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## EXECUTIVE SUMMARY

### Title and location of the project:

The subject project is Upgradation in Utilities at Nestlé Pakistan Limited Sheikhupura Factory, of the Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability at Nestlé Pakistan Limited Sheikhupura, located at 29- Km Lahore Sheikhupura Road, District Sheikhupura. The cost of the project will be more than 1 billion.

The project can be considered Schedule II of Review of IEE and EIA Regulations, 2022. TORs of the study under clause 5 (f) of policy and procedure for the filing, review, and approval of environmental assessment are annexed as **Annexure-A** with this EIA report.

### Location

The project site is present in the existing unit premises of Nestlé Pakistan Limited Sheikhupura Factory. Located at 29-Km Lahore Sheikhupura Road, District Sheikhupura.

Land co-ordinates of the Nestlé Sheikhupura Factory are as follows:

|                  |              |               |
|------------------|--------------|---------------|
| Land Coordinates | 31°41'7.44"N | 74° 4'18.88"E |
|------------------|--------------|---------------|

Environmental Impact Assessment Report for Infrastructure Upgradation and Replacement of Obsolete Technologies  
M/S Nestlé Pakistan Limited Sheikhupura Factory, District Sheikhupura



Figure 1: Google Earth Map showing Nestlé Sheikhupura Factory

For further details please consult the Layout plan & colored Google Earth Maps (A3-size) of the project site attached as **Annexure-B**.

### **Project proponent**

The company has authorized the factory manager Mr. Rizwan Islam having CNIC No 35202-2351367-7. The correspondence should be done on Mailing address “Nestlé Pakistan Limited, Sheikhupura Factory 29-Km Lahore Sheikhupura Road, District Sheikhupura”.

For further details CNIC copy of proponent and other relevant documents are attached as **Annexure-C**.

### **Environmental consultant**

Pak Green Enviro-Engineering (Pvt.) Ltd, as independent consultants, has been appointed by the proponent to conduct an Environmental Impact Assessment (EIA) study.

**Lahore Office:** Pak Green Laboratory (EPA Certified), 46 M, Gulberg III, Lahore.

**Islamabad Office:** Suite No. 14 Shaukat Plaza, I-10 Markaz Islamabad.

**Peshawar Office:** House # 01, Old Bara Road, University Town, Peshawar.

**Contact #:** +92-4235441444, +92-303-4442334

**Email:** info@pakgreen.pk

For a detailed company profile & study team see *Chapter # 1 “Introduction”*.

### **A brief outline of the proposal**

The Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability at Nestlé Pakistan Limited Sheikhupura, located at 29 Km Lahore Sheikhupura Road, District Sheikhupura. The estimated initial cost of the project will be more than 1 billion rupees

The installation of the subject project will be started only after obtaining the NOCs from all concerned government and local authorities including NOC of EPA Punjab.

The project can be considered Schedule II of Review of IEE and EIA Regulations, 2022.

### **Major Impacts during Installation phase and their mitigation**

Major impacts and their mitigation are given in below table:

| SUMMARY OF IMPACTS DURING INSTALLATION PHASE                                                                       |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Impacts                                                                                                  | Criteria for determining Significance | Key Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Health and safety issues-may arise due to improper handling of work if precautionary measures will not be adopted. | <b>OSHA Standards</b>                 | <p>Proper training of workers and staff regarding proposed installation should be conducted to avoid the accidents.</p> <p>Use of PPEs should be implemented at workplace.</p> <p>First aid measures/medical facility is available at the project site.</p> <p>Safe drinking water will be provided to workers and staff.</p> <p>Safety signs &amp; boards should be placed during installation activities.</p> <p>Installation site should be fenced properly to avoid any damage to adjacent workers in the area.</p> <p>Adequate firefighting arrangements and availability of trained firefighting staff is being ensured by M/s Nestlé Pakistan Limited.</p> <p>Smoking or any drugs should be prohibited during working hours or performing work.</p> |
| <b>Gaseous Emissions</b>                                                                                           | <b>PEQS</b>                           | <p><b>NIL.</b></p> <p>Proposed project's scope did not cover any construction &amp; demolition activity as subject</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                                                                                                                |                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                |                                                                                                                          | unit & associated facilities are already constructed and only involves installation activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Particulate Matter</b>                                                                                                                      | <b>PEQS</b>                                                                                                              | <p><b>NIL.</b></p> <p>Proposed project's scope did not cover any construction &amp; demolition activity as subject unit &amp; associated facilities are already constructed and only involves installation activities.</p>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Noise-</b> Noise may be generated during installation and movement activities at the project site; which may be a nuisance for the workers. | OSHA standards                                                                                                           | <p>Activities generating high levels of noise should be minimized at the project site.</p> <p>If the noise level will exceed the permissible limits with reference to national and OSHA standards during installation activities i.e., movement of machinery/ loading/ unloading, handling, welding etc., following recommendations are suggested to take action against the high noise levels:</p> <ul style="list-style-type: none"> <li>• Proper tuning of machinery and vehicles involve in installation activities is recommended.</li> <li>• Ear muffs and ear plugs are recommended in case of high noise levels.</li> </ul> |
| <b>Solid waste Management</b> — If solid waste will not be managed properly, it may cause negative impacts                                     | <p>Generation of excessive waste;</p> <p>Recyclable waste and reusable waste are discarded;</p> <p>Improper disposal</p> | <p>Solid waste should be handed over to relevant contractor;</p> <p>Domestic waste should be disposed off properly, handed over to contractors, placed in bins;</p> <p>Proper solid waste management plan is implemented.</p>                                                                                                                                                                                                                                                                                                                                                                                                       |

|                                                                                                                                 |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                 |                                                                                                                    | Temporary handling & storage site is designated.                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Vegetation Loss/<br/>Soil erosion—</b>                                                                                       | Unnecessary or excessive removal of trees and shrubs.                                                              | <p><b>NIL.</b></p> <p>No tree cutting/ vegetation loss issue will be involved in the proposed project as project site is already established unit and only installation and upgradations will involve.</p> <p>Efforts has been taken to restore/ betterment of the local area through Plantation Plan &amp; donations.</p> <p>Native trees/plants will be planted along with boundary walls and in designated sites.</p> |
| <b>Soil Contamination—</b><br>mismanagement of solid waste can contaminate the soil.                                            | Presence of visible amount of solid waste in soil.                                                                 | An effective solid waste management system is in place to mitigate the potential impacts.                                                                                                                                                                                                                                                                                                                                |
| <b>Wastewater-</b>                                                                                                              | <p>Environmental implications if disposed off untreated.</p> <p>Prevention of diseases spread.</p>                 | <p><b>NIL.</b></p> <p>Proposed project's scope did not cover any construction &amp; demolition activity as subject unit &amp; associated facilities are already constructed and only involves installation activities which will not generate any wastewater.</p>                                                                                                                                                        |
| <b>Socioeconomic impacts—</b> Inter-cultural differences between the project staff from other areas and the local community may | <p>No community complaints</p> <p>Increased employment facilities in the area;</p> <p>Increased infrastructure</p> | <p>Training of the non-local project staff on local culture and norms;</p> <p>Avoidance of unnecessary interaction of local population with the non-local project staff.</p> <p>Employment opportunities should be provided to the local people to maximum extent possible.</p>                                                                                                                                          |

|                                                                                                                                                               |  |                                                                                                                                          |
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| <p>arise due to the subject project.</p> <p>Positive socioeconomic impacts due to increased infrastructure, employment opportunities and economic growth.</p> |  | <p>CSR program for local community in recommended.</p> <p>Complaint resolution committee should be formulated to address grievances.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------|

