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EXECUTIVE SUMMARY

TITLE AND LOCATION OF THE PROJECT

"Gourmet Foods (Private) Limited" at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura.

NAME AND ADDRESS OF THE PROPONENT

Zulqarnain Nawaz Chattha S/O Muhammad Nawaz Chattha

Address: House No. 110, Block C, Model Town Lahore

CNIC no: 35202-5662623-3

NAME OF THE ORGANIZATION PREPARING THE REPORT

EnvironTech Consultants.

Office No. 11, 2nd Floor, Center Point Plaza, Main Boulevard Gulberg, Lahore.

Phone: 0303-4342302

info@environtech.com.pk

A BRIEF OUTLINE OF THE PROPOSAL

Proposed project is the establishment of Beverage Production unit by M/S Gourmet Foods (Private) Limited. On approximately 20.06 Acres of total area with different capacity of each product Located at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura. The products which are to be manufactured are carbonated soft drinks (350 ml) with rated capacity of 60000 bottles per hour, carbonated soft drinks (1000 ml) with rated capacity of 52500 bottles per hour, carbonated soft drinks (1500 ml) with rated capacity of 48500 bottles per hour & carbonated soft drinks (2250 ml) with rated capacity of 35000 bottles per hour. This will be a Beverage Production unit in which different flavored Beverages will be manufactured.

The proponent of the Gourmet Foods (Private) Limited. engaged M/S **EnvironTech Consultants** to carry out the environmental for the development of aforesaid project in accordance with Punjab-EPA guidelines. The salient features of the proposed project are given below:

Salient Features of Project

1	**Project Title**	**Gourmet Foods (Private) Limited.**
2	**Proponent**	Zulqarnain Nawaz Chattha S/O Muhammad Nawaz Chattha
	Project Location	Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura.
	Co-ordinates	31°44'3.52"N 74° 3'52.37"E
3	**Land Use in Surrounding of Proposed area** **North:** **South:** **East:** **West:**	Surrounding are of the project is Industrial in nature. Open Plot Road Road Open Plot
4	**Consultant**	EnvironTech Consultants
5	**Total Area**	Approx. 20.06 Acre
6	**Cost of Project**	PKR 2410 Million
7	**Tree Planation**	7% designated area
8	**Water Source**	Ground Water provided by Industrial area
9	**Status of Project**	Open/Vacant Land
10	**Nature of Area**	Industrial
11	**Source of Power**	WAPDA (LESCO)
WAPDA= Water and Power Development Authority		

THE MAJOR IMPACTS

Environmental impacts have been identified and mitigation measures are recommended within the project area of influence. The major impacts on physical, biological and social environments are described as under:

Impacts Summary

Environmental Parameters	Impact Assessment	
	During Construction	After Construction
1. Location	+2p	+3p
2. Design	+1p	+2p
A: Physical		
Land Resources		
1. Solid Waste	-1t	-2p
2. Land Use	-1p	-1p
Air Resources		
1. Air Emission	-1p	-1p
2. Noise	-1t	-1t
Water Resources and Wastewater Management		
1. Water Resource	-1p	-2p
2. Wastewater Management	-1p	-1p
B: Ecological		
Flora		
1. Vegetation	0	+2p
Fauna		
2. Wildlife	NA	NA
C: Socio-Economic		
1. Transportation	0	+2p
2. Employment	+1p	+1p
3. Aesthetic	-1t	2p
4. Energy Consumption	NA	-1t

- **Legends: 1= Low; 2= Medium; 3= High; 4= Extremely High; NA= Not Applicable; t= Temporary; p= Permanent; app= Applicable; 0= Negligible**
- **All adverse environmental impacts except natural calamities are manageable easily by implementing EMMP**

RECOMMENDATIONS FOR MITIGATION MEASURES

To manage the environmental and social impacts of the project, significant negative impacts and their mitigations have been covered in this section. For the ease to understand and identify the impacts and to implement their mitigations, a mitigation plan has been developed as a ready reference for the Proponent and Contractor to

minimize the negative impacts or to manage activities in such a manner to avoid any adverse negative impact.

Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in EMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. The air quality is determined once before the commencement of the development and once after the end of the development. During the operational phase solid waste management practices and wastewater disposal practices will be monitored by the concerned authority on the regular basis. Moreover, fire-fighting equipment will be installed in the public and private buildings will be maintained and monitored on the regular basis.

It is pertinent to mention that the Beverage Production do not involve any complicated process and therefore have very limited impact on environment in order to examine the environmental impact of the establishment of the ware house a comprehensive study has been done and explained in chapter 5.

The total estimated cost for the implementation of EMMP in proposed project area is approximately 1% of the total cost of the project.

PROPOSED MONITORING

A comprehensive Environmental Management and Monitoring Plan (EMMP) have been prepared to effectively manage and monitor the environmental and social impacts for the development of the project.

Environmental Mitigation Plan

To manage the environmental and social impacts of the project, significant negative impacts and their mitigations have been covered in this section. For the ease to understand and identify the impacts and to implement their mitigations, a mitigation plan has been developed as a ready reference for the Proponent and Contractor to minimize the negative impacts or to manage activities in such a manner to avoid any adverse negative impact.

Environmental and Social Monitoring Plan

Mitigations for physical, biological and socio-economic parameters will be measured to determine compliance with standards established in EMMP. The Monitoring Plan will record the inputs provided by various participants in the environmental and social management process. The air quality is determined once before the commencement of the construction and once after the end of the construction phase. During the operational phase solid waste management practices and wastewater disposal practices will be monitored by the concerned authority on the regular basis. Moreover, fire-fighting equipment will be installed in the building and will be maintained and monitored on the regular basis.

The total estimated cost for the implementation of EMMP in proposed project area is approximately PKR 38 million which will be used for tree plantation, monitoring of environmental parameters and the implementation of EMMP as suggested in this EIA Report.

Further recommendations are as following;

- The adverse environmental impacts can be reduced significantly by adopting best management and monitoring practices as well as by implementation EMMP effectively.
- It is recommended to construct the green building instead of conventional building, having green-roofs, insulation as well as maximum utilization of the sunlight. Green roofs will not only attract the customers but will serve as an insulator. In addition, the life of the green roofs is longer than conventional roofs.
- It is recommended that the Proponent should obtain an Environmental Approval (NOC) from the Punjab-EPA before proceeding further into the construction activities.

1. INTRODUCTION

1.1 INTRODUCTION

The beverage industry in Pakistan has grown significantly over time and is one of the top industries in the country. It consists of 170 operational units producing soft drinks, juices, syrups, and milk. Pakistan's beverage industry is projected to experience 30.5% sales growth by 2010. Challenges include high sugar prices, taxes as high as 12.5% excise duty and 15% sales tax, and low per capita consumption of 20 servings compared to other regional countries due to taxation increasing prices. The Pakistan beverages market size was 8.7 billion liters (BL) in Q1 2024. Soft drinks and hot drinks among others are the primary Pakistan beverages market categories. In Q1 2024, hot drinks accounted for the highest beverage market share in Pakistan.

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 Federal Agency an Initial Environmental Examination (IEE) or where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Federal Agency in respect thereof."* Later, Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022provided the guidelines for categorizing the Projects. According to Schedule-II of PEPA (Review of IEE and EIA) Regulations, 2022; the project falls under **Category B (4), (Food processing industries including sugar mills, beverages, milk and dairy products, with total cost more than Rs.200 million).** i.e., the project requires an EIA Study.

Proposed project is the establishment of Beverage Production unit by M/S Gourmet Foods (Private) Limited located at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura, with total area of approx. 20.06 Acres and Capacity of the project is carbonated soft drinks (350 ml) with rated capacity of 60000 bottles per hour, carbonated soft drinks (1000 ml) with rated capacity of 52500 bottles per hour, carbonated soft drinks (1500 ml) with rated capacity of 48500 bottles per hour & carbonated soft drinks (2250 ml) with rated capacity of 35000 bottles per hour.

The anticipated project will comply with regulation of Pak-EPA 1997, Punjab Environmental Protection (Amendment) Act 2012 and Punjab Development of Cities

Act 1976. The land of the project area is owned by the Client. The land ownership documents are attached as Annexure.

The purpose of this study is to identify 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 and to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulation of Environmental Management Plan (EMP) for implementation of the project in environment friendly manner.

This report is prepared by critical examine of the environmental factors which might be affected due to construction and operation of the project. The purpose of this report is to analyze impacts of the project. This EIA provides the basis for a determination of the degree of the environmental impacts of the project.

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

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 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 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.

The Project site is geographically located at 31°44'3.52"N 74° 3'52.37"E

1.2 PURPOSE OF REPORT

The purpose of the Environmental Impact Assessment (EIA) study is to identify the possible beneficial and adverse environmental impacts of the project as presently envisaged and propose the applicable mitigation measures to be implemented during the construction and operational stages of the project in order to minimize the negative impacts and preparation of Environmental Management Plan (EMP) to obtain No Objection Certificate (NOC) from EPA-Punjab.

This EIA report has been prepared keeping in view the following regulations and guidelines:

a. Pakistan Environmental Protection Act (PEPA), 1997 & Punjab Environmental Protection Act (PEPA), 1997 (amended 2012)

b. Pakistan Environmental Protection Agency Regulations, 2022 for review of IEE and EIA.

c. Pakistan Environmental Impact Assessment procedures, 2022.

d. Guidelines for Preparation and Review of Environmental Reports

1.2.1 NEED OF ENVIRONMENTAL ASSESSMENT

The preparation and submission of a EIA Report for any development project is a statutory obligation under Punjab Environmental Protection Act, 1997 (PEPA, 1997) amended in 2012 in terms of Section 12 of the Act which states as under: *"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."*

The current Project falls under Schedule- II, ***Category B (4), (Food processing industries including sugar mills, beverages, milk and dairy products, with***

total cost more than Rs.200 million) and above of IEE/EIA Regulation as per section 12 of Environmental Protection Act and thus requires Environmental Impact Assessment (EIA).

1.2.2 IDENTIFICATION OF PROJECT AND PROPONENT

The proposed Project consists of the design and construction of Beverage Production unit by M/S Gourmet Foods (Private) Limited. The silent features of the project are given as under-:

Table 1: Salient features of the project

1. Details of proponent	**Zulqarnain Nawaz Chattha S/O Muhammad Nawaz Chattha** **Address: House No. 110, Block C, Model Town Lahore** **CNIC no: 35202-5662623-3**
2. Name of project	Gourmet Foods (Private) Limited.
3. Location/ Address of the site	Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura.
4. Nature/ Feature of the project	Beverage Production Unit. It will be Beverage Production unit in which different flavored Beverages will be manufactured with controlled environmental conditions. The products which are to be manufactured are carbonated soft drinks (350 ml), carbonated soft drinks (1000 ml), carbonated soft drinks (1500 ml) & carbonated soft drinks (2250 ml).
5. Major process during construction	Excavations, Concrete, Mixing, Elevation, Finishing
6. Estimated cost of project	PKR 2410 million
7. Plot area of the project	The total project area is about approx. 20.06 Acers

8. Electricity connection capacity	For construction: 1000 kW For production: 6000 kW
9. Detail of standby generators	Stand-by generator of 2250 kva for operation during LESCO shutdown only.
10. Project start	1 month after getting NOC from all relevant departments
11. Project completion duration	6-8 Months

1.3 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of this Proposed Project, the proponent has hired the services of the environmental consultants; M/S EnvironTech Consultants. Team comprising of environmental engineers, chemical engineers, environmental experts and environmentalists. Following table lists the names of those experts:

Table 2: List of Experts

Sr. No.	Team Member	Position Held	Qualifications
•	Kamal Ahmed Cheema	Chief Executive Officer	M.Phil. Environmental Economics, Pakistan Institute of Economic Development (PIDE)Islamabad BS Environmental Sciences, University of Gujrat (UOG)
•	Amna Hafeez	Environmentalist	M.Sc. Mountain Conservation and Watershed Management Punjab University, Lahore
•	Zargham Arshad	Environmentalist	M.Phil. Environmental Sciences FCCU, Lahore
•	Huda Ashfaq	Environmentalist	M.Phil. Environmental Sciences UVAS, Lahore
•	Arslan Iqbal	Environmental	M.Phil. Environmental Sciences

		Specialist	University of Lahore.

1.4 NATURE, SIZE AND LOCATION OF THE PROJECT

GOURMET FOODS (PRIVATE) LIMITED is an Beverage Production unit and the products which are to be manufactured are carbonated soft drinks (350 ml), carbonated soft drinks (1000 ml), carbonated soft drinks (1500 ml) & carbonated soft drinks (2250 ml).Total project area is 020.06 Acres at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura.

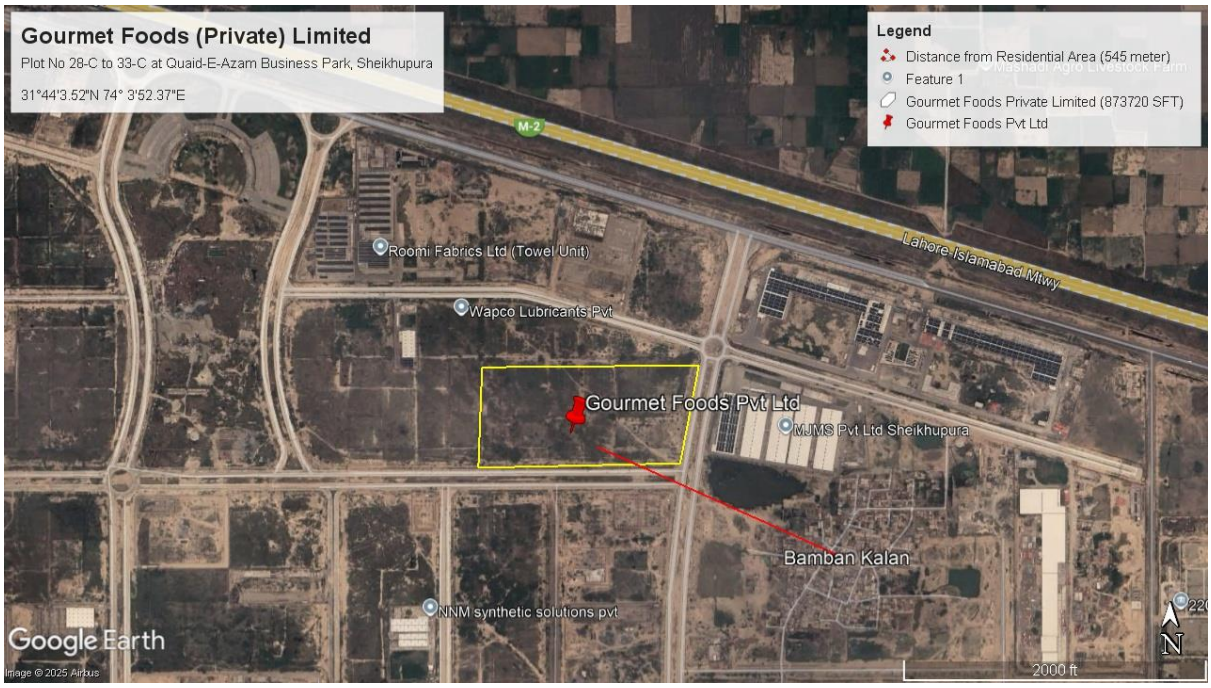
This project is of beverages manufacturing unit.

List Of products	
Main Product Name	**Flavor Description**
Gourmet Cola	Classic cola taste
Gourmet Lemon Up	Lemon-Lime flavor (Sprite/7Up alternatives)
Gourmet Malta	Sweet Malt Flavor
Gourmet Twister	Citrus-Lemon Flavor (Green Label)
Gourmet Red Anar	Pomegrante-flavored carbonated drink
Gourmet Apple	Sweet apple flavor
Gourmet Lychee	Floral-fruity Lychee flavor
Gourmet Mojito	Mint-lime mojito-style drink
Gourmet Ice-cream Soda	Vanilla-cream soda (blue label0

Size of Project

List of FG Products to be Prepared	
1.	Carbonated Soft Drinks 350 ml
2.	Carbonated Soft Drinks 1000 ml
3.	Carbonated Soft Drinks 1500 ml
4.	Carbonated Soft Drinks 2250 ml

The site location map of the project and the significant localities around the project are given as under-:



2. SCREENING & SCOPING

2.1 TYPE AND CATEGORY OF PROJECT

Pakistan Environmental Protection Act (PEPA), 1997 amendment in 2012 stipulates that an IEE is mandatory for Development Projects. Therefore, an IEE is required for projects for policy procedure, filing, review and approval of environmental assessments". As this project is enlisted in EIA/ IEE regulation 2022 **Schedule- II**, **Category B (4)**, (Food processing industries including sugar mills, beverages, milk and dairy products, with total cost more than Rs.200 million) so EIA is conducted.

2.2 OBJECTIVES OF THE PROJECT

The main objectives of the project Gourmet Foods (Private) Limited:

- To ensure environmentally safe, hygienic and quality Beverage.
- Affordable for all
- Increased availability of high-quality Beverage product
- Better monitoring, and improved governance and management of Beverage
- To promote sustainable production practices by minimizing energy consumption, reducing waste generation, and encouraging the use of eco-friendly packaging to lessen environmental impact.

