromise on public health and environment should be allowed.
- Waste minimization practices should be employed and workers should be encouraged to adopt such methods.
- Wages should be distributed on time.
- Proper tree plantation plan should also be developed in order to make the unit environment friendly.
- Proper dispensary and first aid box should be provided for workers
- Smoking should be avoided within premises of project site and near fuel storage areas.
- The Security Guards shall also be trained to act in case of all possible emergency situations. The fire alarms can be activated to signal evacuation. At the same time, communication shall be made with hospitals, emergency services and police for urgent support.
- The proposed Environmental Management & Monitoring Plan should be implemented.