## Major Impacts during operation phase and their mitigation

Major impacts and their mitigation are given in below table:

| SUMMARY OF IMPACTS DURING OPERATION PHASE                                                                                                                                                                                                                                             |                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Impacts                                                                                                                                                                                                                                                                     | Criteria for determining Significance                       | Key Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p><b>Air Emissions-</b></p> <p>During the operational phase of the project, gaseous emissions from project related activities and power sources may affect the air quality of the project area.</p> <p>Project activities can also impact the ambient air through release of PM.</p> | <p>PEQS for Ambient Air</p> <p>PEQS for Stack Emissions</p> | <p>Industry should ensure the PEQS compliance and should not be allowed to emit hazardous pollutants.</p> <p>Air Emission Control Measures are recommended to control the air emissions.</p> <p>Maximum possible plantation is recommended as it absorbs gaseous emissions as well as prevent lower atmospheric dust to move along with the air action.</p> <p>All project related machinery, standby generators, vehicles will be checked regularly to ensure that are in sound working condition and are not emitting smoke.</p> <p>Regular monitoring as per PEQS is recommended for ambient air and stack emissions.</p> <p>Proponent should keep the record of monitoring and equipment maintenance.</p> |

|                                                                                                                                                                 |                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Noise-</b> Noise due to industrial activity, machinery and generators can be a nuisance for the workers in the working area.</p>                          | <p>PEQS for ambient noise level.</p> <p>OSHA standards for covered working areas.</p>      | <p>Activities generating high levels of noise should be minimized at the project site.</p> <p>If the noise level will exceed the permissible limits with reference to national and OSHA standards, following recommendations are suggested to take action against the high noise levels:</p> <ul style="list-style-type: none"> <li>• Personal Protective Equipment PPEs including Ear muffs, Ear plugs and other noise abating equipment will be provided to the workers and other staff in case of noise at the project site.</li> <li>• Sound proof/ covered buildings already has been built for placement of machinery i.e., generators (if any) to be installed at the project site to control the noise.</li> <li>• Proper tuning of machinery is recommended.</li> <li>• Rubber wounds/ vibration control platforms already has been placed underneath the machinery/ generator to avoid the vibration.</li> <li>• Speed/ horn restriction should be imposed on all project related vehicles.</li> <li>• Maximum plantation is recommended within site area as it absorbs the noise waves and act as barrier.</li> <li>• Regular monitoring as per PEQS/ OSHA standards and record keeping is recommended.</li> </ul> |
| <p><b>Discharge of wastewater-</b> The discharge of untreated industrial effluents or municipal wastewater may be a negative impact of the subject project.</p> | <p>PEQS for Municipal and Liquid Industrial Effluents (mg/l, unless otherwise defined)</p> | <p>Industry has treatment facility to treat its wastewater before its final disposal.</p> <p>The process wastewater and domestic wastewater will be generated from the site which will be treated into existing wastewater treatment facility before disposal/ reuse.</p> <p>Treated wastewater is being used for plantation or can be used for sprinkling purpose on unpaved areas or simply drained out in nearby local drain present along with the northern boundary of the proposed site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                                                                                                                                                                                              |                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                              |                                                                | <p>Compliance of PEQS for Effluents should be ensured.</p> <p>Monitoring should be conducted as per PEQS and record should be maintained.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>Health &amp; Safety Issues-</b> different operational activities at the project site may cause health and safety issues for workers if precautionary measures will not be adopted.</p> | <p>OSHA Standards</p>                                          | <p>An S&amp;E department is established to look after the worker and community's health, safety &amp; environment related issues, headed by HSE officer.</p> <p>Proper training of workers and staff should be conducted to avoid the accidents.</p> <p>Use of PPEs should be implemented at workplace.</p> <p>First aid measures/ medical facility should be provided at the project site.</p> <p>Safe drinking water will be provided to workers and staff.</p> <p>Safety signs &amp; boards should be placed during operational activities.</p> <p>Smoking or any drugs should be prohibited during working hours or performing work.</p> <p>Fire Fighting Arrangements/ Equipment should be installed and responsibility should be assigned for firefighting in emergency situation.</p> <p>SOPs for operational activities should be formulated and implemented.</p> <p>Regular review meetings should be arranged to assess the efficiency of EMP.</p> |
| <p><b>Soil Contamination—</b> leaching from storage sites, Oil/chemical</p>                                                                                                                  | <p>Presence of litter in soil.</p> <p>Untreated wastewater</p> | <p>Effective treatment of wastewater before disposal.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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| spills, solid waste and untreated wastewater disposal can contaminate the soil.                                                                                                               | disposal.<br><br>Presence of visible amount of hydrocarbon in soil.                                                                                                                  | Implementation of effective solid waste management plan.<br><br>Oil/ chemicals/ raw material should be stored in properly constructed covered paved area to prevent leaching of contaminants in soil. i.e., in rainy seasons.<br><br>Provision of spill prevention and control kits;<br><br>Use of impermeable surfaces in workshops, and storage areas;                                                                                     |
| <b>Solid waste management-</b> If solid waste will not be managed properly, it may cause negative impacts.                                                                                    | Exposure to potentially hazardous waste;<br><br>Generation of excessive waste;<br><br>Recyclable waste and reusable waste are discarded;<br><br>Littering;<br><br>Improper disposal. | Solid waste from the sources should be disposed off properly by following SOPs.<br><br>Proper solid waste management system is recommended for unit.<br><br>Industrial ecology practices will be adopted wherever possible.<br><br>3R's of sustainability are recommended to achieve.<br><br>Separate waste bins should be placed at suitable places.                                                                                        |
| <b>Socioeconomic impacts</b> —Inter-cultural differences between the project staff from other areas and the local community may arise.<br><br>Positive socioeconomic impacts due to increased | No community complaints<br><br>Increased employment facilities in the area;<br><br>Increased infrastructure<br><br>CSR Activities                                                    | Training of the non-local project staff on local culture and norms;<br><br>Avoidance of unnecessary interaction of local population with the non-local project staff.<br><br>Employment opportunities should be provided to the local people as possible.<br><br>Grievance redress/ conflict resolve committee should be formulated in order to resolve worker's and local's concerns.<br><br>CSR activities for welfare of local community. |

|                                                               |  |  |
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| infrastructure, employment opportunities and economic growth. |  |  |
|---------------------------------------------------------------|--|--|

## Proposed Environmental Monitoring

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

Gaseous Emissions and

### Gaseous Emission and Particulate Matter/ Dust

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

### Noise

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

### Ambient Air Quality

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

### Water

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

## CHAPTER # 1

### INTRODUCTION

This section of the report provides an overview of the rationale of the project, objective of the project, why it is to be installed, purpose of the report and approach adapted to conduct the Environmental Impact Assessment (EIA) study for the Proposed Upgradation in Utilities by installing the new technologies, modification in the existing infrastructure to save the energy.

#### **Purpose of the report**

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

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

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

#### **Scope of study**

The scope of study includes baseline survey of the proposed project, collect relevant data from primary and secondary sources, assess the impacts related to the subject project, suggest the mitigation measures to control the anticipated impacts, formulate the environmental monitoring program to check the environmental parameters at PEQS, prepare an

Environmental Management plan to implement the recommended mitigation measures, consultation with the stakeholder or nearby community to know their concerns regarding the subject project.

### Identification of the project:

According to the *Review of IEE/ EIA Regulations 2022*, the proposed project can be considered Schedule II of Review of IEE and EIA Regulations, 2022

### Project title:

The proposed project to which Environmental Impact Assessment (EIA) study required is entitled as “Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability, at Nestlé Pakistan Limited Sheikhupura factory located at 29-Km Lahore Sheikhupura Road, District Sheikhupura”.

### Project benefits/ objectives:

- For process safety, operational continuity and sustainability
- To establish a business for the proponent.
- Provide job opportunities to local public.
- Contribute to the national economy of the country.
- Project will function in a sustainable way.

### Project proponent

|                    |                                                  |
|--------------------|--------------------------------------------------|
| <i>Proponent</i>   | <i>Mr. Rizwan Islam</i>                          |
| <i>Designation</i> | <i>Factory Manager</i>                           |
| <i>CNIC #</i>      | <i>35202-2351367-7</i>                           |
| <i>Resident of</i> | <i>House # 337-B, EME, Phase 12, DHA, Lahore</i> |

CNIC and other relevant documents are attached as **Annexure- C**.