2.3 ALTERNATIVES

2.3.1 NO PROJECT OPTION

The Beverage industry is considered one of the rapidly growing sectors within Pakistan's food and beverage market. According to recent market research, Pakistan along with other Asia-Pacific countries is forecasted to witness significant growth potential in the Beverage sector, with a robust CAGR in the coming years. Modernization of this industry, aligned with changing urban lifestyles, increasing population, and the gradual shift from rural to urban areas, indicates a strong demand for convenient and ready-to-eat desserts. These factors collectively highlight the growing potential for high-quality Beverage products in Pakistan's food industry.

There is no other better option to be consider by the proponent as the current project is the need of time. This project is situated at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura. So, the Beverage Production will be developed at this place to meet the growing demand along with boosting up commercial activities of Area.

2.3.2 YES, PROJECT OPTION

The main consumers of Beverage are children, youth, and adults alike. Due to its refreshing taste, variety of flavors, and appeal as a convenient ready-to-eat dessert, Beverage has become an increasingly popular product across all age groups. It not only serves as a source of quick energy owing to its carbohydrate and fat content but also provides nutritional value through milk-based ingredients such as proteins, calcium, and essential vitamins.

In light of these factors, the proposed project of establishing a Beverage Production unit will contribute positively to the country's economy while also catering to the growing market demand for quality Beverage products. The proponent therefore intends to set up this unit to play a vital role in meeting consumer needs and supporting industrial development.

2.4 APPROACH ADOPTED TO CONDUCT THE STUDY

Following approach and methodology has been adopted for conducting the EIA studies:

2.4.1 REVIEW OF AVAILABLE DATA

A detailed review of the following available documents of the project was conducted:

- Desk Studies
- Preliminary Design Report
- Construction Drawings
- Layout Plans

The basic objective of the review was to fully understand the Project and the extent of the developmental activities. The review of studies helped to assess the nature and

extent of the impacts related to the implementation and operation of the proposed project activities.

2.4.2 ENVIRONMENTAL BASELINE SURVEY OF THE PROJECT

Prior to the start of the baseline environmental survey, a checklist was developed. The major items, which were considered for physical, ecological and social environment, are discussed in the subsequent paragraphs.

Physical Environment

For collecting information on the physical environment, the following main parameters were considered:

a) Land Resources (including land use, soil composition, topography, geology, contamination of soil and soil erosion, etc.)

b) Water Resources (including available surface water resources and natural streams, spring water, etc.)

c) Climate (including temperature, rainfall, humidity, wind direction, etc.), Ambient Air and Noise Quality

d) Existing solid waste management and effluents disposal practices and storm water drainage.

Ecological Environment

Under the ecological environment, the following main parameters were covered:

a) Flora

b) Fauna

Social and Cultural Environment

To assess the social and cultural baseline settings of the Study Area, social survey was carried out to accomplish the following specific objectives:

a) To establish the socio-economic conditions.

b) To identify the potential disruption of private infrastructure.

c) To identify poor and vulnerable groups and strategies to ensure that such groups should get benefit from the Project.

d) To ensure adequate public/stakeholder consultations and their participation.

e) To identify the effects on available common resources of the community due to the implementation of the Project.

2.5 ANALYSIS OF DATA

After collection of the physical, ecological, environmental and social data from both primary and secondary sources; a critical analysis was made to assess the existing baseline conditions and potential impacts.

2.5.1 SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- Environmental problems due to project location.
- Environmental problems related to design.
- Environmental problems resulting from project operations.
- Potential environmental enhancement measures.

2.5.2 PREPARATION OF ENVIRONMENTAL MANAGEMENT PLAN (EMP)

An EMP depicting the mitigation measures and monitoring plan has also been developed. Institutional capacity building of the Client has also been reviewed and enhancement was proposed for the effective implementation of the EMP.

CHAPTER 3: DESCRIPTION OF PROJECT

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.

3.1 Screening/Type and Category of Project

Section 12 of Punjab Environmental Protection Act says that no proponent of a project shall commence/ undertake construction or operation of any sort unless they had filed with the Provincial Agency an Initial Environmental Examination (IEE) and an Environmental Impact Assessment (EIA), where the project is likely to cause an adverse environmental effect. The Proponent has to secure approval from the Provincial Agency in respect thereof. Punjab Environmental Protection Act provided the guidelines for categorizing the projects. As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Proposed project falls in the **Schedule-II** of the projects mentioned in ***Category B (4)***, *(Food processing industries including sugar mills, beverages, milk and dairy products, with total cost more than Rs.200 million)* so EIA is conducted.

3.2 SITE FEASIBILITY

Economic viability, investment limitations, market volume, ensured availability of costumers, availability of dependable energy source, availability of project basic support systems and environmental management are the main considerations. All these factors were taken into consideration while selecting a suitable site for the project. The present place from all point of views was the most suitable. The major points taken into consideration and their summary discussion, for the site selection is given as under-:

- Easy access for everyone
- Availability of flavored Beverage

The project site is linked to Quiad-e-Azam Business Park Road.

3.3 ELECTRICITY ALTERNATIVES

Electricity will be supplied by Industrial Estate Sheikhupura (QABP) which is sourced by LESCO.

3.4 WATER ALTERNATIVES

Water is necessary element to carry out daily routine work and some water is also necessary during Development. For construction and operational phase ground water will be used which will be provided by Industrial Estate which will be supplied by Industrial Estate. So there is no need to consider any alternative regarding water.

3.5 LOCATION AND SITE LAYOUT

Gourmet Foods (Private) Limited is located At Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura. The project site is accessible through main QABP road and Co-ordinates of project site are at 31°44'3.52"N 74° 3'52.37"E , location of the project site is given below;

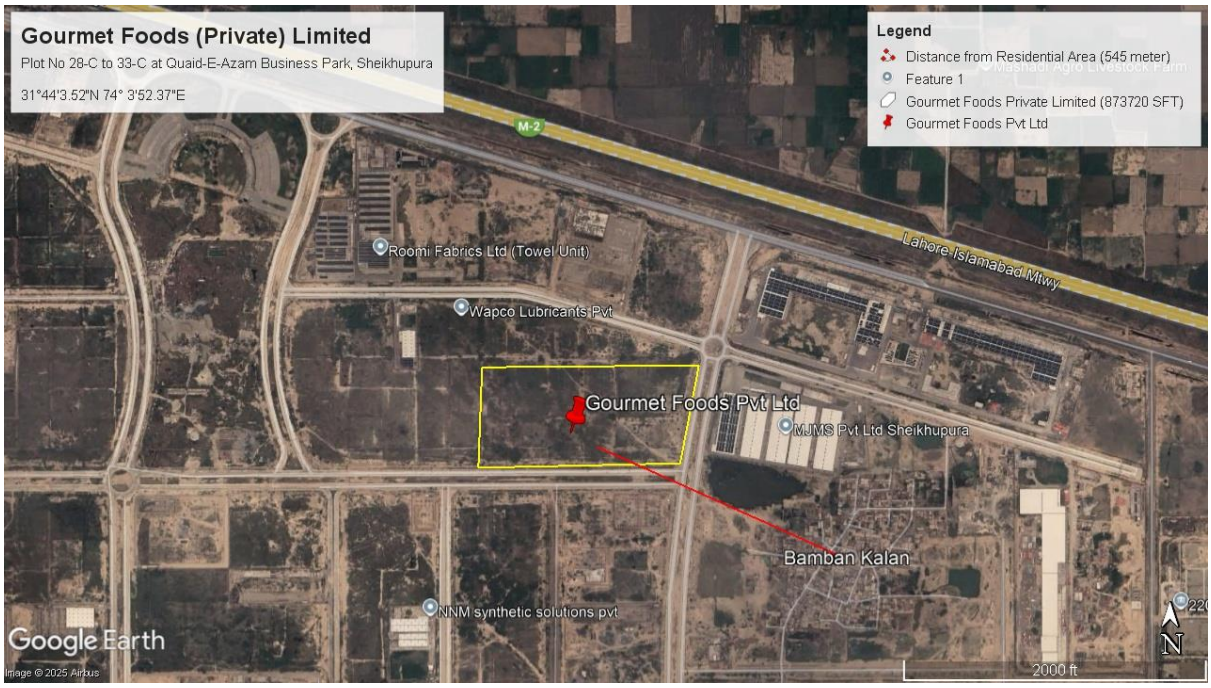


Figure 1: Site location map

3.6 ROAD ACCESS:

The project site is linked to main Quiad-e-Azam Business Park Road.

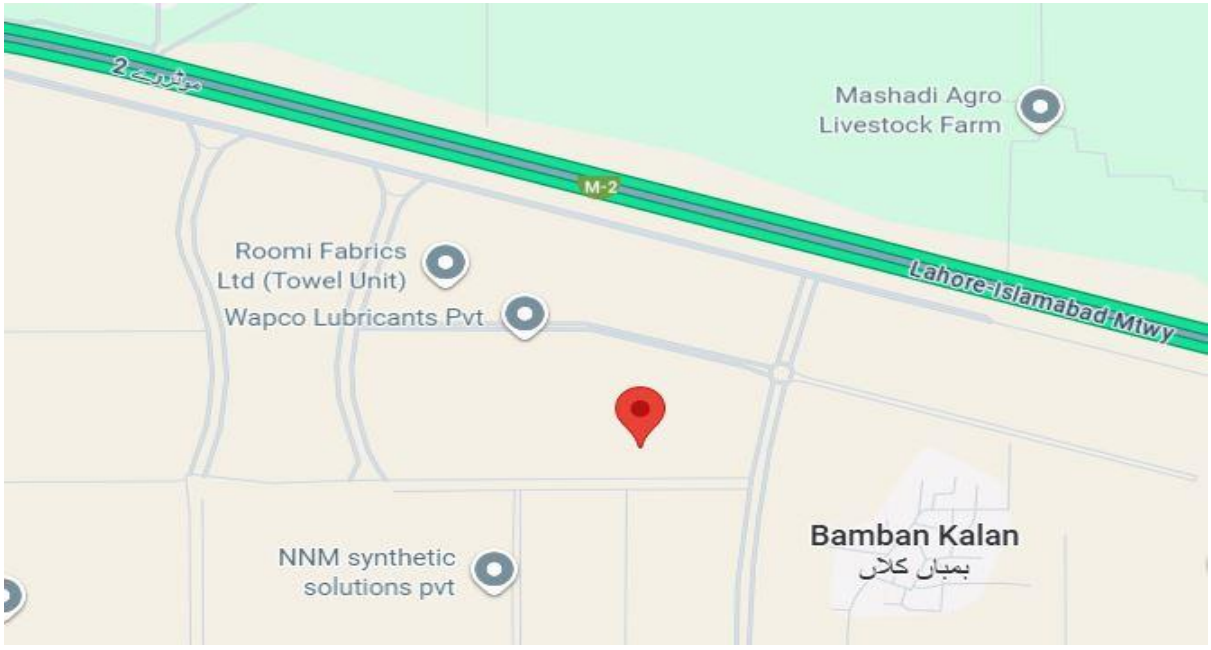


Figure 2: Road Access Map

The layout plan with detail features of the project is attached in Annexure.

3.7 LAND USE ON SITE

Currently the land is open/vacant plot. The project area falls within the uninhabited land comprising of bushes and shrubs. Land is owned by the Company and Land document is attached as Annexure.

3.8 VEGETATION FEATURE ON SITE

The site is partially covered with grass patches and bushes. The area around the project is industrial. The main crops grown around the project area includes; rice, wheat and maize.

3.9 MANAGEMENT PLANS:

Following management plans will be employed to reduce the impact of the proposed activity

3.9.1 AIR EMISSIONS:

Slight air emissions are expected to be produced from boiler during the operational phase. To control air emissions from the boiler, dry scrubber will be installed. Other than boiler no air emissions will be produced during operational phase which will

deteriorate the air quality, so no major air emission will be produced except transportation of material by vehicles exhaust emissions. The possibility of exhaust emissions increases when old vehicles are utilized for the execution purposes. Generally, the above activity will generate particulate- matter (PM_{10}), smoke, dust, CO and NOx in the ambient air, which is deteriorating the air quality and resulting in impacts on human health, fauna and flora. The movement of heavy vehicles on the dirt tracks will also cause dust emissions. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface.

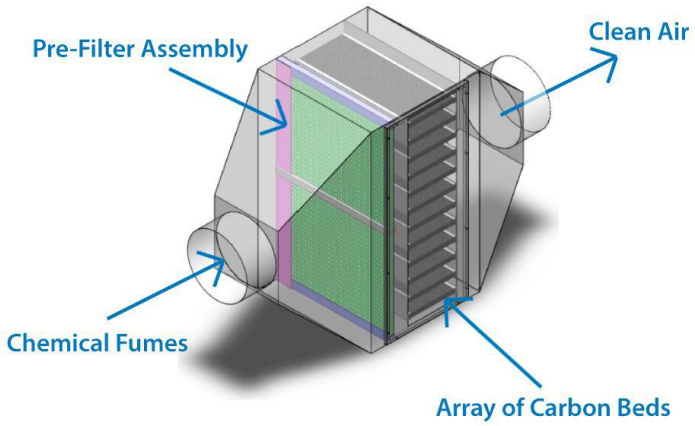
3.9.2 Dry Scrubber design and working principle

Dry scrubbers work similarly to other scrubbers. The system sprays a collection of dry reagents into an exhaust stream. These chemicals can react differently depending on which material they are specifically targeting for removal. Some of these materials neutralize harmful pollutants in the stream through a chemical reaction, while others cause a material to react and turn into a different substance. That substance then falls out of the gas stream or is caught in a particle screen.

Dry scrubbers remove acid gases, this is done by introducing a series of dry reactants to exhaust gas at high speeds. This neutralizes the pollutants in the gas. This task is done in three steps: gas cooling, reagent injection, and filtering. First, gas cooling will be done to prepare exhaust gases. In the gas cooling system, emission gases are cooled to make it easier to remove pollutants and other toxins from the gas. The exhaust gas is diluted using an evaporative cooler. Once the gas has been significantly cooled the reagent injection can begin. It is in this step that the harmful components are actually removed from the gas. Components of the dry reagent are generally chosen because of their neutralizing properties; thus, sodium bicarbonate is included for the said project scrubber. A variety of powders are mixed together and fired at high pressures into the exhaust gas. Chemical reactions occur that reduce the acidity of the gas and remove harmful pollutants. The final step is using a fabric filter to capture the used scrubbing powder as the cleaned gas exits the scrubbing chamber.

Dry scrubbing has been embraced widely, and one of the biggest advantages to using it is the positive environmental impact. The removal of hazardous substances

from exhaust gas is important as it prevents a large number of pollutants from escaping into the air. Dry scrubbers are also more commonly used than wet scrubbers mainly because they produce comparatively little waste material. Most of this material that is sprayed into the exhaust is burned off in the heat of the stream or is caught in a filter. The use of dry scrubbers is less expensive as there is no associated cost with removing, transporting, and storing waste water from wet scrubbers.



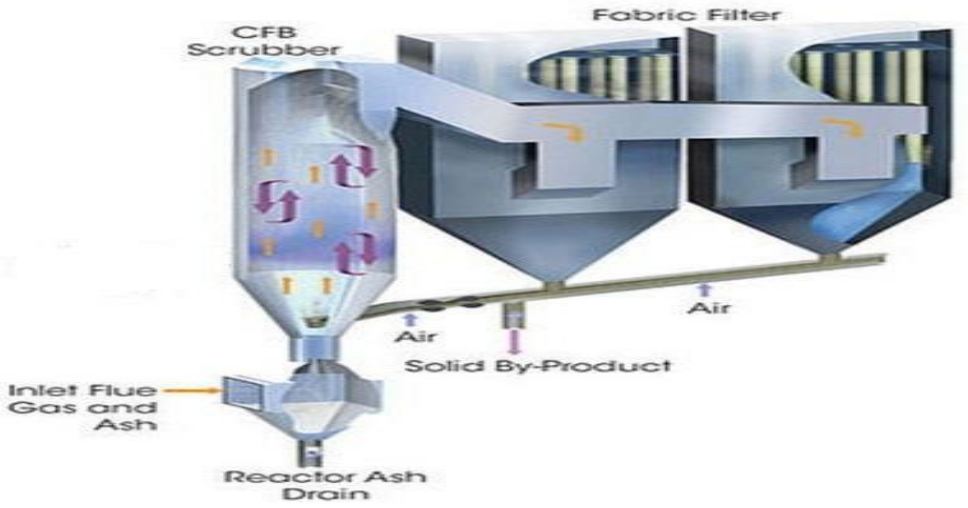


Figure 3: Design of Dry Scrubber

Specifications:

Specifications of the dry scrubber to be installed

Voltage 440 Volt	**Airflow (m^3/h or CFM)** 1000- 50000 CFM
Orientation Horizontal	**Type** dry Scrubber
Automation Grade Automatic	**Material of Construction** Stainless Steel
Power Source Electricity	**Efficiency** >90%

3.9.3 Boiler Specifications

A natural gas fired boiler with capacity of 5 Tons/hour will be used in proposed project for plant operation.

Operation Instructions

1. **Remove trapped air before running**

a) Notices for feed water pipe line

b) Venting of gas pipe line

2. **Inspection before running**

Open feed water system and gas fuel system valves to check they are normal. Confirm the operation valves are on the correct positions and the pressure of the gas supply is in the allowable working range.

3. **Starting the Steamer**

a. Turn the electrical power switch ON.

b. Turn the running switch ON.

c. Make sure the booster pump is working properly

d. Check the water level in the water column

e. Turn ON the burner switch then the air within the furnace will be purged.

f. . The burner will be fired at combustion state after 20-40 seconds.