### Project consultant:

Pak Green Enviro-Engineering (Pvt.) Ltd is an independent company, who conducts IEE, EIA, EMP and other environmental investigations through its panel of environmental consultants,

public participation practitioners and experienced environmental managers. The company has its own recommended instruments to check the baseline environmental data as per NEQS/ PEQS and lab analysis facility for water, waste water priority parameters.

**Lahore office:** Pak Green Laboratory (EPA Certified), 46 M, Gulberg III, Lahore.

**Islamabad office:** Suite No. 14 Shaukat Plaza, I-10 Markaz Islamabad.

**Peshawar office:** House # 01, Old Bara Road, University Town, Peshawar.

**Contact #:** +92-4235441444, +92-303-4442334

**Email:** info@pakgreen.pk

The current study was carried out by the following professionals:

| Sr. # | Name               | Qualification                 | Role in IEE                             |
|-------|--------------------|-------------------------------|-----------------------------------------|
| 1     | Abdul Hafeez Nasir | Ph.D Environment, LLB         | Team Leader, revision of the IEE report |
| 2     | Sabeera Tauheed    | M.Phil Environmental Sciences | Report writing                          |
| 4     | Husnain Ali Naqvi  | Law Graduate                  | Legal aspects of report                 |
| 5     | Umair Rasheed      | BS Chemistry                  | PEQs Monitoring                         |
| 6     | Zaira Tasneem      | BS Psychology                 | Socio economic Survey                   |

### **Nature, size and location of the proposed project:**

The proposed project to which Environmental Impact Assessment (EIA) study required is entitled as Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability, at Nestlé Pakistan Limited Sheikhupura factory located at 29-Km Lahore Sheikhupura Road, District Sheikhupura.

### **Location**

Project site is located at 29-Lahore Sheikhupura Road, District Sheikhupura. The proposed setup will be installed within the Nestlé industrial premises.

For further details please consult the layout plan & google earth map of the project site attached as **Annexure-B**.

### **Methodology of EIA study & report writing:**

For the purpose of this report, environmental and social baseline data and conditions at/ around the project site has been undertaken. The methodology adopted to conduct the EIA Study includes Review of Layout Plan, detail meetings with the client, orientation session, development of data acquisition plan, Analysis of data, review of existing data, primary &

secondary data collection survey, Screening of Potential Environmental Impacts and Mitigation Measures and also interviews with people near the project area has been conducted to collect their opinion regarding the proposed project and after findings it has been concluded that the project will not have any major adverse impacts on the socio-economic environment of the existing community.

### **Screening**

According to the Review of IEE/ EIA Regulations 2022, the proposed project falls under Schedule-II.

## **CHAPTER # 2**

### **ANALYSIS OF ALTERNATIVES**

This Chapter deals with the analytical overview of different alternatives that have been considered. The analysis has been carried out critically so as to justify the need of the Project and to select the most feasible alternative. Besides the economic viability; environmental sustainability and social soundness of the proposed Project has also been considered while analyzing different alternatives.

#### **THE NO PROJECT ALTERNATIVE**

Adopting zero-alternative would mean abandoning all the potential that the site offers to investor(s), contribution to government revenue and even local community livelihoods' improvement.

#### **LOCATION/SITE ALTERNATIVES**

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

Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment, and other related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements, the selected site is ideally suited for Construction of the subject unit.

#### **ALTERNATIVE SITE**

No Alternative site has been considered due to insignificant environmental impacts. The proposed site fulfills the site selection criteria.

## **MODIFIED CONSTRUCTION TECHNOLOGY ALTERNATIVES**

As the project site is said project is proposed, there are no construction technology alternatives rather some alteration/renovation of the building will be done.

## **TECHNOLOGY ALTERNATIVES**

M/s Nestlé Pakistan Limited will install the best efficient machinery of the plant the proponent is ensuring the technology equipped with pollution abatement system.

A state-of-the-art system of Nestlé controls the operations. The system used a state-of-the-art calibration mechanism

## CHAPTER # 3

### DESCRIPTION OF THE PROJECT

#### Type and category of project:

Subject project for which this EIA study has been conducted is the Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability, at Nestlé Pakistan Limited Sheikhupura factory located at 29-Km Lahore Sheikhupura Road, District Sheikhupura. According to the Environmental Protection Agency, Government of the Punjab, Lahore, the project can be considered Schedule II of Review of IEE and EIA Regulations, 2022.

#### Project objectives

Main objectives of the proposed project are given below:

- For process safety, operational continuity and sustainability
- To establish a business for the proponent.
- Provide job opportunities to local public.
- Contribute to the national economy of the country.
- Project will function in a sustainable way.

#### Alternatives consideration:

##### Location alternative:

As the project is proposed within the exiting Nestlé Sheikhupura Factory and objective of the project for process safety, operational continuity and sustainability to the existing of the factory, hence consideration of alternative site is out of question.

|                  |              |               |
|------------------|--------------|---------------|
| Land Coordinates | 31°41'7.44"N | 74° 4'18.88"E |
|------------------|--------------|---------------|

##### Proposed location:

The proposed setup will be installed within the industrial premises.



Figure 4: Google Earth Map Showing Nestlé Sheikhupura Factory

For further details please consult the Layout plan & colored Google Earth Maps (A3-size) of the project site attached as **Annexure-B**.

**Technology alternative:**

There is no technology alternative involve for the said project. As the said project is already a Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability.

**Existing land use:**

The land is under the ownership of M/s Nestlé Pakistan Limited an open plot free of any activity.

**Road access:**

The Nestlé factory is located on the Lahore Sheikhupura main road and proposed activities within the premises of the factory.

**Cost and magnitude of the project:**

The cost for the proposed project is about more than 1 billion rupees.

**Schedule of implementation:**

The project is the Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability which is expected to be completed within a few months after the issuance of approval from the relevant departments.

**Project description:**

The Proposed Upgradation, Revamping and replacement of obsoleted technologies with the latest technologies and infrastructure upgrades for operational continuity & sustainability, at Nestlé Pakistan Limited Sheikhupura factory located at 29-Km Lahore Sheikhupura Road, District Sheikhupura.

The list of Projects is mentioned below which are involve in the said project.

- Fuel Storage Area Revamping
- Construction of rainwater pit to avoid stagnant water and ensure safe factory operations

- Relocation of Caustic and Carbon Dioxide Tanks to avoid vehicle and pedestrian safety at intersection points
- Replacement of Rusty and worn-out Shed for Empty Bottle Racks at water plant
- Waterproof Coating over Thermal Insulation on Beltex warehouse Roof to avoid rain-water seepage and material damages
- Removal of leakages and water proofing is required for production building's roofs to avoid rain water seepages leading to hygiene and quality issues
- Replacement of Magnetic Traps at Dairy & Juice Plant (Phase-I Qty 12) to comply with St 08.720 i.e. ensure more than 8,000 Gauss magnetic strength to prevent metallic foreign bodies
- New Laser Printer on PET Aseptic Line to adhere regulatory compliance i.e. printing of accurate and visible expiry on PET bottles (230ml & 1L SKU)
- Food Safety & Quality Compliance Projects at Nutrition Plant
- Bag Lifting Devices for STD
- Battery jack required for Material movement
- Cup plastic Tray Spinner
- Magnetic Traps Replacement Quantity (09)
- Malt Dosing Pump
- Positive pump 10000 l/H for the replacement of the obsolete pump to minimise the cost of maintenance and increase efficiency
- PUMA booster pump for Pasteurizer
- Replacement of compressor to avoid High temperature of blast units and high leak rates due to excessive wear and tear after completion of their useful life.
- Replacement of Rotor and Stator Pump Fluidor TAD1 & TAD2
- Replacement of the Pasteurizer MS water circulation pump with SS to avoid quality incidents
- Replacement of Utilities MS line in UHT, Juice, Tetra filling hall
- Standards Compliance Project
  - Milk shelf-life monitoring through PLC
  - Cream feed line integration – AI sustainability
  - Provision of Cream Separator back up
  - PSA upgradation