4. **Attention during running**

a) Check the force draft fan and feed water pump has the unusual sounds.

b) Check that the gas pressure is same as the previous day.

c) Check whether the color of the smoke emission through the chimney is white or black.

d) Check whether the water level in the water column has extreme variation.

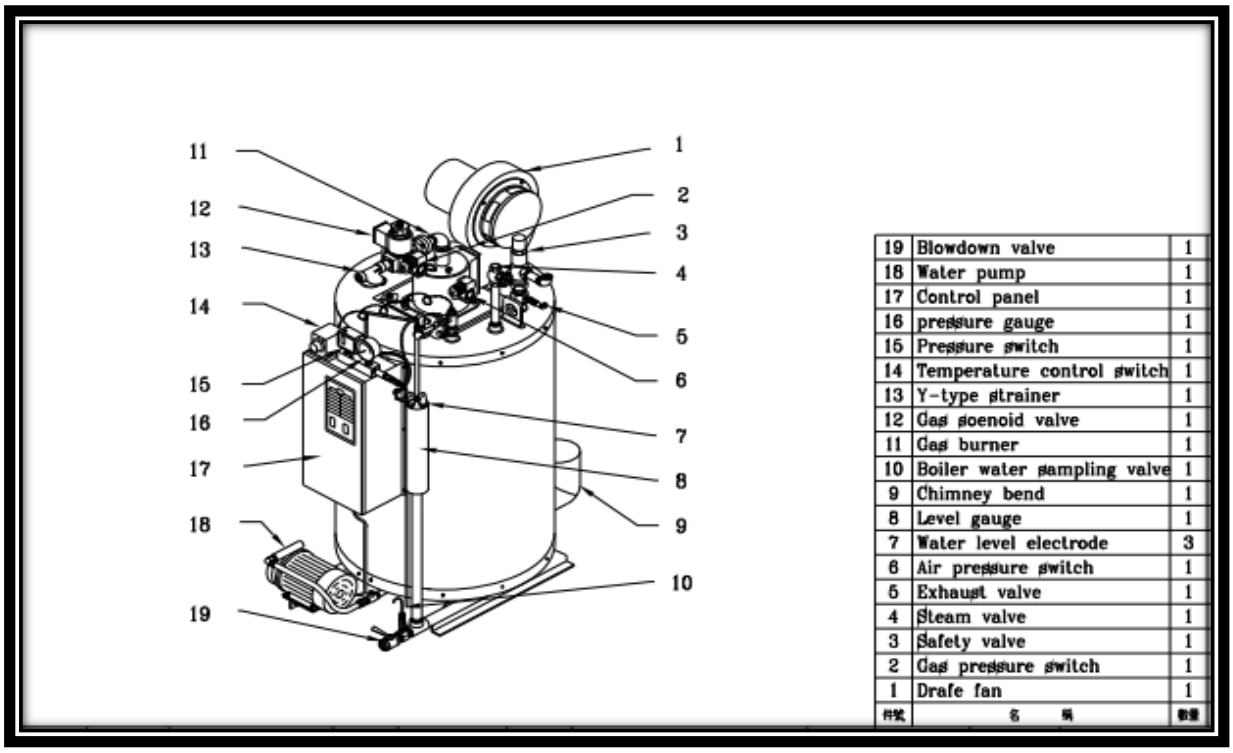
e) Open the main steam valve slowly

5. Shutdown

a) Turn the firing and the running switches OFF.

b) Turn the electrical power switch OFF.

c) Shut off the feed water, the fuel systems and the main steam valves.



19	Blowdown valve	1
18	Water pump	1
17	Control panel	1
16	pressure gauge	1
15	Pressure switch	1
14	Temperature control switch	1
13	Y-type strainer	1
12	Gas soenoid valve	1
11	Gas burner	1
10	Boiler water sampling valve	1
9	Chimney bend	1
8	Level gauge	1
7	Water level electrode	3
6	Air pressure switch	1
5	Exhaust valve	1
4	Steam valve	1
3	Safety valve	1
2	Gas pressure switch	1
1	Drafe fan	1
件号	名 称	数量

Figure 4: Design of boiler

3.10 WATER REQUIREMENT, WATER BALANCE & DISPOSAL

For construction stage the ground water will be used. About average 94meter cube per day of ground water will be used in construction phase of the project. For Operational phase of the proposed project water requirement is during batch formation along with the domestic; required primarily for floor cleaning and for fire-fighting besides domestic uses (drinking). Groundwater will be the source of water for all these requirements. The ground water will be supplied by industrial estate. The total water requirement will be 70m^3/day out of which 50m^3/day is domestic water demand. Whereas the RO plant will also be installed at the facility

The proposed Beverage Production unit will have an estimated total water consumption of around 120–150 m^3/day (≈5–6 m^3/hr). The distribution of this water

usage will include domestic requirements of about 5,000–8,000 liters/day. Out of this reject stream, a portion will be reused for rinsing and floor washing, while the remaining will be processed for recovery, enabling partial reuse within the plant.

The domestic/Municipal wastewater will be treated through septic tanks prior to dispose in main sewerage line. While as mentioned above that the total usage of water for RO plant will be 36,000 liters/day out of which 25000liters will be utilize and 11,000 liters of water will be rejected water. An estimated amount of 3000 liters will be used for bottles rising purposes from the RO rejected water and 8000 liters will be processed for recovery while out od that 8000 liters, 3000 liters of water will be recovered and re utilized by the plant.

Furthermore, in other process activities 973,000 liters of total shall be required from which 80% of water will be utilized while the remaining wastewater containing high level of COD will be treated through a WWTP and shall be stored in tank from where it will be reutilized for boiler. So, technically there will be only municipal wastewater will be generated and the other wastewater will be reused after getting a proper treatment. And process flows are given below.

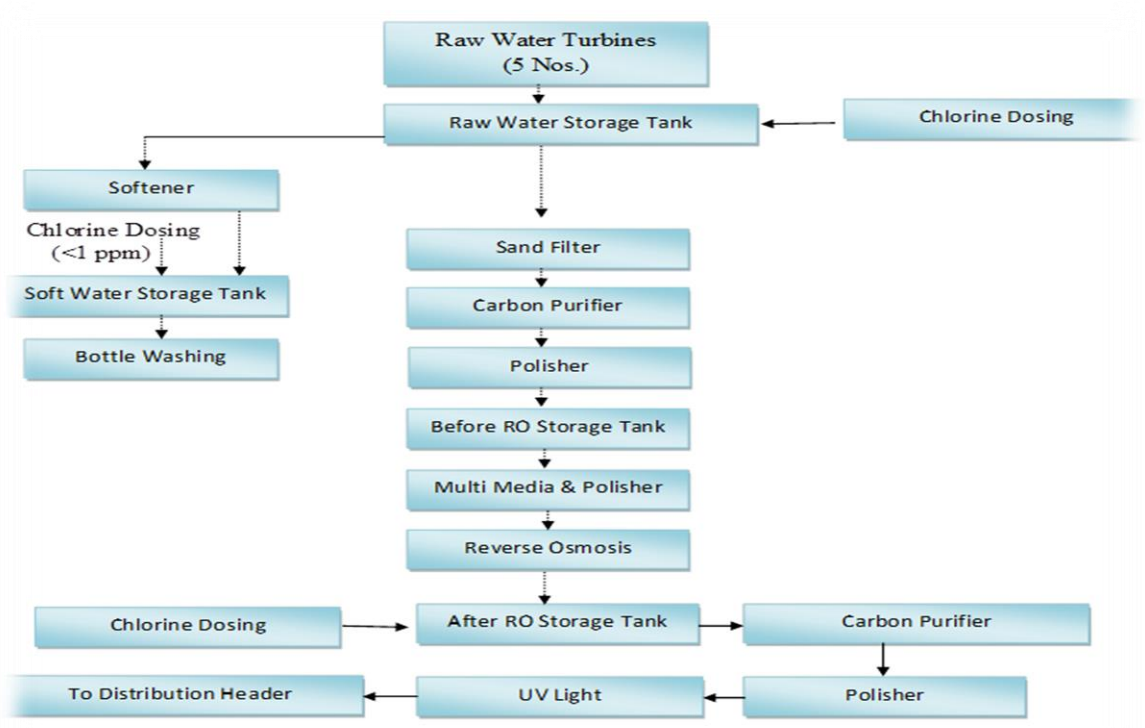


Figure 5: Process Flow of RO Plant

3.11 COST AND MAGNITUDE OF THE PROJECT

Main activities will be taken during construction phase are the foundation works and Structures concreting. The development and civil work cost of the project is given below in table, While the total cost of the project is PKR 2410 Million, including land cost, contractor cost, cost of buying material and Environmental Budget.

Sr. No.	Source	Cost (PKR)
1	Construction & Building Material Cost	630 M
2	Land Cost	1079 M
3	Machinery Cost	564.8 M
4	Raw Material Cost	136 M
5	Environmental Budget	0.2 M

3.12 SCHEDULE OF IMPLEMENTATION

Duration for the completion of Gourmet Foods (Private) Limited is about 6-8 months. There will be a symmetrical process. The process is divided in to 3 phases

Pre-construction phase

This phase includes:

- Site investigation & Evaluation
- Budgeting
- Design
- Schedules of working
- Obtaining all relevant NOC

Construction phase

This phase includes:

- Management team& Construction Crew
- Excavation
- Construction of building
- Provision of allied facilities
- Mitigation process
- Amenities

- Managing safety
- Monitoring & Evaluation

Operational phase

This phase includes:

- Implementation of fire safety, emergency evacuation plans
- Security management
- Finishing of amenities
- Finishing of the unit
- Proceeding of unit

3.13 PROJECT DESCRIPTION

Raw materials:

List of Raw Materials To be consumed
Sugar
Preform
Water
CO2
Caps
Label/Shrink/Stretched Films
Concentrate

Process involved in Production:

1. Water Treatment

The beverage production process begins with raw water, which undergoes a comprehensive water treatment procedure to ensure it meets quality and safety standards. This step typically involves filtration to remove suspended solids, softening to eliminate hardness, and disinfection using chlorine or UV light to kill microorganisms. The treated water must be clear, odorless, and free from contaminants, as it forms the main component of the final beverage.

2. Simple Syrup Preparation

In this stage, sugar is mixed with a measured quantity of treated water to prepare a simple syrup. The mixture is heated and stirred until the sugar fully dissolves, forming a uniform solution. This step ensures that the sweetness level remains consistent throughout production. The syrup serves as the base for flavor development in the beverage.

3. Pasteurization

Once the simple syrup is prepared, it undergoes pasteurization to destroy any remaining microorganisms that could spoil the beverage. The syrup is heated to a specific temperature for a set period, ensuring microbial safety without altering its flavor or composition. Pasteurization is a critical quality control step that extends the product's shelf life

4. Cooling

After pasteurization, the hot syrup must be cooled to prevent caramelization and to prepare it for mixing with other ingredients. The cooling process is carried out under controlled conditions to maintain the syrup's quality and prevent contamination. The cooled syrup is then stored temporarily in hygienic tanks until further processing.

5. Final Syrup Preparation

In this step, the cooled syrup is blended with other ingredients such as flavors, colors, acids, and preservatives to produce the final syrup. Each ingredient is added in precise quantities according to the product formulation to achieve the desired taste, aroma, and appearance. The resulting final syrup determines the characteristic flavor profile of the beverage.

6. Mixing

The final syrup is then mixed with treated water in a specific ratio to obtain the beverage base. The purpose of this step is to achieve the desired concentration and sweetness level. Proper mixing ensures uniformity and consistency throughout the product, which is essential for maintaining quality standards

7. Carbonation

During carbonation, carbon dioxide (CO_2) gas is dissolved into the beverage under high pressure to create the fizz that characterizes soft drinks. This not only enhances the sensory appeal but also acts as a mild preservative. The carbonation level must be carefully controlled to achieve the desired mouthfeel and taste balance

8. Blowing (Bottle Formation)

Parallel to the beverage preparation, PET preforms are heated and expanded through a blowing process to form PET bottles. This process involves high-pressure air that shapes the preform into the desired bottle size and design. The produced bottles are light, durable, and ready for the filling operation

9. Filling and Capping

In this stage, the carbonated beverage is filled into PET bottles under pressure to prevent loss of carbonation. The bottles are then immediately capped in an automated system to ensure airtight sealing. Maintaining hygiene and pressure control during this process is crucial to preserve carbonation and product quality.

10. Post-Filling Inspection

After filling and capping, bottles undergo a post-filling inspection to check for defects such as leaks, improper capping, or incorrect fill levels. This step ensures that only properly sealed and filled bottles move forward. The inspection process helps maintain quality assurance and compliance with industry standards.

11. Labelling

In the labelling section, approved bottles are fitted with brand labels that display product details such as name, ingredients, nutritional information, and expiry date. The labels are applied accurately and securely using automatic labelling machines. Proper labelling is essential for both marketing and regulatory compliance.

12. Packaging

Finally, the labelled bottles are collected and packed into cartons, crates, or shrink wraps for distribution. The packaging step ensures the safe transportation and storage of the product. Proper packaging maintains the beverage's integrity until it reaches retailers and consumers, marking the completion of the production process.

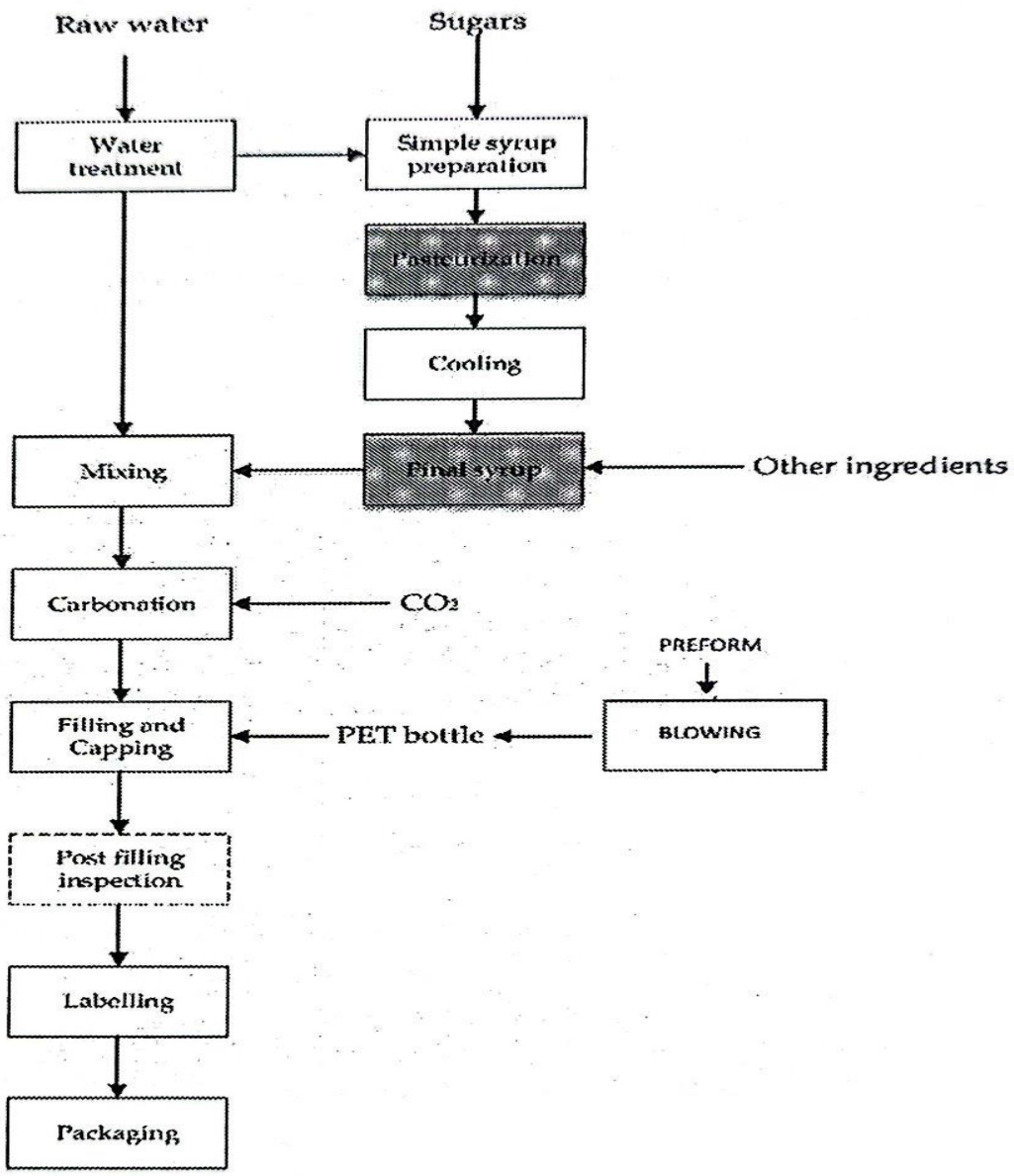


Figure 6: Process Flow Diagram

LIST OF MACHINERY:

Imported machinery Details

Sr.no	Name/Type/Make of Machinery	Quantity
1.	CSD Krones Lines	2
2.	Pallet Labeller & Lazer Jet Cooling	2
3.	HP Compressor	3
4.	Chiller	3

5.	Sugar Dissolving	1
6.	CO2 Tanks	3
7.	LP Compressor	2
8.	Steam Boiler	1
9.	RO Plant	1
10.	Solar Pannels Equipments	4918

Local Machinery List

Sr.no	Name/Type/Make of Machinery	Quantity
1.	Transformers	3
2.	Gensets	4
3.	CIP System	1
4.	Syrup Room	2
5.	Tanks	8
6.	Evaporator	1
7.	Purifier	2

3.14 RESTORATION AND REHABILITATION PLAN

The restoration work comprises the removal of temporary construction works. No individual will have to leave the area for this project so there will be no resettlement issues. There were no trees present on site. In order to enhance the environmental features of the site, the indigenous trees will be planted accordingly.

3.15 GOVERNMENT APPROVALS

The project is seeking Environmental Approval from Punjab Environmental Protection Agency (Punjab-EPA) and District Council Sheikhupura.

4. DESCRIPTION OF ENVIRONMENT

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area. The information has been compiled by using primary and secondary data resources. This chapter also refers to the theoretical analysis of the methodology adopted for collection of baseline data. The underlying principles and practices adopted in this regard are also discussed.

4.1 Methodology

The methodology employed to collect the baseline data and information regarding the social structure and various related parameters as discussed in sub-sections below:

4.1.1 Data Collection

The primary data was collected by visiting the project area and its communities in its nearby vicinity. The secondary data regarding physical parameters (topography, geology, seismology, and climate) was obtained by visiting relevant various government departments and their official websites. The biological parameters such as flora and fauna were studied by preparing a floristic list based on visual observation and fauna was studied by using opportunities approach. The species were recorded with reference to their existence in the project area. Information on wildlife fauna species (mammals, amphibians, reptiles, birds, etc.) in the assessment area was compiled based on opportunistic observation, gathering the existing information and consultation with local experts, community members and government and Non-Government Organizations (NGOs). The socioeconomic aspects were studied and analyzed by studying detailed village profile and by conducting household surveys.

4.1.2 Social Survey

The purpose of social survey was to record the present condition of the people living in the project area and to assess the expected project impacts on their life, subsistence systems and socio-cultural conditions. Prior to conducting the field surveys, the following steps were taken:

- Clear boundaries of the project area were identified

- Decided the sampling procedure in order to draw a representative sample size of the target population and households
- Developed the tools for data collection i.e. questionnaires to access the socio-economic status of the area

4.1.3 Sampling Design

Social baseline data of the persons residing in the study area has been estimated and collected through random sampling by using pre-developed questionnaires.

4.1.4 Questionnaires

In order to test the validity and reliability of the proposed questionnaires, they were reviewed to assess whether questions needed to be clarified, changed or re-sequenced and then a final editing of questionnaires was conducted prior to their application in the project area. The sample of socio-economic questionnaires used is attached as Annexure.

4.1.5 Data Editing and Analysis

The filled questionnaires and recorded information were compiled by the same field investigators who were involved in the data collection. This was done immediately after completing the field investigations. Data sets were processed. Analysis of the data and preparation of conclusions in the minimum possible time was done using statistical techniques of data analysis.

4.2 Review of Legal and Administrative Framework

The objective of reviewing legal and administrative framework is to obtain information on all legislation pertaining project development. The Socio-Environment Team of EnvironTech Consultants (PVT) Ltd. reviewed the environmental policies, national, international and provincial laws and guidelines relevant to the development of project which helped in systematic identification of impacts.

4.3 Baseline Conditions

This chapter provides baseline data (physical, biological and socio-economic parameters) related to the project and study area

4.4 Physical Environment

Pakistan Can be divided into five broad physiographical regions. These are the mountainous regions of the north, the western highlands and plateaus, the sub-mountains Indus region, the Potohar Plateau, Salt Range, and the Indus Plain. Brief description of these regions is given below:

Region	Characteristics	Location	Height
Northern Mountainous	Hindu Kush Karakoram and Himalayan Mountain Ranges	Northern Part of KPK, Gilgit Agency, Northern Areas and Kashmir.	Rises above 8,000m
Western Highlands and Plateaus	Toba Kakar, Sulaiman, Central Baruhi, Saihan, Central Makran, Makran Coastal and Kirthar Ranges	Mainly in Baluchistan, also parts of Sindh and KPK	Between 1,200 to 3,000 m
Sub-Mountains Indus	Alluvial filled Basins	Plains of Peshawar Kohat and Bannu	Less than 1,000 m
Potohar Plateau and Salt Range	Flat to gently undulating surface, broken by gullies,	Mainly northern parts of Punjab, some parts of KPK	Less than 1,000 m
Indus Plain	Flood plains of the Indus, Jhelum, Chenab Ravi and Sutlej Rivers	Punjab and Sindh	Less than 1,000 m

4.4.1 Topography

Sheikhupura the city of Punjab province, eastern Pakistan. In the town center stands a fort of the Mughal emperor Jahangir (completed 1619) that also served as the 19th-century residence of one of Ranjit Singh's queens; outside the city, the massive Hiran Minar tower overlooks the countryside. Sheikhupura is connected by road and rail with Lahore (25 miles [40 km] southeast) and various other cities. It is an industrial center that makes food products and textiles. The city is in a section of alluvial plain known as the Bar tract, which is irrigated by the Chenab Canal system.

Sheikhupura is an industrial city in the northwest of Punjab province, Pakistan. The city is also the administrative headquarter of the Sheikhupura district and is approximately 38 km from Punjab's provincial capital, Lahore. District Sheikhupura is bounded on the North by Gujranwala and Hafizabad districts, on the North-East by Narowal district, on the West and South-West by Nankana Sahib District, on the East by Lahore district.

Project Site:

The proposed project site is located in Quid-e-Azam Buisness Park, District Sheikhupura.

4.4.2 Hydrology

Groundwater from depth of 100 ft can be used for drinking and other purpose. 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 and industrial needs. Ground water quality report of area is annexed. No surface water body is present within 5 km radius of the project site.

4.4.3 Seismicity

According to Seismic Zoning of Pakistan, the project area lies in Zone 2A and represents minor to moderate damage due to earthquakes.

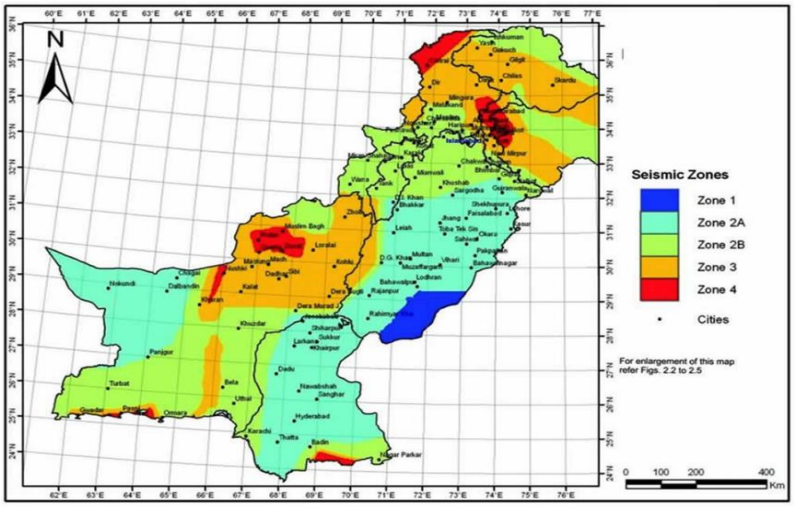


Figure 7: Seismic Zoning Map of Pakistan

4.4.4 Climate

Due to its high evaporation rate, Sheikhupura features hot desert-like climatic conditions according to Koppen-Geiger classification. The climate of the district can see extremes, with a summer maximum temperature 44°C and a winter temperature of 4.0°C The mean maximum and minimum temperature in summer are 43.5°C and 18.0°C respectively. In winter it peaks at around 19.4°C and 4.1°C respectively. The summer season starts from April and continues till October. May, June and July are the hottest months. The winter season starts from November and continues till March. December, January and February are the coldest months. "The bulk of monsoon precipitation occurs in July and August, with monthly averages of 115.0 mm and 89.8 mm respectively. Minimum rainfall occurs in the month of November which is 3.0 mm" (PMD).

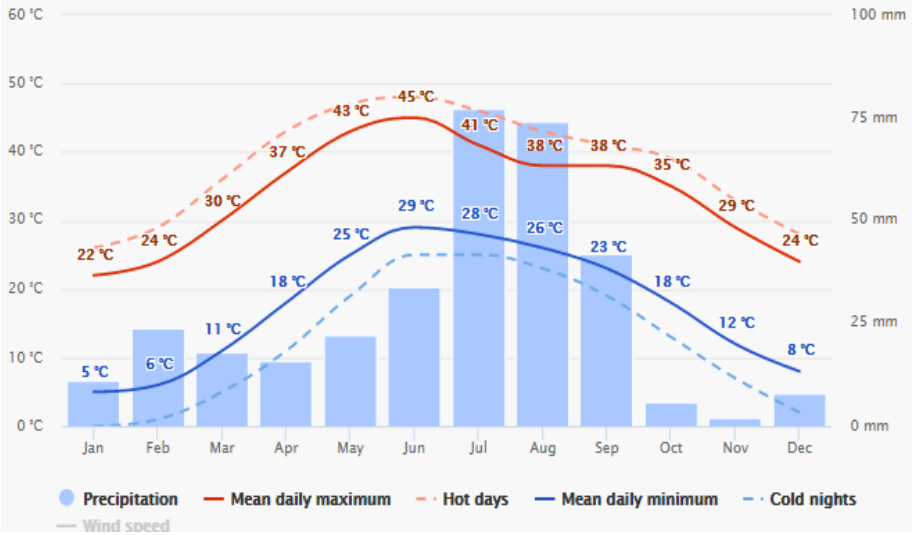


Figure 8: Average Annual Temperatures and precipitation in Sheikhupura

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Sheikhupura. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Weather in Sheikhupura is influenced by Subtropical Dry Semiarid Steppe climate. Low-latitude dry climate. Evaporation exceeds precipitation on average but is less than potential evaporation.

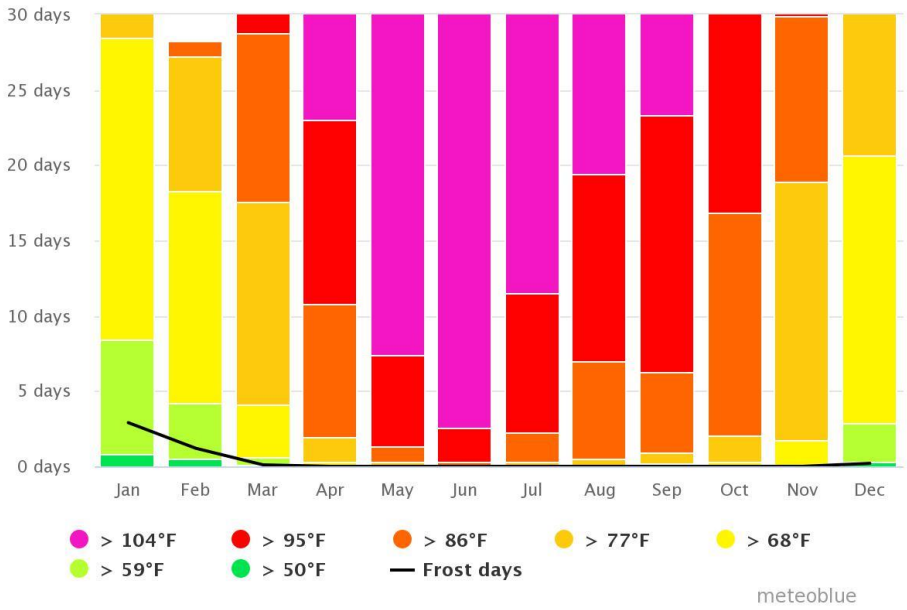


Figure 9: Maximum temperature ranges in Sheikhupura

The graph shows the monthly number of sunny, partly cloudy, overcast and precipitation days. Days with less than 20% cloud cover are considered as sunny, with 20-80% cloud cover as partly cloudy and with more than 80% as overcast.

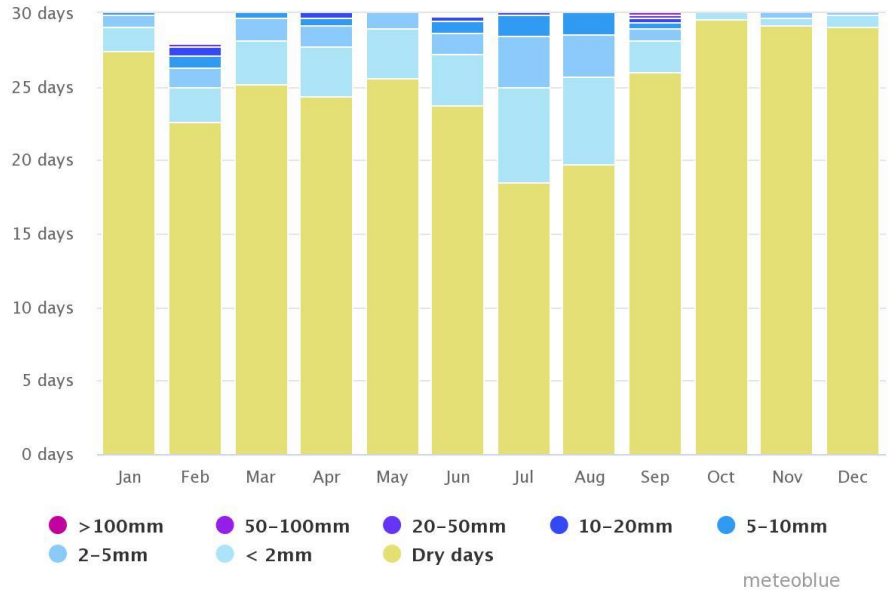


Figure 10: Annual Precipitation amounts in Sheikhupura

4.4.5 Wind

The diagram for Sheikhupura shows the Max and Average Wind speed and Wind Gust.

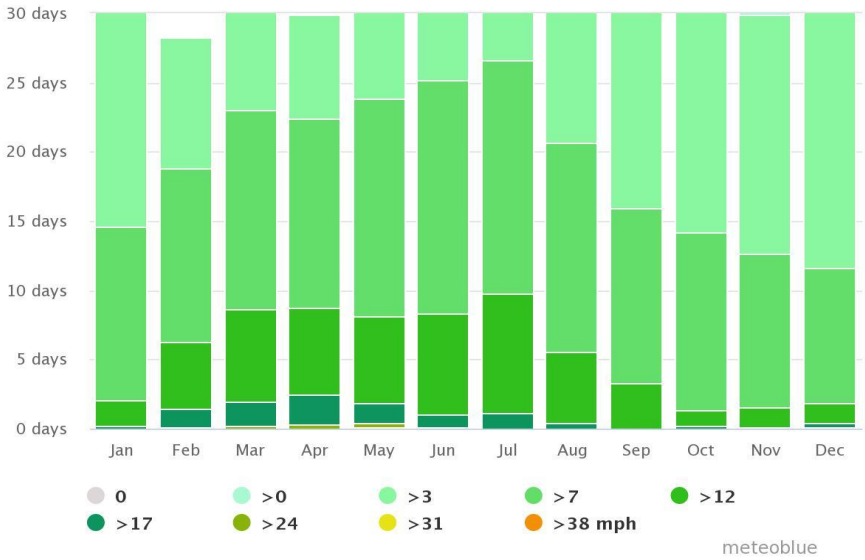


Figure 11: Annual average wind speed in Sheikhupura

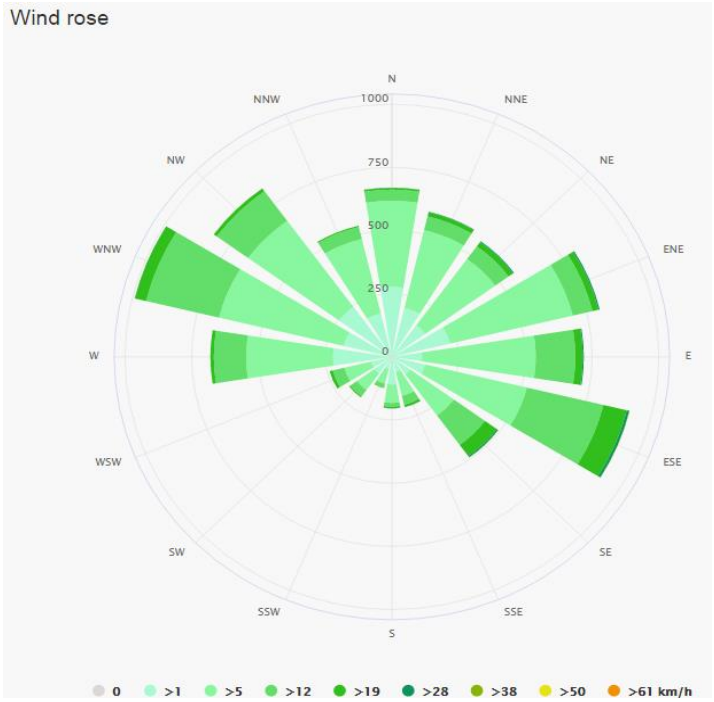


Figure 12: Wind Rose diagram of Sheikhupura

The wind rose for Sheikhupura shows how many hours per year the wind blows from the indicated direction. Example SW: Wind is blowing from South-West (SW) to North-East (NE).