- Safety Compliance at Tanker CIP station
- Ultrasonic Cleaning Machine required for cleaning the critical components (Heat Exchanger & Scrubber) of Tetra Fillers
- Upgradation of back pressure valves of Dairy and Juice Plant in sterile loop from PTFE to SS Bellow
- Upgradation of westfalia clarifier
- Replacement of Thermal with Laser Printers
- Additional Bornemann pump for soup distribution
- Control System IO upgradation of Manual BIB Lanegns (P,Q,R,S)
- Dust collector for Roller dryer 4
- Finish Product Leak detector
- High suction vacuum cleaner for cleaning inside the AD/AC sieve.
- Lifter for Pulp drums handling for new pulp crusher
- Portable scissor lift for high hygiene area
- PowTest Detection System for Scorched Particles Deployment in factories producing powdered Infant Formula
- Repalcement of obsolete satellite at RD1 (QTY = 01)
- Replacement of Hi-Ray 11 Generators with Hi-Ray 7 generator along with XRC Controller Qty: 3
- Replacement of Vaccum Pumps for powder conveying
- Revamping of Egron 2 plant Air heater
- Stacker required for MR2 Tote bin
- Vacuum Cleaners
- Vibrator and new sieve for the old cereal tipping
- Energy Optimization at Sidel Blow Molding at NPL
- Energy and Planned Stoppage reduction by Process improvement at Dairy & Juice Plant
- Roller Dryers Air Supply – Exhaust Reduction at NN
- Replacement of High-Power Ceiling Lights with Low Power LEDs at Dairy & Juice Plant
- Project Horizon-Metering Upgrade to have a better, accurate and real time visualization of Energy parameters
- Camera's for boundaries & other locations for factory surveillance

- Camera's for Nutrition
- Camera's required for Standardization department
- Cladding and Insulation improvement of entire factory
- Extension of RCC Road
- Ferro Flex air tight Fire Door at RP warehouse
- Fire Sprinklers at RP warehouse
- Noise absorbing mufflers for Packing Hall Machines to minimize the noise level in the hall
- Overhead passage Infront of Gea and New Chiller Room to minimize the safety risk at Walkway
- Platform for Tanker Washing area
- PSA Shed for dairy material storage to close the Hygiene audit gaps
- Strengthening of Beltex Halls # 17, 18 & 19
- Tile work in processing & filling area to improve the hygiene conditions
- Water proofing & Heat proofing in factory
- Waterproofing of Production Buildings + paint of MS structure
- Relocation of Walkway for TAD-3 from juice PLE
- Tetra store lifter accessibility for easy material movement
- Revamping of Chemicals Storage area to ensure NER compliance
- Replacement of Old/Obsoleted Line lab equipment
- SACMI Conveyor Control system upgradation
- Turbidity Meter for CIP validation
- ATP Meter for CIP Validation
- Camera's required for safety and security purpose of factory
- Portable asset tag printer required
- Upgradation of weighing bridge for Raw & Packaging
- CO<sub>2</sub>, O<sub>2</sub> and N<sub>2</sub> Gas analyzer required
- Client PC with HD graphical card
- AF2 Compressor Controller + HMI Upgradation
- Replacement of GEA chiller VFD
- Elimination of STF and health risk in ALMIX juices
- Bottle inspection Units at Nestlé Water Plant

- Filter and Shoe Washing room
- Manual Chain Hoist and Trolley for High Pressure Air Compressors NPL SKP
- Filler 1,2 PLC Program Modification from Wolf
- SCABA cylinder for RAC
- Upgradation of Tipping Station
- New LCD required
- New Gas pipeline with header required
- New Washing station setup required at NP Line
- New RP warehouse Shed construction
- Blowback filter assembly for Egron - Transferred to Replacement of obsolete 4 auger tubes
- Rework Dosing for NN Products
- Replacement of obsolete filling tube and auger
- Over Head Chain Hoist 3 Ton raw material lifting device at N line
- Laser Tube Replacement for Markem Image Laser Printers SC 350 Series
- Sacmi labeler up grading
- Up grading of Siapi HMI
- Submersible pumps for rainy water system
- E&A calibration compliance
- i) Fluke Calibrator
- Quality improvement at E2 Bulk Line
- Freezer - Imran RCA
- UPS- 10 KVA - Ibrahim
- Tray Washing Pits
- Other PRs
- BANNERS- predictive maintenance solution implementation at SKP
- SCABA for RAC (P1)
- Eagle X-Ray machines Diode cards are obsoleted (P1)
- Hach BENCHTOP Spectrophotometer without RFID
- PET Palletizing Project
- GEA Loop Optimization Project (P1)
- Aeration Blower Aerizen (P2)

- Charge Air Cooler (P2)
- DC-2 Roof Replacement

The details of some projects are incorporated below:

Two out of five tanks need to be replaced, as they have reached their useful life of more than 20 years and it is EPA regulation that the proponent shall construct storage in accordance with OGRA's notified technical standards.

#### **Fuel Storage Area Revamping**

- Replacement of 200m<sup>3</sup> HFO storage tanks with 500m<sup>3</sup> HFO tanks-Qty 2
- Camouflage paint on all storage tanks –Qty 5
- Hazard Area Classification as per the latest code & standard. (IE 15, NFPA 497 or API 500).
- Fuel storage vehicle movement/parking area modification.
- New Roof Plates as per API 653 Clause 9.11. and API 650 Clause 5.10.3.

#### **Elimination of Foreign Body Risk via Magnetic Traps Upgradation**

This low magnetic flux has the potential to cause metallic contamination in the product. Moreover, other than the stated 13, 10 additional magnetic traps are required to eliminate potential metallic contamination risks during pulp dosing and aseptic tank filling.

- Replacement of less gauss magnetic traps with new ones – qty 9
- Magnetic traps (new addition) – qty 3
- Mechanical and fabrication services

#### **New Laser Printer Required for Expiry on PET Aseptic Line**

Expiry print on all PET bottles and majorly on 230 ml, is not meeting quality requirements. It is regulatory requirement as well to have clear printing of batch code and expiry on all PET formats.

Printer is made to run on speed higher than its designed speed, which has led to increase in replacement frequency of printer filters leading to exponential increase in operating cost as well.

#### **Food Safety & Quality Compliance Projects at Nutrition Plant involving following key activities:**

To ensure food safety and compliance at Nutrition plant, following upgradations and/or replacements are required:

- a) Obsolete Smith's 0.8 mm energy detectors' replacement as per OEM

- b) recommendation
- c) Upgradation of Hi-Ray generators as existing ones are obsolete
- d) New augers and tubes to ensure Compliance to Quality standard, St-88.309,
- e) UV conveyor at maltose dosing setup to eliminate EB occurrences
- f) Upgradation of dry mixer Gurein Drive as current model is obsolete
- g) New Multivac machine to ensure O2 level < 2.5% in 25 kg bags to ensure compliance

#### **Revamping of Egron 2 plant Air Heater:**

The refractory lining of Air Heater at Egron 2 has reached its useful life of 08 years and damages on the ceramic sleeve and Tube Sheet ends have increased over the past few months leading to unplanned stoppages and production interruptions. The burning of tubes end through flue gases and hot Air leakage are increased and repairing them poses a great threat of refractory lining falling during tubes welding which is already very weak. The repair job has been carried out multiple times with high risk of complete system failure.

#### **(PowTest):**

Zero-Defect is our Nutrition SBU Operations' key priority in our Future Operations Landscape (FOL) Roadmap 2021-2025. With this ambition an off-line scorched particles detection system (PowTest 1.0), supplied by Elica ASM S.r.l., has been validated showing high performance in the detection of black and brown particles (0.3-2mm) and yellow particles (1-2mm).

#### **Replacement of Hi-Ray 11 Generators with Hi-Ray 7 generator along with XRC Controller:**

As per manufacturer, Hi-Ray 11 Generator is obsolete now and he recommended to replace the Generators with Hi-Ray 7 series along with XRC Controller to avoid breakdown due to generators getting faulty because of completion of their expected lifetime.