4.5 Ecological Environment

Sheikhupura is enriched with the presence of natural flora and fauna, although with the growing population and development activities, the presence of some has been somewhat affected. They are discussed in detail below.

4.5.1 Aquatic Flora & Fauna

No aquatic ecosystem (i.e. canal, stream, river or pond) observed within or around the study area, which omits the possibility of any kind of aquatic species that may be harmed due to the establishment of proposed project.

4.5.2 Flora

The project is located in industrial area. The project site has no vegetative cover, hence, no trees or vegetation will be removed. The dominant tree species in study area include; Eucalyptus, Neem, and Kikar. The crops present around project site include wheat, sugarcane and common grass. The nomenclature including common, English, local and botanical names of the flora found in the study area are presented in Table

Table 3: Flora of the Study Site

S#	Common Name	Scientific Name
1	Neem	*Azadirachta indica*
2	Kikar	*Vachellia nilotica*
3	Safeda	*Eucalyptus globulus*

4.8.3 Fauna

For study of fauna in the project area, field guides and books were consulted. On the other hand field observations were conducted along with the interviews of local community members about the fauna of the area. The equipment used in field included cameras, binoculars and GPS device (wherever required). It is important to note that there is a number of factors which can change the findings of such survey. It may be pointed out that the pattern of seasonal migration of small birds varies

depending upon each specie. During the construction activity in project area, no important biological feature will be damaged or disturbed as the project falls in industrial area.

The fauna commonly found in District Sheikhupura includes; Hares, Falcon, Eagle, Quail, Starling, Jungle Pigeon, Russian Sparrow, Doves, King Fisher, Parrot, Crow and Local Sparrow.

Commonly found mammals in the area include; dogs, cats, horses, house-rats, squirrels, porcupines and bats. However, Small Indian Mongoose and Indian Palm Squirrel are also found in the District Sheikhupura.

Table 4: Mammals in Study Area

S#	Common Name	Scientific Name
1	Rat	*Rattus*
2	Bat	*Chiroptera*
3	Small Indian Mongoose	*Herpestes javanicus*
4	Indian Palm Squirrel	*Funambulus palmarum*
5	Porcupines	*Erethizon dorsatum*
6	Squirrels	*Sciuridae*

The commonly found bird's species include; House Sparrow, Crow and some of them are mentioned below with scientific names.

In District Sheikhupura reptiles such as Snakes (Cobra and Kraits), Spiny Tailed Lizard and Fringed Toed Lizard are common in the tract, but cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away.

Table 5: Birds in Study Area

S#	Common Name	Scientific Name
1	House Sparrow	*Passer domesticus*
2	House Crow	*Corvus splenders*
3	Pigeon	*Columbidae*
4	Bulbul	*Pycno notidae*
5	Teetar	*Francolinus francolinus*
6	Parrot	*Psittaci forms*
7	Titodi	*Vanellus indicus*

Table 6: Reptiles in the Study Area

S#	Common Name	Scientific Name
1	Snake	*Serpentes*
2	Spiny Tailed Lizard	*Uromastix hardwickii*
3	Fingered Toed Lizard	*Acanthodactylus cantoris*
4	Earthworm	*Lumbricina*

The amphibians commonly seen around the project area, especially during the rainy season includes;

Table 7: Amphibians in the Study Area

S#	Common Name	Scientific Name
1	Common Frog	*Rana temporaria*
2	Indus Valley Toad	*Bufo stomaticus*

A large number of insects are present due to open fields in the project site. Few of these insects are known to cause diseases in local population. Following is a list of commonly observed insects at the site:

Table 8: Insects in Study Area

S#	Common Name	Scientific Name
1	Black Ants	*Paratracheaiognicornis*

2	Dragon Fly	*Dragon Fly*
3	House Flies	*Musca domestica*
4	Butter Flies	*Parnassiusbalucha*
5	Honey Bees	*Apismellifera*
6	Wasps	*Anagyrus pseudococci*
7	Grasshopper	*Melanoplus differentialis*
8	Mosquito	*Anophlese sp.*

No endangered species are found at the site. The area has not been identified as ecologically sensitive area by wildlife department.

4.8.4 Water Resource

The main source of the water consumption is the ground water which is being pumped from 200 ft borehole and its being used in the study area for domestic purposes. To check the quality of the water in the area, ground water was collected and analyzed. The ground water was collected from bore hole adjacent to the project area.

4.9 Socio-Economic Resources

This section provides collective information about the existing socio-economic and environmental condition of the project area within the AOI. The different types of socio-economic aspects were covered such as demographic profile, occupation, education and health facilities. This data helped in identifying major interventions for the development of Environmental Management and Monitoring Plan (EMMP). The study also helped to assess the positive or adverse impacts on local community.

4.10 Socio-Economic Profile of Study Area

This topic provides an overview of the baseline information relating to the socio-economic environment of the project area and the AOI. The socio-economic study gives information about the demographic profile, occupation, education and health facilities in the project area.

4.11 Demographic Profile

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

Different community individuals in the vicinity of the project area have different family sizes depending upon their living setups. Average family size is however 5-7 individuals per family with 1-2 earning hands per family.

4.11.1 Health Facilities

As the project site is in an Industrial zone. DHQ Hospital Faisalabad is located at the distance of approx. 16 Km radius. Some other private health center is present as Villages area present in the vicinity of the project site.

4.11.2 Educational Facilities

As the project site is not located in any residential area. However, the villages located around project site have few governments' primary schools.

4.11.3 Cultural, Religious & Other Structures

No cultural, religious and other structures are present in the close proximity of the project area that needs to be relocated. Villages present around the project site have mosques and imam bargah.

4.12 Lab Reports of Environmental Analysis

Testing of different parameters was done from a certified laboratory named SEAL to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is attached at Annexure of this IEE Report.

4.13 Suitability of Site:

Comprising all assessment of above baseline data there will be no significant ecological/ environmental impact expected in and around the present selected project site, hence it is suitable for the proposed project.

5 .POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATIONS

This chapter identifies the potential impacts related with Preconstruction, construction and operation phases of the Project on the physical, ecological and socio-economic domains of the environment. Accordingly, mitigation measures have been proposed to mitigate the negative impacts and to enhance the positive impacts.

5.1 Approaches and Methodology

During the preparation for the project construction phase the future contractors must be notified and prepared to co-operate with the executing agency, project management, supervising consultants and local population in the mitigation of impacts. Furthermore, the contractor must document and implement the EMP in full and be ready to engage trained environmental management staff to audit the effectiveness and review mitigation measures as the project proceeds. The effective implementation of the EMP will be prepared and must be audited and this will be considered as the most important part of planning. In this regard the proponent must fulfill the requirements of the law and guidance prepared by EPA on the environmental aspects of power projects and the recommendations already made for projects in this EIA and under EIA/IEE regulation 2022 and Punjab Environmental Protection Act (amended 2012).

For impact identification, various EIA methodologies are available including the checklists, interaction matrices, networks and overlays. Among these four methods, following two are used in EIA of Gourmet Foods (Private) Limited.

- Project Interaction Matrix
- Checklists

Project Interaction Matrix

Interaction matrix is a two-dimensional matrix wherein the project actions are placed along one axis (i.e. along y-axis) and on the other axis there are different environmental parameters likely to be affected by the proposed project actions grouped into categories i.e. Physical, Ecological & Socio-economic Environment. Interaction matrix is used in this project due to the following reasons:

- It provides cause-effect relationship between the project actions and resulting consequences impacts.

- It provides nature (+ve or –ve) and weighting of different impacts.
- It provides cumulative impacts of a project.

Matrix grouped project actions into temporal phases. For the impact assessment, project interaction matrix is used by dividing the project action into different phases (Preconstruction, construction and operation). The environmental impacts are divided into three main categories including physical, ecological and socio-economic domains. The environmental impacts of the project actions are identified and weighed into the following categories:

+3 = Extremely Beneficial

+2 = Potentially Positive

+1 = Slightly Positive

0 = Insignificant

-1 = Slightly Negative

-2 = Potentially Negative

-3 = Extremely Negative

The assignment of significance is based on the previous knowledge and professional judgment of EIA team experts. The project impact matrix has been developed and attached in Annexure. It may be noted that the environmental parameters, which are not related to the implementation of the projects, have not been considered in the matrix.

Checklist

The assignment of significance is based on the previous knowledge and professional judgment of EIA team experts. The project Checklist has been developed for "without" and "with mitigation" is attached as Annexure. It may be noted that the environmental parameters, which are not related to the implementation of the projects, have not been considered in the matrix.

5.2 Environmental Impacts and Their Mitigation during Pre-Construction Phase

5.2.1 Environmental Impacts Regarding Project Location

The project is of 020.06 Acres land owned by Gourmet Foods (Private) Limited. (Dairy Beverage Production Unit) which will be constructed at designated area at Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura. The land is present in industrial area and no sensitive inhabitants present in and around the area. So, there is no impact regarding project location.

Mitigation

As in the case of project location, there are no negative impacts on the environment, so no mitigation measures will be required.

5.2.2 Assessing Impacts

Planning for environmental assessment depends upon reliably predicting project impacts on resources and managing those impacts to achieve the greatest gain or the smallest loss. The basis of the prediction is the knowledge of the proposed project and of local resources with which it is expected to interact. Two types of information are, therefore, needed: a comprehensive description of all resources likely to be affected by each of the project components, and an understanding of the project component itself. The baseline information given in the previous section includes all resources, natural and human and all aspects of those resources that may be expected to be touched, directly or indirectly, by the project. Conversely, project information will include all aspects of construction or operation that might affect the environment. Following are the probes which should consider before assessing the impacts.

What is the problem?

The proposed project is of Fruit juices Production unit. The nature of the land is open land having native vegetation such as Neem, Kikar, Safeda and wild grass. The study area is fertile, leveled and industrial land. In addition, to the noise and fugitive dust emissions during the development phase solid waste management and disposal issues may arise along with wastewater disposal issues. The major impact associated with the operation of project includes the management of the solid waste generated during

the processing, wastewater management and air pollution due to the emission of particulate matter from generators and vehicles.

When problem will occur and when it should be addressed?

The impacts from the establishment of project will occur during the operation due to the development involved of Fruit juices Production and the people residing in the project area. These issues included; noise generation, fugitive dust emissions, solid waste management, wastewater disposal, top-soil removal, Health and Safety issues and change in the geographic features of the area. These all problems should be addressed on-site where they are being generated, to avoid the residual or adverse impacts.

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 time frame.

How the problem should be addressed?

Proper mitigations measures will be provided according to the nature of the impacts/problems. For example, against dust emissions sprinkling of water may be done on regular basis, for solid waste proper solid waste management and disposal practices may be adopted, to manage liquid waste proper treatment may be made before discharging into the receiving body. The change landscape is estimated to be quite minor and the removed topsoil may be used to reclaim the disturbed areas.

5.2.3 Approach to Assessment

Various components of the project will interact with local resources in different ways. Therefore, it is useful to divide the project into units small enough that the interactions may be examined individually as well as collectively. The main construction components of the project are Excavations, Concrete, Mixing, Elevation, Finishing and installation of entertainment facilities. Each of these is in effect a project itself. Various aspects of each component are treated separately. They are examined both in terms of construction period and much longer period of project operation. Some component of the project has positive and some have negative impact on environment and on the different factors like socio-economy of the community.

Negative impact

This Fruit juices Production has no potential negative impacts on environment as well on the socio-economic feature of community. Anyhow it has some impacts which have discussed as well as their mitigatory measures have well defined in the previous section.

Positive impacts

The positive impacts of the project are given as under-:

- The employment opportunities in the project area will be increased due to the establishment of Beverage Production unit by M/S Gourmet Foods (Private) Limited.
- The overall economic conditions of the area will be improved due to the establishment of the proposed project.
- This improved system would make use of modernized technologies that could facilitate the fruit juice Production.
- Availability of quality confectionery.

5.2.4 Risk Assessment

Risk assessment is done for construction phase which will describe the potential impacts/hazards so that the precautions/control may adopt accordingly.

Risk Magnitude/ severity	**Assigned Values**	**Probability/ Likelihood**	**Assigned Values**
Low	1	Highly Unlikely	1
Medium	2	Unlikely	2
High	3	Possible	3
Extreme	4	Likely	4
Catastrophic	5	Very likely	5

Table 9: Risk assessment during construction and operational phase of Gourmet Foods (Private) Limited.

Hazard	Source	Duration Hours/day	Severity S	Likelihood L	Risk amount S*L
Noise	Generators and excavation	8	2	4	8
Dust	Excavation and transportation of construction materials	8	3	4	12
Vibration	Excavation	8	2	3	6
Falling objects	Construction activities	8	4	2	8
Ergonomics	No proper posture for Work	8	3	3	9
Workload	Continues work	8	2	3	6
Temperature	Sunlight during summer	8	3	4	12
Fire	Flammable materials, electrical short circuit	8	3	4	12
Work at height	----	During work	3	4	12
Air pollution	Vehicles and generator	During their working	3	5	15

Likelihood Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10

3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Green color boxes (1-5): Low risk and unlikely to cause health impact.

Yellow color boxes (6-12): Noticeable risk. It has potential to cause medium impacts.

Red color boxes (15-25): High risk & cause high level health impacts.

5.2.5 Controls

All most all the risks which can occur in this project during both construction and operational phase does not fall in high risk area. But there is still need of controls which are given below:

- Regular tuning of construction vehicles and machinery.
- To avoid the dust water should sprinkle after specific duration.
- PPE should be provided to workers.
- Job rotation to avoid work pressure.
- Proper holdings, controls and use of PPEs for safe work at height.

5.2.6 Environmental Impacts Regarding Project Design

The design for Gourmet Foods (Private) Limited. has not affected the adjacent residential areas. Gourmet Foods (Private) Limited. has been designed in order to ensure the privacy of neighborhood. Adequate daylight and air in the neighboring entities and impact in this regard shall be insignificant The Gourmet Foods (Private) Limited is to be designed in a way that it guarantees all compliance with the Punjab Environmental Quality Standards (PEQS) and Building Codes.

5.3 Environmental Impact and Their Mitigation during Construction Phase

5.3.1 Physical Impacts

Soil contamination

- Soil Construction activities such as excavation, filling and disposal of materials (both solid and liquid) will affect the existing soil conditions in the Project Site and in its nearby surroundings. Spillage from the generator or from moving vehicle will cause contamination of soil at construction sites.
- Construction site will generate about 0.5 kg/person/day solid wastes from site camps and construction debris from construction activities. Although quantity of waste is much less, inappropriate disposal methods will have a negative impact on the physical environment of the project area.

Mitigation

Good engineering practices will help in controlling soil erosion at construction sites. Following measures will be adopted as per site conditions:

- Soil contamination can be curtailed by reducing the spill at project construction areas by well maintaining the construction vehicles as well as generators.
- The Contractor is required to impart proper training to his workforce in the handling and proper disposal of solid waste.
- Proper drainage facility will be provided to avoid the water accumulation, which will minimize the soil contamination.
- Ground shall be leveled to avoid slopes.
- Proper solid waste management plan should be developed by the Contractor and implemented to avoid the litter and any other waste problems.

Contamination of Surface and Groundwater Resources

Sewage and sanitary wastewater generated from the construction site may contaminate groundwater, if not disposed of properly. There is Sewer line /Drain present near the project site, so all the sewage and sanitary wastewater will drain in

it. The proponent has taken environmental approval for the safe and proper disposal of waste generated.

Mitigation Measures of Impacts on Water Resources

Sewage from construction camp will be disposed-off using septic tank which has been designed properly keeping in view the following parameters:

- Soil stratigraphy at site
- Depth of groundwater table
- Discharge of sewage from construction camp

The septic tank has been designed by the Design Consultant according to the relevant standards. The example of the septic tank is shown in Figure below;

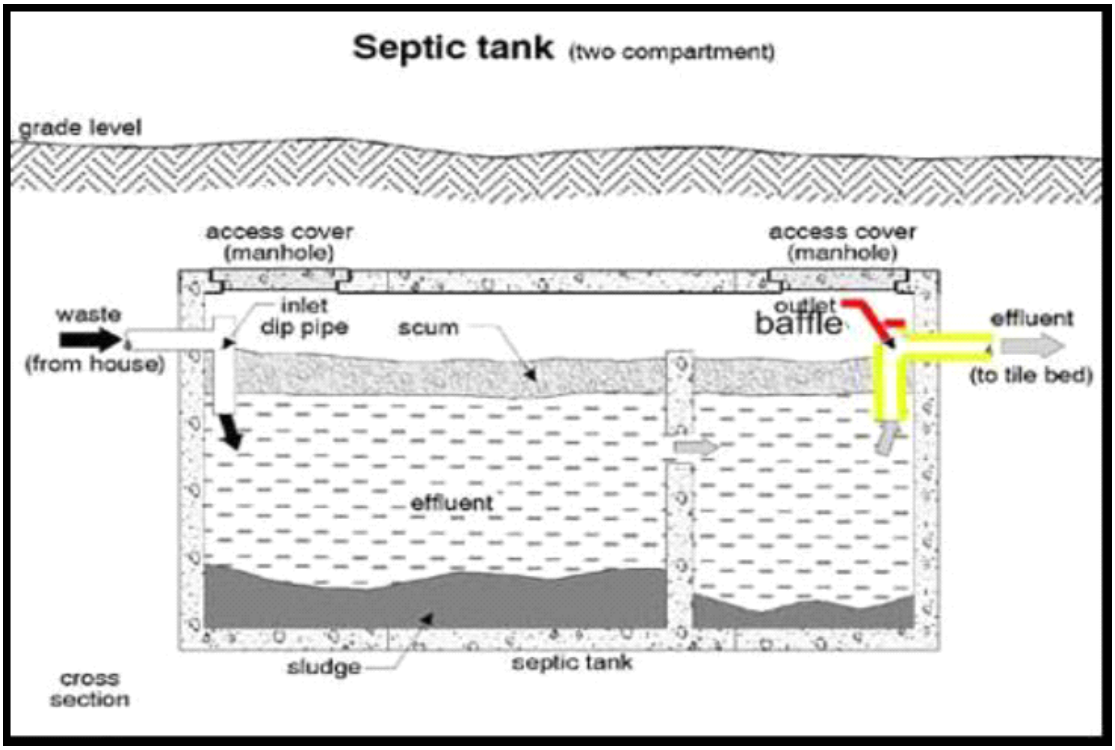


Figure 13: Septic tank

- Avoid accidental spills of oils and lubricants through good practice. Prepare and implement Emergency Response Procedures in case of any spill hazard.
- Construction site effluent drainage should be established in areas with adequate natural drainage channels in order to facilitate flow of the effluents.

Impact on Ambient air quality

Due to the construction activities like excavation, clearing, leveling and compaction with the use of machinery like batching plants, excavators, dump truck and other transport vehicles etc. Most of these are using diesel engines that generate noise and exhaust emissions. The possibility of exhaust emissions increases when old vehicles/plants are utilized for the execution purposes. Generally, the above activity is generating particulate- matter (PM10), smoke, dust, CO and NOx in the ambient air, which is deteriorating the air quality and resulting in impacts on human health, fauna and flora. The movement of heavy machinery and vehicles on the dirt tracks is also causing dust emissions. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface.

Mitigation Measures of Impacts on Ambient Air Quality

- Tuning of vehicles should be made mandatory to reduce the emissions of NOx, SOx, CO and PM_{10}.
- Equipment and vehicles powered with diesel should be well maintained to minimize particulate emissions.
- Haul-trucks carrying, earth, sand, aggregate and other materials should be kept covered during transportation of materials and during storage at site, with tarpaulin.
- The fugitive dust emission will not be a problem because the roads are paved but for the precautionary measure sprinkling of water by water trucks will be done.
- As well as the temporary boundary wall made of wood will be constructed that will act as barrier for air emissions going towards residential area.

Impact on Ambient Noise Levels & Vibration

During the implementation of the project a large amount of equipment and construction machinery will be utilized for construction. The equipment would include excavators, concrete mixer, trucks and other machinery and vehicles. The operation and movement of such equipment will increase the noise and vibration in the Project Area and Neighborhood residential may be disturbed by the noisy activities. The impact will be significant when compared to the without project situation.

Mitigation Measures of Impacts on Noise & Vibration

- For the construction machinery generating noise level in excess of that prescribed in PEQS and WHO limits, Contractor will make arrangements to bring the noise level within applicable limits (including proper tuning of vehicles and mufflers/silencers). Movements of the trucks and other construction machinery causing high noise levels must be restricted at nighttime to avoid disturbance to the nearby locality. Truck drivers should be instructed not to play loud music especially night and stop use of horn.
- As well as the temporary boundary wall made of wood planks will be constructed that will act as barrier.

Disposal of Construction Debris & Garbage

During construction phase of the Project, large quantity of construction waste will produce, the disposal of which, if not managed properly could have negative impacts on the site and surrounding areas. Clearing of shrubs and grass could pose a fire hazard and affect air quality if burned on location. Construction materials including concrete waste, wood, steel, packaging plastics etc. could be dispersed that may result in the blockage of drainage channels if not disposed of at approved disposal sites.

Mitigations

- A site waste management plan should be made the responsibility of the construction contractor to provide for the designation of appropriate waste storage area on the site and a schedule for the timely collection and removal of construction debris to an approved dump site.
- The organic waste produced during site clearing should be mechanically mulched and composted at the site and used for landscaping.
- Arrangements should be made for regular garbage collection and removal of sewage from the construction site.

Traffic annoyance

Due to the movement of large construction vehicle there may be traffic problem.

Mitigation

During the construction phase traffic control measurement will be implemented. All raw materials will be transported to the site at nighttime due to at nighttime traffic flow very low in the project area.

5.3.2 Ecological Environment

Impacts on Ecological Environment

- Impact on Flora

Project area is open/vacant plot there was no tree present on the project site. All the project activities will be done inside the premises of the boundary walls so there will be no effect on outside the boundaries.

- Disturbance to Fauna:

The associated fauna with tress will be affected and they will move away to nearby nesting places.

Mitigations

Trees of single species will be planted at project site which will not cut down during construction phase. In order to enhance the environmental measures of the site the Landscaping plan has been prepared and attached as Annexure. As almost significant amount of open area will be used for the landscaping, so it will enhance the natural features of the area.

5.3.3 Socio Economic Environment

- Impacts on Local Population

There is no population residing in and the surroundings of the Project Area as the project area falls in industrial estate.

Mitigations Measures of Impacts on Local Population/Workforce

No mitigation measure is required

5.4 Environmental Impacts and Mitigations Measures during the Project Operation

5.4.1 Ground Water Resource

During the operational phase the ground water will be used which will be provide by industrial estate. The quantity of water used during operational phase is given as under:

Total Water Usage during operational phase: 4000liters per day approximately

The quantities of required water from groundwater usage will ultimate impact on level of ground water resource which may reduce with the passage of time.

Mitigation

In order to reduce the impact on ground water resource following measures will be adopted.

- There will be proper lining and engineered structure to avoid the leakage.
- The water conservation will be adopted in washrooms that will be installed water saving gadgets and eco-devices.

5.4.2 Air Emissions

Slight air emissions are expected to be produced from boiler during the operational phase. To control air emissions from the boiler, dry scrubber will be installed. Other than boiler no air emissions will be produced during operational phase which will deteriorate the air quality, so no major air emission will be produced except transportation of material by vehicles exhaust emissions. The possibility of exhaust emissions increases when old vehicles are utilized for the execution purposes. Generally, the above activity will generate particulate- matter (PM10), smoke, dust, CO and NOx in the ambient air, which is deteriorating the air quality and resulting in impacts on human health, fauna and flora. The movement of heavy vehicles on the dirt tracks will also cause dust emissions. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface.

Mitigation

- Regular monitoring on all emission sources should be done and measures will be taken if found non-compliance with PEQS

5.4.3 Noise

In the operational vehicular traffic will generate noise and vibration which are likely to affect the nearby communities.

Mitigation

- It will be compulsory to use PPEs.
- The Department will prepare a traffic management plan for each silo facility. This plan will be a part of the Operational Manual of each facility.
- Liaison will be maintained with the relevant authorities regarding the wheat transportation particularly during emergencies.
- Proper maintenance and monitoring of machinery should be on priority basis.

5.4.4 Solid Waste

Improper disposal off the solid waste generated during the operational phase of proposed project can pose a health hazard; pollute soil, surface and ground water. Domestic solid waste will be disposed-off by using standard practices whereas there will be no process waste.

Proper implementation of the mitigation measures will ensure that the residual impact from improper management and disposal of the waste is minimal. Monitoring and inspection will be undertaken to ensure compliance and minimize any residual impact.

Mitigation

This impact is low, long-term, temporary and significant.

- Records of all waste generated will be maintained
- Training will be provided to personnel for identification, segregation, and management of waste

- Various waste containers for waste collection should be placed at appropriate locations in the building
- Waste generation will be minimized by adopting waste management strategy of reduce, reuses and recycle
- A waste management plan will be prepared, implemented and monitored for the safe collection, storage and treatment/disposal of the building waste

5.4.5 Wastewater

Daily wastewater generation during operational phase will be 200-300 liters/day from households.

Mitigation

- The wastewater will be the municipal in nature and will be passed from septic tank before the final disposal in specified drain system.
- The extra treatment will be done by increasing the bacterial activity in septic tanks through the anaerobic and sludge degradation bacteria.

5.4.6 Security Issue

There is need for vigilant security presence in and around the Gourmet Foods (Private) Limited. round the clock on a permanent basis to guard against theft and terrorist activities. The security concerns will have to be addressed adequately. Any threat to the security should be dealt with as a major challenge.

Mitigation

A comprehensive Security Plan will be developed and implemented for the Gourmet Foods (Private) Limited. which includes the main entrance gate consisting of security guards. The aim of the security is to check out the in and out movements of vehicles and to monitor all the security related issues. The walk though gates will also be installed for checking of the visitors. In addition to this the security guards regularly monitor in and around the whole park to ensure proper security. Moreover, the security cameras will be installed at critical places. The security cameras are operated from the common control room.

5.4.7 Effect on Flora

No sensitive flora is present on the project site, there will be no effect on flora.

Mitigation

Hence, there will be no mitigatory measures are required. Anyhow native plants will be planted in abundance within Gourmet Foods (Private) Limited. The plantation will enhance the environmental features of the project.

5.4.8 Effect on Fauna

There will be no effect on fauna.

Mitigation

There will be no mitigatory measures are required. But use of native trees will welcome the local and migratory birds for nesting and shelter.

5.5 Potential Environmental Enhancement Measures

Besides the concrete measures to be adopted as described above, the quality of environment will further be enhanced through the running of project in complete accordance with the 5RS Principles- Reduce, Reuse, Recycle, Refurbish and Retrofit. Good housekeeping practices will be the order of the day.

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1 Environmental Management Plan

This Chapter provides an overall approach for managing and monitoring the environmental issues and describes the institutional framework and reporting mechanism to implement the Environmental Management Plan (EMP) for the construction of Beverage Production unit by M/S Gourmet Foods (Private) Limited. The EMP has been prepared with the following objectives:

- Provide the details of the project impacts along with the proposed mitigation measures, and a corresponding implementation schedule.
- Define the roles and responsibilities of the project proponent, contractor, and supervisory consultants in order to effectively communicate environmental issues among them.
- Frame a monitoring mechanism, reporting frequency, auditing mechanism and identifying monitoring parameters to ensure that all the mitigation measures are completely and effectively implemented.
- Define the requirements necessary for documenting compliance with EMP and communicating it to all the concerned regulatory agencies.

6.2 Structure of EMP

The EMP has been divided into the following sections:

- Review of regulatory requirements and applicable standards
- Mitigation Management Matrix (MMM)
- Institutional Arrangements for Implementing the EMP
- Roles and Responsibilities of the different agencies.
- Environmental Monitoring Plan
- Training program

6.3 Regulatory Requirements and Applicable Standards

The main law and legislation concerned with the environment is Pakistan Environmental Protection Act (PEPA) 1997. This Act is a fairly comprehensive legislation and provides for protection, conservation, rehabilitation and improvement of the environment.

The salient features of the law are:

- No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal EPA or Provincial EPAs an EIA and has obtained NOC.
- Establishment and Formation of the Pakistan Environmental Protection Council (PEPC).
- Powers and Functions of the Federal and Provincial Environmental Protection Agencies.
- Prohibition of certain discharges or emissions.
- PEQS for wastewater, air emissions and noise.
- Empowers Government to issue notices and to enforce them for the protection of the environment.

The proposed project related environmental laws/guidelines are as follows:

- Pakistan Environmental Protection Agency Regulations, 2022for Review of IEE and EIA
- Pakistan Environmental Impact Assessment Procedures
- Guidelines for Public Consultation
- PEQS
- Sectorial Guidelines for Environmental Reports, Major Roads, October 1997

6.4 Description of proposed mitigation actions

This matrix identifies the environmental impacts of multipurpose project during the construction and operation stages and establishes the linkages between the environmental and social impacts, mitigation strategy and the agencies responsible for execution. The MMM identifies the following:

- The mitigation measures recommended in EIA.
- The person/organization directly responsible for adhering to or executing the required mitigation measures.
- The person/organization responsible for ensuring and monitoring adherence to the mitigation measures.
- The parameters which will be monitored to ensure compliance with the mitigation measures.
- The timing at which the mitigation or monitoring has to be carried out.

Table 10: Description of proposed mitigation actions

Anticipated impacts	Mitigation measures	Responsibility		Actions/Monitoring parameters/Monitoring methods
		Execution	Monitoring	
Soil erosion may take place in the project as a result of excavation. Soil contamination may take place due to the generated solid waste at project site in addition to oil spillage from generator or vehicles.	• Good engineering practices should be adopted by Contractors, which will help to control soil erosion at the construction sites. • Soil contamination can be curtailed by reducing the oil spill from generator and other machinery at project	CC	SC and Gourmet Foods (Private) Limited. Management	• Equipment maintenance. • Placement of solid waste storage containers at project site. • Collection and disposal by Gourmet Foods (Private) Limited.

	construction areas, proper solid waste management. • The Contractor is required to impart proper training to his workforce in the storage and handling of obnoxious materials, like oil, diesel and petrol that can potentially cause soil contamination.			
Sewage is generated from the construction site.	• Septic tank and artificial	CC	SC and Gourmet Foods	• Septic tank

This may contaminate surface and groundwater, if not disposed of properly	drainage pipe should be developed and attached to natural drainage. • Additional Bacteria will be dose in the septic tank in order to degrade the waste and sludge		(Private) Limited. Management	
Generation of noise and exhaust emission due to construction activities like excavation, clearing, leveling and compaction	• Tuning of vehicles should be made mandatory to reduce the emissions of NOx, SOx, CO and PM_{10}. • Water Sprinkling on roads • Equipment and	CC	SC and Gourmet Foods (Private) Limited. Management	• Maintenance of Vehicles • Water Sprinkling • Filled Vehicles covered with tarpaulin

	vehicles should be well maintained to minimize particulate emissions. • Haul-trucks carrying, earth, sand, aggregate and other materials should be kept covered during transportation of materials and during storage at site, with tarpaulin.			
No tree will be affected with the	Trees will be planted within the premises of project	CC	SC and Gourmet Foods (Private)	Plantation of trees

implementation of the project. All project activities will be done under the premises of the boundary walls so there will be no effect on outside the boundaries.	which will not cut down during construction phase In order to enhance the environmental measures of the site the significant number of indigenous trees will be planted.		Limited. Management	
People will face the noise and dust problems during the construction phase especially for the nearby residents	• Effective construction controls may be made by the Contractor to avoid inconvenience to the population due to noise, smoke and fugitive dust.	CC	SC and Gourmet Foods (Private) Limited. Management	• Sprinkling of water in dust affected areas as per schedule • Timing of vehicle movement to be noted.

	• The site will be closed with wooden planks which reduce the dust and the noise levels going towards the residents • Temporarily, the Contractor should select specific timings for heavy machinery operation so as to cause least disturbance to the population considering their peak			

	movement hours.			
Construction activities, particularly excavation and movement of haul trucks and machinery may prove dangerous for safety of the workers. Contractor's staff while working on the high-rise columns, transoms, etc. may slip and get injured.	• Contractor will ensure the provision of medicines, first aid kits, emergency vehicles, etc. at the workplace. • Training of workers in the construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets,	CC	SC and Gourmet Foods (Private) Limited. Management	Instruct Staff of the Contractor to strictly follow the HSE policies of the company

	gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage.			
200 Liters per day of the ground water will be used which will be supplied by Industrial estate. The groundwater usage will ultimate impact on level of ground water resource which may reduce with the passage of time.	• There will be proper lining and engineered structure to avoid the leakage. • The water conservation will be adopted in washrooms that will be installed water saving gadgets and eco-devices.	Gourmet Foods (Private) Limited. Management	EPA	Conservation and reuse

The solid waste generation during operational phase will be 50-100 per day if not managed cause the aesthetic problem with spread of diseases.	• The large waste bins will be placed at all the floors • The waste will be collected from each floor and from the bins placed by the workers of waste management team. • The wastewater will be the municipal in nature and will be passed from septic tank before the final disposal in main sewer line drain.	Gourmet Foods (Private) Limited. Management	EPA	Regular Monitoring of Solid waste collection

The construction of this Beverage Production will increase the social life of the community.	• Proper maintaining the Multi-purpose Building to ensure the increasing lifestyle of the community.	-	-	Monitoring to be conducted to make sure that proposed plan is working

6.5 Institutional Arrangements for Implementation of EMP

The main institutions involved in the implementation and management of EMP will be as follows:

- Supervisory Consultants (SC)
- Construction Contractor (CC)
- Punjab Environmental Protection Agency (Punjab-EPA)
- Gourmet Foods (Private) Limited.

6.6 Environmental Management Team Along with their Roles and Responsibilities

The key organizations will have the following roles and responsibility during the construction and operation stages:

6.6.1 Construction Stage

During the construction stage, Construction Contractor (CC) will be mainly responsible for the execution of the mitigation measures. Supervisory Consultants (SC) will be responsible for the monitoring of the compliance with top management as defined in mitigation management matrix.

6.6.2 Operation Stage

During the operational stage of the project, role of CC and SC will gradually decrease. During this phase of the project, implementation of recommendations of EMP and its

supervision will be the responsibility of Gourmet Foods (Private) Limited. Management and Punjab-EPA as defined in mitigation management matrix.