#### **Replacement of obsolete satellite at RD1:**

Recently obsolete RD1 has been replaced. However, the mountings are still old and reaching their end of life. In the last servicing it was observed that the ends of satellite were damaged and new bearings were fit by punching to avoid slipping of bearings. On steam side a sleeve is added. As the satellite is 2 decades old it also showed signs of DE shaping causing wobble in whole structure and is moving irregularly in vertical axis. In order to avoid a long-term process failure, we need to replace the satellite to sustain continuous production

**Lifter for Pulp drums handling for new pulp crusher:**

For new pulp crusher area. Previously we are using hand jack. For pulp crusher we need lifter for drum placement on conveyer of pulp crusher.

**Control System IO upgradation of Manual BIB Langen (P, Q, R, S):**

Currently installed control system equipment's are almost getting obsoleted by the manufacturer. There is a need to upgrade the control system of P, Q, R, S Langen machines. In addition to this, there is a need to transform the conventional control system (that consists of multiple Push buttons for controlling different equipment's and parts of machine) by a touch-based HMI system to get better UI and control, command, status of the overall machine.

**Replacement of Vacuum Pumps for powder conveying:**

The two-vacuum pump (Busch made) for base power and crunchy's in technical room cereal are obsoleted. These are bottle neck pumps, and their breakdown will cause whole plant shutdown and need to replace them to upgraded version as soon as possible.

**Strengthening of Beltex Halls # 17, 18 & 19:**

In recent structural evaluation of Beltex Warehouse it is identified that the building structures of Halls # 17, 18 & 19 require structural strengthening to sustain the lateral loads e.g., seismic loads in case of earthquakes. The current structures are not designed for seismic loads and need to be strengthen by provision of Shear Walls and addition of new MS columns at critical points.

**Project Horizon**

DMO energy is a global drive focusing on optimization and benchmarking of energy utilization across factory operations for selected sites. The project is initiated with an objective to provide visibility on different energy and water streams and ultimately improving the distributions while putting special focus on major energy consuming processes

This project will contribute to the delivery of energy efficiency targets along with Nestlé's commitment to zero carbon emissions.

The high-level scope of the project is as follow

- Flowmeters for Steam
- Flowmeters for Ice and Chilled Water
- Flowmeters for Compressed Air line level
- Flowmeters for HFO & Natural Gas

- Electricity Meters
- Flowmeter Water (Raw, treated)
- Flowmeter Cooling Water
- Control System Upgrade
- OTIT servers' installation
- Cabling Network, Integration & Commissioning

### **Water requirement:**

In the proposed project ground water is available from the existing factory for domestic purposes.

### **Solid waste:**

During operational stage, the generated waste will be handed over to certified contractor for scientific disposal/recycling.

### **Trainings:**

S&E Manager is already appointed by the management should conduct Monthly or quarterly trainings of the workers/ staff. S&E Manager will train the S&E staffs for regular inspection and field visits of the area. S&E department of the M/s Nestlé Pakistan Limited regularly conduct the training sessions in order to advance the skills of the staff and workers.

### **Personal protective equipment:**

Workers will be provided with safety shoes, ear plugs, Masks & other personal protective equipment during the working hours to insure personnel health & safety. Implementation of PPEs will be ensured by the S&E department.

### **Restoration / Rehabilitation Plan**

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

One completion of the project, the debris will be removed from the site in order to maintain aesthetics of the project. All measures will be undertaken for ensuring occupational safety, security and clean environment in the project area. Local species of trees and flowering plants

will be planted within the unit premises, along the road sides with the consultation of EPA and experts.

### **Plantation**

Area for plantation should be reserved within the premises of the project and plantation should be done within, outside and at the boundary wall of the unit.

### **Government approvals:**

Project proponent will get NOCs from all concerned departments including EPA.

## CHAPTER # 4

### DESCRIPTION OF ENVIRONMENT

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

#### **Physical Environment/ Resources**

##### **History:**

Sheikhupura also known as Qila Sheikhupura is a city in the Pakistani province of Punjab. Founded by the Mughal Emperor Jehangir in 1607, Sheikhupura is now the 16th largest city in Pakistan, and is the headquarters of Sheikhupura District. Sheikhupura is also the headquarters of Sheikhupura Division. The city is an industrial center, and satellite town, located about 38 km northwest of Lahore. According to the 2017 Census of Pakistan, its population is 473,129.

The region around Sheikhupura was previous known as Virk Garh, or "Virk Fort", in reference to the Jat tribe that inhabited the area. The city, founded in 1607, was named by Mughal Emperor Jehangir himself - the city's first name is recorded in the Emperor's autobiography, the Tuzk-e-Jahangiri, in which he refers to the town as Jehangirabad. The city then came to be known by its current name, which derives from Jehangir's nickname Sheikhu that was given to him by his mother, wife of Akbar the Great.

##### **Mughal:**

Mughal Emperor Jahangir laid the foundations of Sheikhupura in 1607 near the older town of Jandiala S&Er Khan, an important provincial town during the early to middle Mughal era. He also erected the nearby Hiran Minar, Sheikhupura's most renowned site, between 1607 and 1620 as a monument to his beloved pet deer, Mansiraj, at a time when the area served as a royal hunting ground for the Mughal Emperor. Jehangir laid the foundation of the Sheikhupura Fort in 1607, which is situated in the city's center.

##### **Sikh**

Following the collapse of Mughal authority, the city came under the control of the Bhatti tribe. The tribe struggled to maintain control of the area, as bandits and Sikhs began encroaching upon the area. In 1797, the Durrani king Shah Zaman briefly seized the city and fortress during

his campaign to capture Lahore. The city's fort then was captured by the Sikh bandit, Inder Singh.

Sheikhupura was then captured from the Bhattis by the forces of Lehna Singh in 1799. Sheikhupura thus came under the rule of the Sikh Sukherchakia Misl state under Lehna Singh's ally, Ranjit Singh, forcing the Bhatti tribe to retreat to Pindi Bhattian and Jalalpur. Sheikhupura then changed hands several more times, before finally being captured by Ranjit Singh in 1808.

Sheikhupura remained under suzerainty of the Sikh Empire until 1847, when the British seized control of the area. The British imprisoned the last Queen of the Sikh Empire, Maharani Jind Kaur, at the Sheikhupura Fort for ten months until 1848 before ultimately condemning her to exile abroad.

### **British**

Following establishment of British colonial rule, Bhatti possessions that had been seized by the Sikhs were restored. The large area between the Chenab and Ravi rivers were initially consolidated into a single district with Sheikhupura serving as its first headquarters, until 1851. The area around Sheikhupura attained District status in 1919, with M.M.L. Karry serving as its first administrator.

### **Partition**

On the eve of the Partition of British India, Sikhs made up 19% of the district's population. Despite the area's Muslim majority, Sikhs had hoped that the boundary commission would award the area to India, given the proximity of Sheikhupura to the city of Nankana Sahib - revered as the birthplace of the founder of Sikhism, Guru Nanak. The city was spared the large-scale rioting that engulfed Lahore earlier in 1947, and the city's Sikh population did not shift to India before the Radcliffe Line that demarcated the border of the newly independent states of Pakistan and India was announced.