6.7 Proposed Monitoring Program to Assess Performance or Output of EMP

6.7.1 Objectives

The objectives of the environmental monitoring during the construction and operation stages are as follows:

- To check compliance with the requirements of the EMP by monitoring activities of the project contractors. This will be called Activity Monitoring.
- To monitor actual impacts of the project activities on physical, ecological and socioeconomic receptors of the Project Area so that any impacts not anticipated in the EMP or impacts which exceed the levels anticipated in the EMP can be identified and appropriate mitigation measures can be adopted in time. This objective will be achieved through effects monitoring.

To achieve these objectives, the following monitoring program will be implemented.

6.7.2 Monitoring Strategy

Activity Monitoring

Activity monitoring will be carried out to ensure compliance with the requirements of the EMP.

The mitigation management matrix will be used as a management and monitoring tool. Activity monitoring will be the responsibility of all organizations involved in the operation, i.e. top management of multi-purpose building, Project Consultants and the Contractors and hence it will be done at three levels:

- Activity Monitoring by Gourmet Foods (Private) Limited. management
- Activity Monitoring by Consultant's field monitors
- Activity Monitoring by the Contractor's officers

The Contractors will report compliance with the MMM to SC and Gourmet Foods (Private) Limited Management for verification.

Effects Monitoring

Effects monitoring will be the responsibility of Gourmet Foods (Private) Limited management. Monitoring requirements have been outlined in the EMP. However, a detailed monitoring program is attached. The monitoring program describes in detail the resources and methodology that will be adopted for the purpose of Effects Monitoring.

Physical Environment will target at identifying project impacts on:

- Water
- Air

Ecological Environment

Floral surveys will be conducted to determine the effects of different project activities on Flora. The recommended effects monitoring protocol for Flora are provided.

Socio-economic Environment

Effects on the socio-economic environment will be monitored by the consultants who will conduct survey both during construction and operation stage. The surveys will be structured to ascertain the level of impacts during the course of the project and the implementation of mitigation measures prescribed in the EMP such as health and safety of communities.

Table11: Recommended Activity Monitoring Protocol for Physical, Ecological and Social Environment

Parameter/Receptor	Location	Monitoring Mechanism	Monitoring and Reporting Frequency
Water Quality	• Near the project area • Concrete preparation plants • Fuel (Petrol. Oil and Grease) products storages	Discrete grab sampling and laboratory testing of water samples.	• Sampling and laboratory testing should be done on Monthly basis during the construction and annually during the operational stage. • Outlet and drains from the mechanical repair units should include testing.
Dust Emissions	• Construction site	Visual checks	• Daily visual monitoring during routine monitoring

			by activity monitors and reported on a monthly basis during the construction period.
Noise Levels	• Construction site • Nearby area due to track movement	Noise meter	• On fortnight basis throughout the construction period. • Quarterly during the operational stage.
Stack emissions and Ambient Air	Silencers of heavy machinery, trucks and other vehicles. Stack monitoring of generator. Construction site Ambient Air	Monitoring of ambient air quality in ppb.	• Monthly monitoring of air pollution parameters including PM, NO_X, SO_X, CO, Hydrocarbons during the construction period, and annually during the operation stage only for ambient air
Ecological Environment			
Plants disruption	As plants are present at site so it will be monitored around the Project Area during the construction phase	Plants	• Weekly during routine monitoring and reported on monthly basis during the construction period, and once in a year monitoring and reporting during the operation period.
Socio-cultural Environment			
Inconvenience to community	All around the Project Area	Consultations with community to get feedback about inconvenience due to the construction activities to perform their daily routine chores.	• Monthly monitoring and reporting during the construction period.

Table 12: Recommended Effects Monitoring Protocol

Parameter/Receptor	Location	Monitoring Mechanism	Monitoring and Reporting Frequency
Water Quality	• Sampling from the points located at a greater distance from the construction sites to ensure that they show the influence on a wider range of receiving body.	• Sampling and laboratory testing of wastewater from WASA drainage system relative away from project site	• Sampling and laboratory testing should be done on monthly basis during the construction stage and annually during the operation stage.
Air Quality	• Existing residential near the project site.	• Ambient air quality monitoring in ppb.	• Monthly air quality monitoring for NOX, SOX, CO, PM_{10} during the construction stage. Once a year during the operation stage.

6.8 Material Transportation Plan (MTP)

Material Transportation Plan will be prepared which specifies the routes for material transportation for construction of this Complex. These routes have been established in such a way that there is minimum hindrance or disturbance to the local communities and flow of traffic. HSE arrangements and proper documentation have been planned in order to achieve the above objectives as follows:

- Material Transportation HSE Arrangements
- Transportation timings should preferably be at nighttime to minimize the traffic conflicts.
- Filled trucks should be covered with tarpaulin to avoid fugitive dust and should be visually inspected for proper loading, sealing and decontamination.

- Vehicles should have passed an annual inspection and carry the fitness certificate.
- The truck drivers will be strictly instructed not to play music and do not use horns at nighttime to minimize disturbances.

Material Transportation Documentation

A field logbook will be maintained for the documentation. This logbook will additionally serve to document observations, personnel onsite, equipment arrival, and departure times, a truck exit inspection checklist and other project information.

Field logbooks will document where, when, how, and from whom any vital project information is obtained. Logbook entries will be completed and accurate enough to permit reconstruction of field activities. Logbooks will be bound with consecutively numbered pages. Each page will be dated and the time of entry notice. All entries will be legible, written in black ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or inappropriate terminology. If an error is made, corrections will be made by crossing a line through the error and entering the correct information. Correction will be dated and initialed. No entries will be obliterated or otherwise rendered unreadable.

Entries in the field logbook will include at a minimum the following for each field work date:

- Site name and address
- Recorder's name
- Time of site arrival/entry on site and time of site departure
- A summary of any onsite meetings
- Description of transport vehicle(s)
- Quantity of excavated soils in truckloads (approximate percentage of full load)
- Names of waste transporters and proposed disposal facilities
- Quantity of import fill material in truckloads

- Levels of safety protection

The HSE officer of the Contractor will communicate HSE requirements and tailgate safety meetings to all drivers and on-site workers. He will provide information related to contaminant descriptions, and requirements for the containment and cleanup of an accidental release along with basic safety requirements, name of personnel in-charge, contact information and a map and directions to the nearest hospital.

6.8.1 Environmental Management and Monitoring Program

In this section, the mitigation measures that are required, for construction and operation of project, to reduce residual impact to acceptable levels and achieve the expected outcomes of the project, are discussed. The Environmental Management program is based on the type, extent and duration of the identified environmental impacts for construction and operation of project.

It is important that the recommendations and mitigation measures are carried out according to the spirit of the environmental assessment process and in line with the guidelines. The impact prediction has played a vital role in reconfirming that typical mitigation measures and approaches will achieve the necessary environmental controls based on the feasibility and detailed design assumptions available at this stage.

6.8.2 Environmental Management during Construction Phase

In order to facilitate the implementation of the EMP, during construction phase the contractor must co-operate with consultant and proponent and mitigates the impacts. Furthermore, the contractor must be primed through the contract documentation and ready to implement all the mitigation measures. Proponent will make provision to recruit, engage retain and replace trained environmental management staff and these staff should audit the effectiveness and review mitigation measures as the subprojects are rolled out. Proponent will also need to confirm that contractors and their suppliers have complied with all statutory requirements and have appropriate and valid licenses and permits for all powered mechanical equipment and to operate in line with local authority conditions.

6.8.3 Environmental Management during Operational Phase

In order to achieve good compliance with environmental assessment principles during operation the environmental staff must be appointed included fire fighters as well as environmental engineers to monitor the environmental aspects, to ensure compliance with the statutory obligations under the PEPA. It is recommended that the project management unit (PMU) should engage directly with EPA to address all environmental aspects in the detailed design and contracting stages. The environmental staff will cover the implementation of environmental mitigation measures in the project packages.

6.8.4 Monitoring Programs

The monitoring program is always a basis of information in identifying environmental and socio-economic impacts for use in informed decision-making. During the study socio -environmental issues as well as mitigation measures during planning phase have been identified. Some area, however, will require monitoring during construction and operation of the project. It, therefore, becomes necessary to include a monitoring program as part of the project. The land resources would require monitoring. In particular landscaping of the area to be used for spoil disposal would require monitoring during project construction and project operation phase. Water resources monitoring will include the ground water and wastewater produce from the site. This will involve both quantitative and qualitative aspects of water resources.

Development projects bring social change in their wake. Much of this is beneficial, particularly that which promotes economic and social development. But there is always another side to development: of wage earners, families, or skill groups left behind by new methods of production, of micro-economics destroyed by new technologies, or the disintegration of village communities by population growth and a capitalizing economy. Some of this can be foreseen in a general way. Much of it would occur, even in the project area, whether or not Project is built. It seems clear that longer a project is in place, the more difficult it becomes to separate the social effects of that project from the wider processes of social change already at work in a region. Monitoring of social impacts may therefore be of value for similar project in future.

- The monitoring staff will be consisting of environmental engineers and environmental analysts. Their responsibilities will be:
- To ensure all statutory environmental submissions under PEPA and other environmentally related legislation are thoroughly implemented.
- To ensure all environmental requirements and mitigation measures from the environmental assessment of project.
- To execute any additional IEE and IEE requirements needed due to fine tuning of the projects and that environmental performance targets are included in the contracts prior to project commencement;
- To ensure all environmental requirements and mitigation measures from the IEEs and environmental performance criteria are incorporated in the project.
- Work with management (consultants), supervising consultant and contractors to manage and monitor the implementation of the project EMP.

6.8.5 Proposed EMP Reporting and Reviewing Procedures

The project falls in schedule I of EIA/IEE regulation 2000. This project does not fall in category of industries because of this reason schedule of monitoring is self-defined.

Table 13: Monitoring Schedule of Implementation during Construction Phase

Parameter	Frequency	Remarks	Responsibility
Solid waste	Fortnight	Visual check to access the disposal methods	Contractor and supervisor
Particulate matters	Monthly	Instrumental measurement	Contractor and supervisor, Reporting to EPA
Exhaust gases	Monthly	Instrumental measurement	Contractor and supervisor, Reporting to EPA
Ground water quality and wastewater	Annually	Monitoring of water and wastewater parameters	Contractor and supervisor, Reporting to EPA
Noise and vibration	Monthly	Measurement of noise and vibration due to construction	Contractor and supervisor, Reporting to EPA

		activities and vehicle movement	
Health and safety	Monthly	Monitoring of health and safety of workers	Contractor and supervisor

Table 14: Schedule of monitoring during the operational phase

Parameters	Frequency	Remarks	Responsibility
Air Quality	Annually	Ambient air quality	Administration of project and Reporting to EPA
Noise	Biannually	Noise by activities in the multi-purpose building	Administration
Surface and ground water	Annually	Monitoring of water and wastewater parameters defined by EPA	Administration and Reporting to EPA
Solid waste	Annually	Waste generation	Administration of the project

6.8.6 Health and Safety Plan

Gourmet Foods (Private) Limited. will make every effort to provide a safe, healthy work environment. All employers, supervisors and workers must be dedicated to the continuing objective of reducing risk of injury.

Supervisors will be held accountable for the health and safety of workers under their supervision. Supervisors are subject to various duties in the workplace, including the duty to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the employer. Workers will receive information, training and competent supervision in their specific work tasks to protect their health and safety.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from the president to the workers.

6.8.7 Institutional Capacity

The main institutions involved in environmental management and monitoring program will be as follows:

- Gourmet Foods (Private) Limited.
- Supervisory Consultants (SC)
- Construction Contractor (CC)
- Punjab Environmental Protection Agency (Punjab-EPA)

These key organizations will have the following roles and responsibility during the construction and operation stages:

6.8.8 Construction Stage

During the construction stage, Construction Contractor (CC) will be mainly responsible for the execution of the mitigation measures. Supervisory Consultants (SC) will be responsible for the monitoring of the compliance of environmental management plan (EMP) and PEQS defined by EPD.

6.8.9 Operation Stage

During the operational stage of the project, role of CC and SC will gradually decrease. During this phase of the project, implementation of recommendations of EMP and its supervision will be the responsibility of monitoring team coordinating with top management.

6.8.10 Summary of Impact and Their Mitigation Measures

Sr. No.	***Anticipated Impacts***
	Construction phase
	Physical Environment
1.	• Dust may take place in the project areas as a result of excavation. • Soil contamination may take place due to the generated solid waste at site in addition to oil spillage through generators.

2.	Sewage is generated from the construction camps. This may contaminate surface and groundwater, if not disposed of properly
3.	• A Number of machinery and equipment is in operation for the construction of this Beverage Production unit like Rigs, excavators, dumping trucks, Mobile concrete mixer and elevators generating noise, particulate matter (PM10), smoke, dust, CO, and NOx in the ambient air which may deteriorate the air quality and cause impacts on human health, fauna and flora. • Due to movement of trucks and other vehicles noise and vibration may increases and residents of the nearby settlements may get affected.
Ecological Environment	
1.	• Cutting of trees and clearing of grasses and shrubs.
Social Environment	
1.	• The project construction will not harm any private structures. This Beverage Production will play a role to cope with the growing demand of quality snack and enhance economic conditions.
2.	• Construction activities, particularly excavation and movement of haul trucks and machinery may prove dangerous for safety of the workers as well as for the residents. • Contractor's staff while working on the high-rise columns, transoms, etc. may slip and get injured.
	Operational Phase
	Physical Environment
1.	• 5000 liters per day of water will be used. This may impact the ground water resource which may reduce with passage of time
	• Air Emission is emitted from the stacks of generators. Stack emissions of generators will produce gasses like NOx, SOx, CO_2, PM and CO. These gasses will cause air pollution if not properly managed or mitigated. • There will be noise of generators during the operation.
	Daily solid waste generation during operational phase consisted of municipal as well as weed.

	Daily wastewater generation during operational phase will be 0.80 cusec from different activities by residents.
Ecology	
	Trees will be planted inside Gourmet Foods (Private) Limited. at different locations. For Noise reduction and visual barrier neem and date trees will be planted on boundary walls. The plantation will enhance the environmental features of the project The Use of native trees will welcome the local and migratory birds for nesting and shelter.

6.9 Mitigation and Impact Assessment

6.9.1 Impact and Their Mitigations during Construction Phase

The most likely environmental problems to occur during construction phase could due to:

- Construction machinery,
- Compaction of soil activity,
- Leveling of land,
- Moving vehicles,
- Construction of building and associated civil work.
- The problems which are associated with these activities are:
- Gaseous emission of SO2, NOx and CO, hydrocarbons etc
- Particulate Matter (PM)
- Noise
- Effluent
- The mitigations use to avoid these impacts are:
- Vehicles transporting lose construction material (clay, sand etc) to be covered with tarpaulins.
- Routine service and maintenance of vehicles and machines to reduce engine emissions.

- During periods with abnormal wind speeds, in particular during dry weather conditions, workers on the construction site should be provided with adequate inhalation and eyes protection gears. In case particulates in air hamper a clear view over the site completely, so that safety is impaired, the construction should be interrupted until weather conditions improve.
- Spraying exposed soil with water to reduce PM10 emissions and particulate matter deposition. Water to be applied at a rate to maintain a moist surface, but not create surface water runoff or erosion conditions.
- During construction, water would be supplied from the water storage facility already provided at the work site which is very closely present to the project site.
- Potable drinking water for construction workers would be provided.
- Solid wastes resulting from the construction activity after segregation of usable or recyclable material will be disposed of properly to avoid any threat to environment.
- Power mechanical equipment like bulldozers, air compressors, concrete pumps, excavators, concrete mixers, and heavy cairns etc. shall only be used with low sound power, whenever possible.
- The building machinery equipment shall be well maintained and serviced regularly during construction phase.
- Silencers or mufflers on construction equipment shall be used.

6.9.2 Impact and Their Mitigations during Operational Phase

The major impacts of operational phase are:

- Air Pollution
- Noise
- Surface water
- The mitigation will be used to avoid the impacts are:
- Continuous monitoring of ambient air for SO_2, NOx, CO and PM shall be carried.
- Tuning of machinery.
- Septic tank will be made for disposal of wastewater

- A noise measurement campaign during full operation at operation start should be implemented to verify that the actual noise levels are in line with PEQS.

What are the hazards?	When will the risk occur?	Who might be harmed and how?	What will the actions do take?	Responsible Person
Buried services	During construction	Plant operator and any worker in the vicinity	Proper training and provision of PPEs	Safety Officer
Worker fall into excavation	During construction	Worker in the vicinity Serious injuries	Physical barriers on excavation edges	Operator and supervisor
Ground contamination	During construction & operational phase	Worker working there during construction and operational phase	Provision of good site welfare facilities, septic tank to prevent ground contamination	Supervising consultants
Inhalation of gases	During construction	Workers	Provision of PPE & use of new technology generators	Supervising consultants and top management
Water contamination	During construction & operation phase	Worker, nearby community	Proper drainage of wastewater, installation of underground septic tank	Supervising consultants and Building's management team
Noise	During construction & operation phase	Worker, nearby community	Latest technology will be used	Supervising consultants and Building's management team

6.9.3 Objective of Mitigatory Measures

Mitigation is the stage of the EIA process when measures are identified to avoid, minimize or remedy impacts. These measures are implemented as part of the process of impact management, together with any necessary adjustments to respond to unforeseen impacts. Both elements are integral to ensuring that the EIA process leads to practical action to offset the adverse environmental impacts of proposed developments. The migratory measures are designed to minimize the environmental impacts of the project.