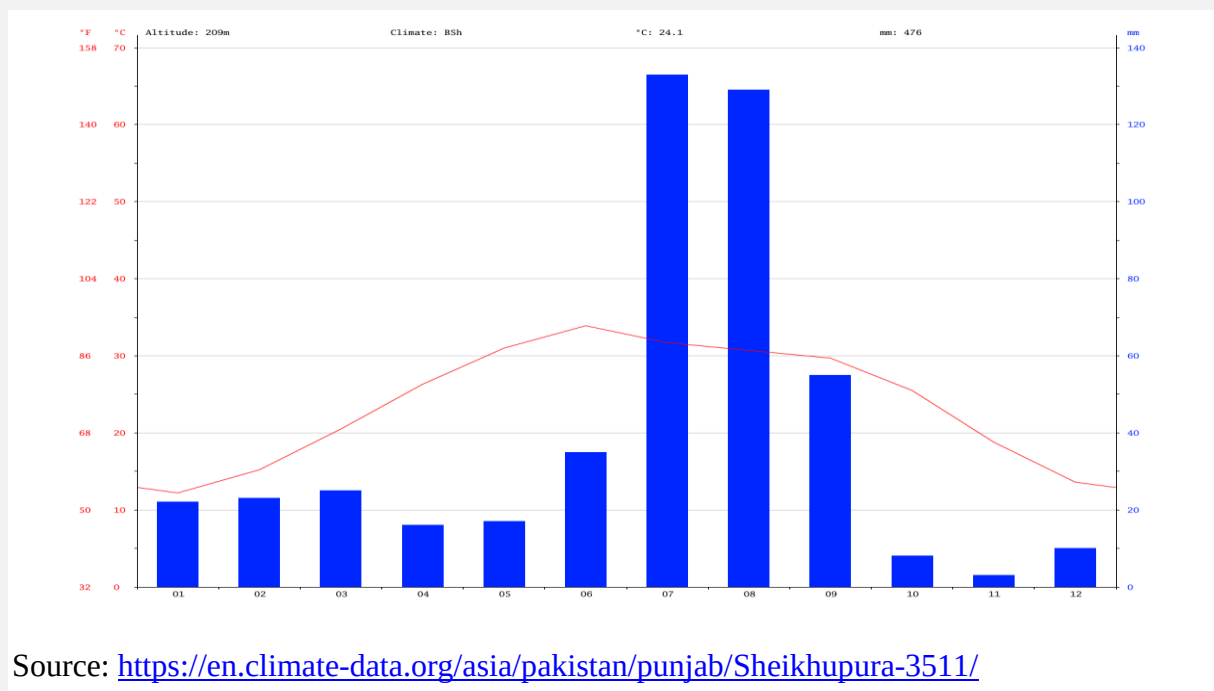
The Sikh population had not made arrangements to leave and remained trapped in the city until 31 August 1947. The city's Sacha Sauda refugee camp hosted upwards of 100,000 Sikh refugees who had come to the city after fleeing nearby Gujranwala and other surrounding areas earlier that year. Fierce violence erupted in the city, and an estimated 10,000 people were killed in Sheikhupura between 16 August and 31 August in communal rioting between Sikhs and Muslims. Large numbers of Sikh women were killed by Sikh men in an attempt to prevent Muslim rioters from reaching them.

## Geography and Climate

Sheikhupura is situated at a distance of about 36 Km from Lahore, the provincial headquarters. Sheikhupura lies 31°42'51.16"N latitude and 73°59'3.49"E longitude. The city is well connected with its surrounding big urban centres like Faisalabad 94 Km, Sargodha 143 Km and Gujranwala 54 Km. Sheikhupura is also a railway junction. Sheikhupura is bounded by 6 other districts of Pakistani Punjab namely: Lahore, Nankana Sahib, Narowal, Hafizabad, and Gujranwala. The Bar jungle has almost disappeared owing to colonization and extension of canal irrigation.

### Climate:

The climate here is considered to be a local steppe climate. In Sheikhupura, there is little rainfall throughout the year. This climate is considered to be BSh according to the Köppen-Geiger climate classification. The temperature here averages 24.1 °C. Precipitation here averages 476 mm. The driest month is November, with 3 mm of rain. With an average of 133 mm, the most precipitation falls in July. June is the warmest month of the year. The temperature in June averages 33.9 °C. January has the lowest average temperature of the year. It is 12.2 °C. There is a difference of 130 mm of precipitation between the driest and wettest months. During the year, the average temperatures vary by 21.7 °C

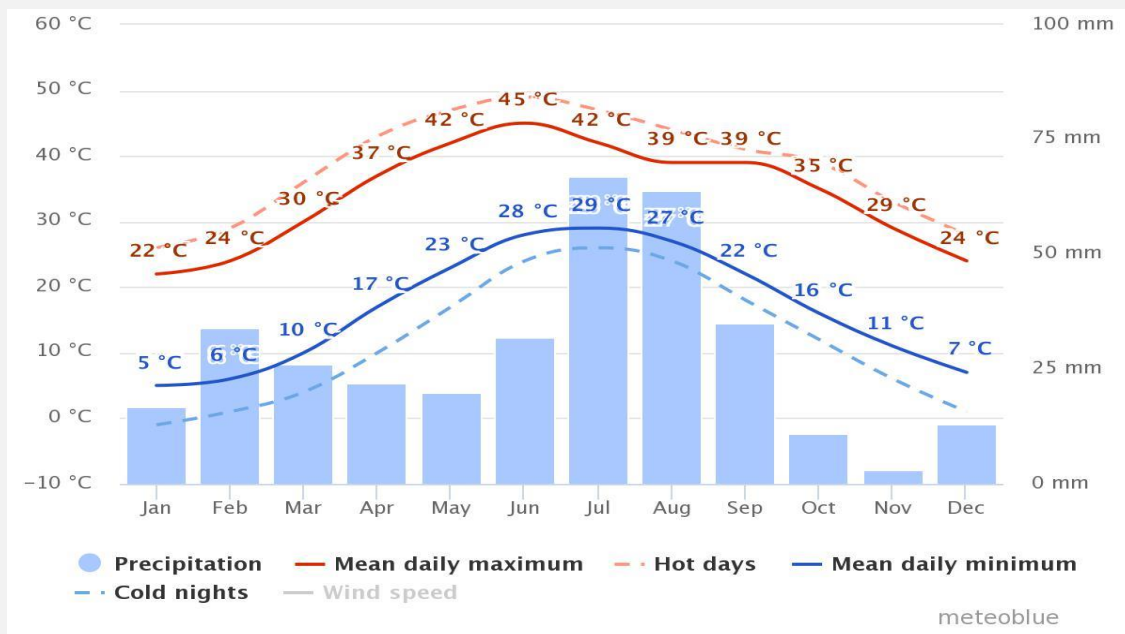


Source: <https://en.climate-data.org/asia/pakistan/punjab/Sheikhupura-3511/>

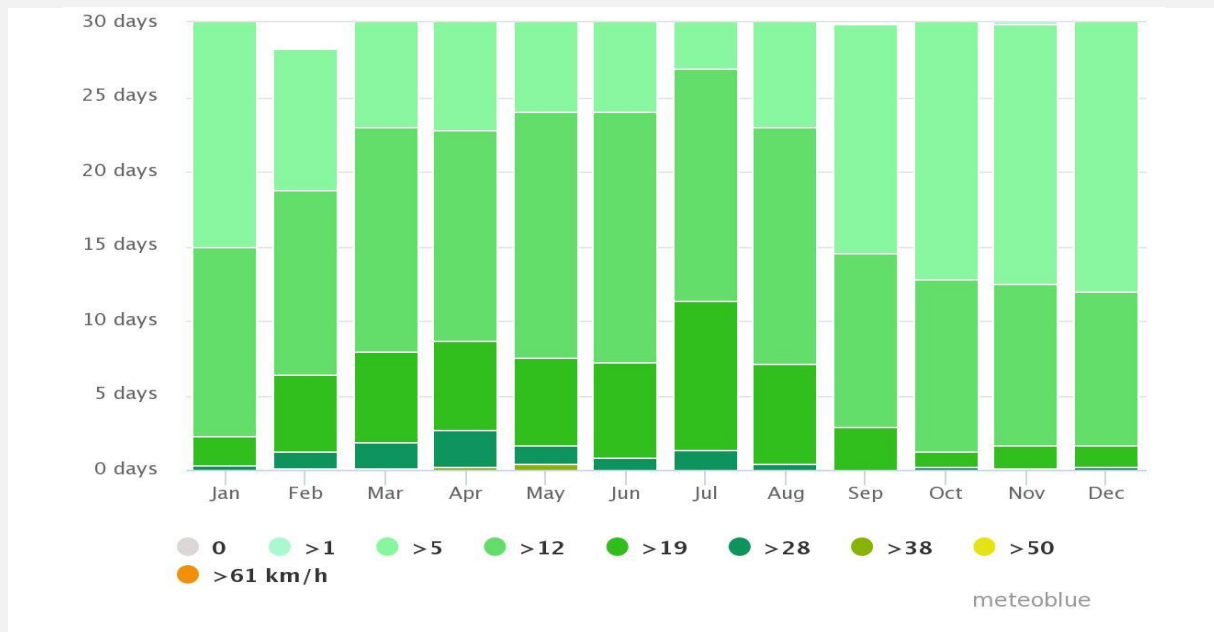
### Muridke Climate:

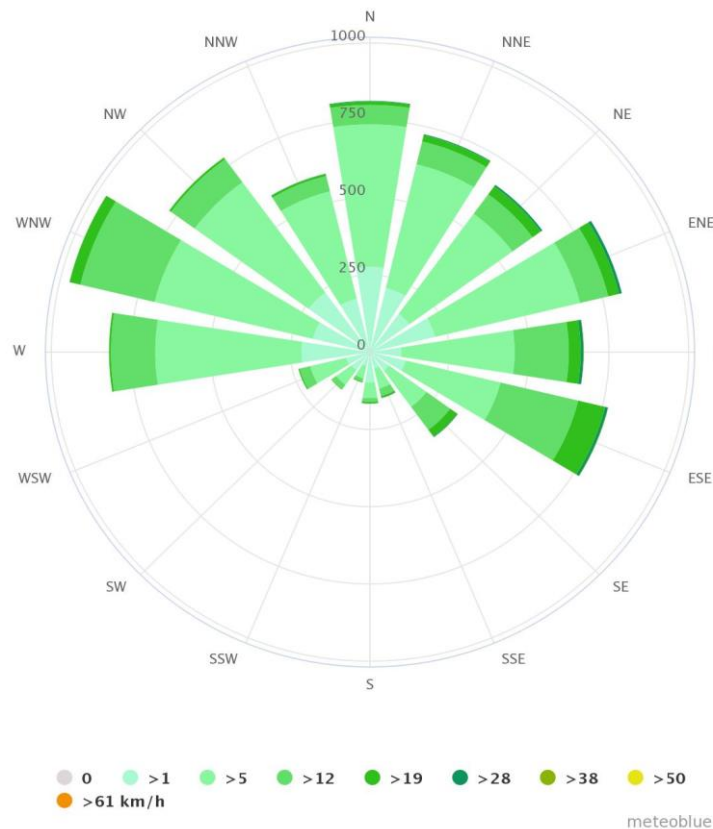
The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Muridke. Likewise, "mean daily minimum" (solid blue line) shows the

average minimum temperature. Hot days and cold nights (daS&Ed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years.



Graphical representation of weather conditions of the area





Source:

[https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/muridke\\_pakistan\\_169692](https://www.meteoblue.com/en/weather/historyclimate/climatemodelled/muridke_pakistan_169692)

## Topography

Topography of Sheikhpura District is plain. The area is a part of Rechna Doab and consists of Sub-recent sediments brought by spill channel from the Chenab River. There are some old channel levees remnants and old basins filled up with clay materials. The material is probably of Late Pleistocene age derived from mixed calcareous sedimentary and metamorphic rocks of Lower Himalayas. Seepage from the canals in the Area has considerably raised the water table resulting in water logging and salinity

## Soils:

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

continues to deeper depths. These layers of silty clay and sandy gravel may also exist below 10-meter depth.

### **Air Quality:**

Ambient air monitoring at the project site was conducted by the team of Pak Green Laboratories. Lab reports are annexed as **annexure-D**.

### **Noise Level:**

Major source of noise generation is vehicular traffic (particular loaded and unloaded truck, van) along the main road. Noise levels were monitored at different location of the project site.

Lab reports are annexed as **annexure-D**.

### **Noise Level Monitoring:**

#### **Basic Environmental conditions:**

During the measurement following conditions were prevailed on workplace:

#### **Metrological Conditions:**

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

#### **Monitoring Instrument:**

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

Name: Digital sound level meter

Model: AR824

Company: Intel Instruments plus

Frequency Range: 31.5Hz to 8kHz



#### **Methodology adopted:**

Noise level was monitored at four points; lab results are attached as **Annexure-D**.

### **Ground water:**

The underground water will be used as a source of water at the project site. Sample was taken from the tube well near the project area to test its parameters. Lab results are attached as **Annexure-D**.

## **Ecological Resources**

### **Fisheries:**

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

### **Biodiversity:**

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

### **Flora:**

Project site is free from any protected species.

### **Fauna:**

Project site is free from any protected species.

### **Rare or endangered species:**

There are no game reserves or protected lands/areas or endangered or rare species either in the area in the range of 5km from the project site.

## **Social and Cultural Study**

### **Demographics**

Muridke is a city and headquarters of Muridke Tehsil in Sheikhpura District of Punjab, Pakistan. It is the 2nd largest city in Sheikhpura Division. It is situated near the city of Lahore, at an elevation of 205 m (675 ft) and is situated on the Grand Trunk Road. In 2005 Muridke became the headquarters of the newly created Muridke Tehsil of Sheikhpura District. According to the 2017 Census of Pakistan, its population is 166,652. It is ranked 53rd in the List of most populous cities in Pakistan. Chand Bagh School is situated on the Muridke-Sheikhpura road.

### **Industries:**

A variety of important industrial units are operating in district Sheikhupura including leather tanneries, rice mills, fertilizer, chemicals, polyester fibre/yarn and rayon yarn, tractor and motor cycle assembling, electric domestic appliances, tyres and tubes (trucks, buses, cars and light vehicles), jute products, ceramics, electrical goods, pharmaceutical, cotton/woolen textile, etc. Paper and paper board industry is also concentrated in district Sheikhupura.

### **Demand Based Industries:**

District Sheikhupura is one of the major industrially developed districts of the country. It possesses requisite physical/social infrastructure facilities and developed industrial base. Therefore, in view of overall provincial/national requirements and export potential, there exists good prospects for pharmaceutical, cosmetics, disposable syringes, glass ampoules, artificial leather, fibre glass, boilers, pumps and compressors, ball bearing, generators, foundry and forging, automobile transmission, etc.

### **List of Identified Projects:**

The following industrial units have been identified for investment in district Sheikhupura

- Auto Parts
- Artificial Leather
- Automobile Transmission
- Corn Oil
- Cosmetics
- Furniture
- Fertilizer
- Fiber Glass
- Foundry and Forging
- Leather Products
- Packaging Unit
- Pharmaceutical
- Wood Pulp for Paper Industry

### **Livestock:**

There are 28 tanneries, one milk processing unit, one ice cream unit, 11 leather products units and 5 leather shoes units already operating in the district. In view of the above, there exist good

prospects for dairy farms, cattle/goat/Sheep fattening farms, leather garments, leather products, etc.

### **Agriculture:**

Major crops and fruit of district Sheikhupura are sugarcane, wheat, rice and guava. A variety of vegetables are also grown in the district. There are 23 flour mills, 93 rice mills, 4 fruit juices, 4 solvent extraction units and 15 vegetable ghee/cooking oil units already operating in the district. In view of the availability of various raw-materials and existing industries, there exist little additional scope for flour mills and rice husking units. However, there exist good prospects for fructose from rice bran, rice husk briquettes, corn oil, furfural from maize cobs, fruit juice/pickles/squashes and vegetables dehydration units.

### **Education:**

Chand Bagh School is an independent boarding school for boys at Muridke in Sheikhupura District, Punjab, Pakistan, approximately 40 km north of Lahore. The school opened in September 1998, having been conceived as a Pakistani version of The Doon School of India. The name "Chand Bagh" refers to the Doon School's estate at Dehradun, India. The origins of the school lie in the independence of Pakistan in 1947 and the series of Indo-Pakistani wars and conflicts which have since followed. In 1985 a group of Pakistan's "Ex-DoscOs", alumni of the Doon School, who had attended it in the days of British India, travelled to Dehradun in India to attend the school's 50th anniversary celebrations. On their return they formed a Doon School Society of Pakistan, which aimed to create a Pakistani version of their old school. After many years in gestation, the school was finally founded by Lieutenant General Ghulam Jilani Khan, a former Governor of the Punjab Province, himself a Dosco, and ten fellow-trustees. In many respects Chand Bagh is modelled on Doon School, Dehradun.