6.9.4 Equipment Maintenance Detail

Maintenance and washing of all heavy mobile machinery & vehicles should be carried out at adequate service stations. Regular maintenance of all vehicles and machines to be used on site will be mandatory. It should be noted that the project footprint is small and therefore the number of construction vehicles to visit the project site will also be very less in number as compared to the large-scale project. Maintenance and re-fueling (if necessary) of any construction equipment shall be done at a decent distance from the excavation area and only be undertaken on sealed area. Any re-fueling must be handled carefully taking particular attention to avoid any spilling of any fuel.

6.9.5 Environmental Budget

Environmental monitoring cost related to the mitigation measures of environmental parameters related to the location of construction site and activities, borrow materials, etc. will be the sole responsibility of the Contractor and he will take care of cost implications. Tentative annual monitoring cost as per environmental monitoring plan is given in Table below.

Table 15: Breakup of Environmental Budget

Environmental Budget: 0.2 million	
Construction	
Ambient air monitoring	30,00/-
Noise monitoring	30/-
Water quality monitoring	40,000/-
Health & safety	50,000/-
Worker's training	50,000/-
Operation	
Environmental Monitoring (Ambient Air, Noise)	50,000/-
Solid waste management	30,000/-
Wastewater management	50,000/-
Plantation/green belt development	70,000/-

6.9.6 Site Selection

The site is selected on the basis of prohibition area, environmental sensitivity, competent to the surrounding and suitability.

The site is not present in the prohibited area. The area is as well not situated in the environmental sensitive area as this area does not fall in the high seismic zone, not near the river as there are very low chances of flood and not extremely polluted area. The site is competent and suitable for this type of complex as this area is in the commercial zone.

6.9.7 Impact Significance

Impacts significance is defined based on its acceptance ecologically, socially as well as on the basis of environmental standards that either it is according to the environmental standards or not.

6.9.8 Ecological Importance

The impact of this Fruit juices Production has least ecological risk. Few of the trees on site are affected due to the implementation of the project. However, before the construction phase 600 trees of 6 feet are planted at project site which will enhance the environmental feature of the project. Moreover, use of native trees will welcome the local and migratory birds for nesting and shelter.

6.9.9 Social Importance

Development projects bring social change in their wake. Much of this is beneficial, particularly that which promotes economic and social development. Another side to development as it provides the opportunities for wage earners and skill groups of local community as well as for the outsiders. It seems clear that this commercial cum residential and entertainment complex has positive impacts on the social life of the area.

During the construction stage in case of any compliant, it can be note down by the site representative. The site representative will maintain a register of complaints received from the local communities and measures will be taken to mitigate these

concerns. They will report the status of complaints in his monthly report to top management, for information and further action.

6.10 Training Programs

Environmental training for construction period will form part of the environmental management system. The training will be directed towards all personnel for general environmental awareness.

6.10.1 Objectives

The key objective of the training program is to ensure that the requirements of the EMP are clearly understood and followed throughout the Project.

6.10.2 Roles and Responsibilities

SC will be responsible for conducting environmental training to all the Project personnel on potential environmental issues of the Project through Contractor, who will be responsible to arrange training and ensure the presence of targeted staff. SC will prepare a Project specific training manual for this purpose. Contractors on their part will be required to provide induction training/briefing to all their staff at the time of their recruitment and before the start of any activity in the Project Area. This will be followed by training arranged by the SC to all the targeted staff.

6.10.3 Training Log

A training log will be maintained by the SC. The training log will include;

- Topic
- Date, time and location
- Trainer
- Participants

7. STAKEHOLDERS CONSULTATION

Public consultation refers to the process by which the concerns of local affected persons and others who have a 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.

7.1 General

Impact assessment survey and public consultation sessions held with different stakeholder groups that may be impacted by the proposed project commencement.

7.2 Proponent's Environment Management Team

7.2.1 Construction Stage

During the construction stage, Construction Contractor (CC) will be mainly responsible for the execution of the mitigation measures. Supervisory Consultants (SC) will be responsible for the monitoring of the compliance with top management as defined in mitigation management matrix.

7.2.2 Operation Stage

During the operational stage of the project, role of CC and SC will gradually decrease. During this phase of the project, implementation of recommendations of EMP and its supervision will be the responsibility of ***GOURMET FOODS (PRIVATE) LIMITED***. Management which will be appointed in operational phase and Punjab-EPA as defined in Institutional Capacity of Chapter 6.

7.3 The Responsible Authority

The consultation process was carried out in accordance with the guidelines laid by Punjab-EPA. The objectives of this process were to:

- Share information with stakeholders on proposed project installation and operation
- Access the impacts on the physical, biological, and socioeconomic environment

- Understand stakeholder concerns regarding various aspects of the project commencement
- Find out valuable suggestions by the stakeholders to improve the proposed project design
- Understand the perceptions, assessment of social impacts and concerns of the affected people/communities of the project area
- Find out the awareness level and situation of acceptability to identify any issues for the implementation of the proposed project
- Invite people to express their views about the positive/negative impacts on their lifestyles and environment
- Disclose information about contact offices/officers for any complaints/queries

It is envisaged, there will be no social impact being foreseen due to the construction and operation of ***GOURMET FOODS (PRIVATE) LIMITED*** at the proposed location. Bhamban Kalan is the nearest community located at 668 Meters distance from the project area. This IEE Report includes all the comments, which were taken into account during the social survey and preparing the definitive development concept for the installation and operation of Beverage Production in Public Consultation.

7.4 Objectives of Consultation

Public consultation plays a vital role in studying the impacts of the proposed project on stakeholders in successful implementation and execution of the project. It provides an opportunity to exchange knowledge with the beneficiaries and affected parties. Referring particularly to a project related to environmental assessment, involvement of the 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-development phase, goes a long way in updating the knowledge and understanding.

7.5 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 which enlisted below. They are the key players including; shops, public and government offices, schools, university, hospitals, hotels, international agencies and the NGOs. Not only published material, brief or other literature were obtained on request, but also noted their views and the concerns, in an official capacity as well as on the personal basis. Following stakeholders are identified for this project:

Project Affected Persons (PAPs) include the settled families, either property owners or the tenants, businessmen (big, shopkeepers, vendors, etc.), employees of the commercial entities. PAPs are of two types, for instance:

7.5.1 Affected and Wider Community

As, no disturbance in the local community is being foreseen due to the installation of the Fruit juices Production as the minimum distance between the community and the project area is 545 m (Bamban Kalan). No property loss is being envisaged due to the construction of Beverage Production unit by ***GOURMET FOODS (PRIVATE) LIMITED***.

7.5.2 Other Departments and Agencies

Indirect impact will occur on those who are living or doing business within a Project Area of Influence (AOI). In the case of the proposed project, the citizens of nearby small towns will get opportunities of being employed. So, in the early development stages and during the operational phase the people will be benefited due to the installation of the ***GOURMET FOODS (PRIVATE) LIMITED***. Industry. Indirect respondents include;

- Government agencies responsible to deal with the project related activities Livestock Departments, Forest Departments, Agricultural Departments, etc.
- Government Agencies directly, indirectly or widely involved in the execution and monitoring of the proposed project
- Government departments such as TMA and Planning & Development Department, working on the other development activities are considered as indirect stakeholders

- Workers of political, cultural, religious or social scientific bodies, directly or indirectly related to the project

7.6 Public Disclosure

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

7.7 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 socioeconomic resources falling within the immediate AOI of the project. Primary data collection included:

- Data collection regarding the socioeconomic condition of the study area
- To consult the locals for collection of information on biological environment
- Various meetings with the stakeholders were held the following objectives:
- Share information with stakeholders on the proposed 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
- 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
- Create a sense of ownership of the proposal in the mind of the stakeholders

7.8 Environmental Practitioners and Expert

Officers of Government departments, Educational Institutes, Lawyers and NGOs were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc., in their offices, for instance.

7.9 Consultation with Beneficiaries

In addition, to the use of direct methods to evince the response of the various stakeholders in the population of the study area was ascertained by conducting a sample survey, through specially formatted questionnaires. Questions posed to the public were related to creation of possible impacts, adverse impacts and beneficial impacts, including; employment opportunities, income generation activities, change in living standards and provision of the amenity.

Disclose the proponent plan of the construction of the proposed facility

- To share information on the design and specifications of proposed project works
- To analyze the expected impact on the socioeconomic environment
- To understand their concerns regarding various aspects of construction and operation

7.9.1 Views, Concerns and Suggestions of Various Stakeholders

- Community showed a lot of concerns; a few are being mentioned here:
- Removal of shrubs and trees should be avoided to the extent possible
- The project will become the source of income for local to earn their livelihood easily and honorably
- The area will become further industrialized
- For the solid waste management and waste disposal, proper disposal techniques should be adopted

- The air pollution is one of the major impacts of the proposed project, so ambient air quality should be monitored regularly
- Water spraying/sprinkling should be done on the regular basis during construction phase to avoid dust emissions
- Removal of shrubs and trees should be avoided to the extent possible
- Good relations with the local communities will be promoted by encouraging Contractor to provide opportunities for skilled and unskilled employment to the locals as well as on-job training
- The contractor should prefer hiring local labor from adjacent nearby villages
- Noise reducing barriers should be installed to reduce noise pollution as the nearest community lies within the radius of 0.8 km

Concerns

- Workers should be hired from local community
- Proper disposal of solid waste should be practiced
- The provision of paint should be at economical rates for poor farmers
- Indigenous tress around the facility should be planted to control air pollution
- Removal of shrubs and bushes should be avoided to the extent possible

7.9.2 Addressing Public Concerns

The best mechanism of effective communication between the community and the proponent is the by the nomination of the representative of the community and all the issues/concerns must be recorded for future reference. This representative may be the member of the Grievances Redressed Committee (GRC).

Grievances Redressed Committee

Grievances Redressed Committee (GRC) will be formulated by the proponent to address the concerns of the locals during the construction phase. The main role of the GRC will be to resolve the issues of the community associated with the proposed project, if any

8. CONCLUSION

8.1 Conclusion

The project aims in construction of Beverage Production unit by M/S ***"Gourmet Foods (Private) Limited."*** located At Plot No 28-C to 33-C at Quaid-E-Azam Business Park, Sheikhupura. According to the "Punjab Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2022" the project falls in **Category B (4), (Food processing industries including sugar mills, beverages, milk and dairy products, with total cost more than Rs.200 million)**. Accordingly, this IEE has been prepared for issuance of NOC/EA by the EPA, Government of the Punjab before initiation of the project on ground.

8.2 Construction Phase

The potential impacts during construction stage are summarized below. Majority of these impacts are of temporary nature and can be mitigated as described below:

1. The construction camp will result in generation of solid waste. It is estimated that about 10 to 15 labors will have employed at construction site, which will be generating about 150 Kg of solid waste from camp site (i.e. @ 0.5 Kg of solid waste per capita per day generation rate). This waste can contaminate the surface, ground water and soil. Proper solid waste management plan should be developed by the Contractor and implemented to avoid the littering and any other waste problems. Adequate number of solid waste containers should be placed at various locations for ease in storage and collection/disposal of solid waste by Gourmet Foods (Private) Limited. Waste Management team.
2. Soil Construction activities such as excavation, filling, development of road, construction camps may affect the existing soil conditions in the Project Area. In addition, such work is likely to lead to changes in the existing drainage pattern and may have a significant adverse impact on the environment that can be mitigated by good engineering practices. The proper drainage facility will be provided at the camp areas Soil contamination may take place due to the generated solid waste at project site
3. During construction stage, dust problem can affect the health of the community belonging to nearby residential areas. However, proper mitigation measures will

remedy the impacts and in order to avoid dust problems during the construction stage, contractor should sprinkle water at least twice a day during the construction activities.

4. Construction machinery using diesel engines will generate noise and exhaust emissions. Generally, the above machinery will generate particulate matter (PM10), smoke, dust, CO and NOx in the ambient air, which can deteriorate the air quality and result in impacts on human health and nearby fauna and flora. The movement of heavy machinery and vehicles on the dirt tracks can also cause fugitive dust emissions. Periodic tuning of vehicles should be made mandatory Around 600 trees are planted on site which will not cut down during construction. Further the indigenous trees will be planted as per landscaping plan at the site.

8.3 Operation Stage

The project during its operational phase will definitely have long term positive and beneficial impacts, which include the following:

- There are no sensitive elements/segments of environment around the project site.
- Noise level, wastewater will remain well within the prescribed limits of the PEQs.
- EMP as recommended in this IEE Report is to be put in place during operations of the project.
- In accordance with EMP the monthly and annual monitoring of environmental parameters by a third-party environmental laboratory also certifies that the project will run in accordance with legal requirements.

Based on the EIA report, it can be concluded that the project will give the residential and commercial facility and job opportunities for local and outsider that comes to Sheikhupura for livelihood. Further, the implementation of the environmental mitigation measures, monitoring proper and compliance of the environmental standards/legislations will make the Project environmentally more sustainable.

8.4 Recommendation

Based on the facts summarized as above, the project merits for issuing Environmental Approval by the Environmental Protection Agency, Government of Punjab.

LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
CC	Construction Contractor
CO	Carbon Monoxide
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring
EPA	Environment Protection Agency
EPD	Environment Protection Department
HC	Hydrocarbons
IEE	Initial Environmental Examination
NO_x	Nitrogen oxides
NOC	No Objection Certificate
PAPs	Project Affected Persons
PEPA	Pakistan Environmental Protection Act
PEPC	Pakistan Environmental Protection Council
PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
SC	Supervisory Consultant
SO_x	Sulfur oxides

GLOSSARY

Agency	A business or organization providing a particular service on behalf of another business, person, or group.
Climate	The weather conditions prevailing in an area in general or over a long period.
Consultant	A person who provides professional advice or services to companies for fee.

Environment	Relationship of natural world (human beings, animals and plants) with physical surroundings (air, land, water).
Excavation	Excavation is the act or process of digging, especially when something specifics being removed from the ground. Archaeologists use excavation to find artifacts and fossils.
Impact	The action of one object coming forcibly into contact with another.
Proponent	A person who advocates a theory, proposal, or course of action.
Policy	A policy is a deliberate system of principles to guide decision and achieve rational outcomes.
Rehabilitation	To restore to a condition of good health, ability to work, or the like.
Resource	A stock or supply of money, materials, staff, and other assets that can be drawn on by a person or organization in order to function effectively.
Sanitation	Conditions relating to public health, especially the provision of clean drinking water and adequate sewage disposal.
Stakeholder	A stakeholder is a party that has an interest in a company and can either affect or be affected by the business. The primary stakeholders in a typical corporation are its investors, employees and customers.
Topography	Topography is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids.

LIST OF PEOPLE CONSULTED

Sr. No.	Name	Fathers' name	CNIC	Concerns/views
1	Saqib Ali	Riaz Ali	35202-4225635-9	Positive
2	Muhammad Shabbir Ali	Syed Farooq	35201-6650791-1	Positive
3	Mohsin Mahmud Dar	Irfan Dar	35202-2607775-3	Positive
4	Haider Muzaffar	Muhamad Muzzafar	35202-4567566-3	Concerned about Water pollution
6	Umar Ali	Faisal Manzoor	35202-2701116-1	Positive
7	Jawad Ahmed	Muhammad Boota	35202-4202245-7	Positive
8	Azhar Aziz	Nisar Ahmed	34401-5144918-9	Positive
9	Behzad Taimur	Muhammad Taimur	38401-6768711-1	Positive
10	Aslam Pasha	Bilal Pasha	34401-0223636-3	Positive

Sources of Data

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- Field Surveys
- Public Consultations

PROJECT TEAM AND RESPONSIBILITIES

Name of expert	Position held	Highest Qualification	TERM OF REFERENCES
Kamal Ahmed Cheema	Chief Environmentalist	M.Phil. Environmental Economics, PIDE, Islamabad	Mr. Kamal would be responsible for: • Environmental Assessment & Management. • Supervision of monitoring team for air water noise and soil analysis. • Preparation of technical EMP
Mr. Shahzaib Ahmed	Social Scientist	M.Phil Development Studies, PIDE, Islamabad.	Mr. Shahzaib would be responsible for: • Detailed social survey of project sites • Social impact assessment
Arslan Iqbal	Environmentalist	MPhil Environmental Sciences, UOL	Mr. Arslan would be responsible for: • Biodiversity assessment • Detailed flora fauna survey of project sites • Identification of threaten and endangered species • Project impacts on flora and fauna • Consultation with stakeholders
Amna Hafeez	Senior Environmentalist	M.Sc Mountain Conservation and Watershed Management, University of the Punjab	Ms. Amna would be responsible for: • Report writing • Field surveys and consultation with stakeholders • Preparation of Environment monitoring plan • Preparation of technical EMP • Conducting and monitoring of health assessment surveys • Environment health risk assessment and management • Detailed survey of project sites • Environmental Assessment.
Huda Ashfaq	Environmental Specialist	M.Phil. Environmental Science, UVAS, Lahore	Ms. Huda would be responsible for: • Detailed flora and fauna survey of project sites • Site Monitoring • Socio-Economic survey & analysis • Report Writing

Saba Nazir	Environmentalist-1	BS (Hons) Environmental Science, GC University, Lahore.	Ms. Saba would be responsible for: • Site Monitoring • Socio-Economic survey & analysis • Report Writing
Aishah Mushtaq	Environmentalist-2	MS environmental sciences, LCWU	Ms. aishah would be responsible for: • Site Monitoring • Socio-Economic survey & analysis Report Writing