The name "Chand Bagh" means "moon garden" and was chosen in memory of the original Doon School, which had been established in 1935 on the Chand Bagh estate at Dehradun, now in the Indian state of Uttarakhand.

The principal architect of the new buildings, which have Romanesque influences, was Kamil Khan Mumtaz. The school opened its doors in September 1998 and occupies a campus of some 190 acres. Around the campus are the Chand Bagh Farms, a further 270 acres.

### **Archaeological sites of the District:**

Sheikhupura, on the outskirts of Lahore, derived its name from a nickname for Prince Jahangir. It was one of Jahangir's princely dominions during his father Akbar's reign, just north of Sheikhupura town lies a hunting complex known as the Hiran Minar. Hunting grounds were an

important part of the physical environment of Mughal emperors, and the Hiran Minar is one of the best known and most beautiful of such sites. Sheikhpura has a number of historical places in the city which attracts visitors to the city:

- Hiran Minar
- Sheikhpura Fort (Qila Sheikhpura)
- Company Bagh
- Shrine of Shah Jamal
- Muqadssa-e-Mariam
- Sacha Sodha
- Tomb of Mian Sher Muhammad Sharaquri

Notable persons:

Aaqib Javed; played as fast bowler for Pakistan cricket team.

Anjum Saeed; played one Olympics for Pakistan hockey team.

Anzhelika Tahir; Miss Pakistan World 2015, a beauty queen from Pakistan.

Ghulam Jilani Khan; the founder of the Chand Bagh School

Kulwant Singh Virk; author

Mohammad Asif; a right arm medium fast bowler in cricket

Muhammad Javed Butta; a former justice of Supreme Court of Pakistan

Nawab Kapur Singh; one of the pivotal figures of the Sikh Confederacy and founder of the Singhpuria Misl.

Rana Naved-ul-Hasan; player for the Pakistan National Cricket Team

Rana Tanveer Hussain; Federal Minister

Saeed Anwar; played three Olympics for Pakistan hockey team.

Sheikh Salim Chishti; Sufi saint of the Chishti Order during the Mughal Empire

Waris Shah; A Great Punjabi Sufi Poet

Zaka Ullah Bhangoo; Pakistani army aviator

Zia Ullah Khan; attributed with major contributions in the military such as serving as Corps Commander of XII Corps Quetta<ref>'XII Corps (Pakistan)'

### **Quality of Life Values:**

### **Recreational Resources and Development:**

The project area has not any private recreational facilities.

**Aesthetic Values:**

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

**Archaeological and Historical Treasures:**

**Archaeological or historical treasures within the project area are not available.**

**Suitability of site:**

The proposed site for the upgradation is in the existing facility. As the project site lies within the boundary wall zone embarked for industrial activity of Nestlé Pakistan Limited, site does not fall in any sensitive area.

## CHAPTER #5

### SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

The environmental issues had been identified during literature review, consultation with stakeholders, relevant reports and visits to project site. Various types of environmental issues likely to crop up during the life cycle of project are grouped in the following stages:

- Impacts due to location
- Impacts due to design stage/Site development stage
- Construction stage
- Operation stage

#### **Environmental impacts due to the project location**

Proposed project site is situated within the premises of Nestlé Sheikhpura factory, 29-Km Lahore-Sheikhpura Road, District Sheikhpura, hence no significant negative impact due to the location and project has positive impact in term of reduction in the ambient air pollution by the provision of renewable energy and replacement of fossil fuels energy.

No nearby fresh water channel in the surroundings of the project site and no adjacent human settlement near the project site. Site does not fall in the category of sensitive area and no environmentally sensitive localities exist within radius of study area. If the mitigation measures are effectively implemented, the residual impact of the subject project activities on the area's geophysical environment is expected to be insignificant.

#### **Mitigation Measures for Location Phase Impacts:**

- Rehabilitation and plantation will be done to reduce long term serious effects.
- Safe drinking water, Heat stroke center and Shelters will be providing to workers in summer.
- Proper parking area and traffic should be regulated to ensure better traffic conditions in the area.

## **Environmental Impacts due to the project design**

Following could be the impacts related to the design of the project:

- Unavailability of emergency services within the project site may cause life loss
- In case of emergency because site area has no nearby health facilities.
- Electricity hazards may arise due to improper electrical works.
- Fire hazard
- Compromised infrastructure and poor maintenance of buildings.
- Improper disposal system of wastewater and solid waste.

## **Mitigation measures and recommendations**

Following are the mitigation measures and recommendations to minimize the anticipated impacts related to the design of the project:

- Structural stability of the building should be ensured.
- Ample parking and good road infrastructure should be ensured at the project site.
- Emergency Services should be ensured within the project site i.e., firefighting arrangements.
- Geo-technical investigation of the project site should be conducted.
- Electricity system should be designed safe and sound.
- Electricity wires should be covered by thick plastic/electricity resistant covers.
- Appropriate waste water treatment system design should be ensured at the project site.
- Safety alarm and signaling system should be installed.
- Emergency exit plan should be formulated and communicated to each staff

member.

## **Environmental Impacts During the Installation Phase:**

### **Air Quality:**

Nil.

### **Noise:**

Noise is a by-product of human activity, and area of exposure increases as function of mobility and installation activities. Sources of noise during installation phase are movement of machinery,

cutting/ welding and other associated activities for installation. Noise generated by installation machinery is likely to affect sensitive receptors located within covered area.

**Impact:**

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

**Mitigation**

- Selection of up-to-date and well-maintained equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices
- Confining excessively noisy work to normal working hours in the day, as far as possible
- Providing the workers with suitable hearing protection like ear cap, or earmuffs and training them in their use
- Vehicles and equipment used should be fit, as applicable, with silencers and properly maintained
- Use of low noise machinery, or machinery with noise shielding and absorption
- Contractors should comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures

**SOIL:**

- Improper disposal of wastewater & solid waste
- Accidental spills

**Impact:**

- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipment and vehicles can spoil the

receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants as proposed site is already having scarce vegetation

- Non-provision of wastewater treatment facility can contaminate the effluent receiving soils because of raw nature of the effluents

**Mitigation:**

- As applicable and needed, plantation of grasses and shrubs will be done at appropriate place where required
- Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire.
- WWTP of adequate capacity is already constructed for receiving and treating wastewater from all sources i.e., worksite toilets, kitchen etc. The domestic wastewater should not be discharged untreated onto the adjacent lands
- All machineries and materials should be stored at the designated areas and compounds
- All the unspent and left over materials should be completely removed offsite upon completion of installation.

**WASTEWATER:**

**Impact:**

- Nil

**SOLID WASTE:**

Due to installation activities waste will be generated at site. The installation waste will include domestic waste, reusable/ recyclable waste and packaging solid waste etc. This will result in unhygienic conditions, health risk to work force and public at the camp site.

**Impact:**

- Insecure and unhygienic disposal of the solid wastes generated at the worksite, particularly garbage and trash may cause degradation of soil and land.

- Insecurely disposed off heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents

**Mitigation:**

- An efficient and responsive solid waste management system should be devised for the entire duration of the installation phase. Such a system should provide for separate collection of different categories of wastes.
- The wastes which will be reusable/recyclable (iron bars, aluminum) should be sold to waste vendors or utilize with in site.
- Training of working force in the storage and handling of materials.
- Solid waste generated during installation phase will be handed over to the
- certified contractor.

**Health And Safety:**

Health risks and work safety problems may result at the workplace if the working conditions provide unsafe and/or unfavorable working environment and due to storage, handling and transport of hazardous material. Workers should be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in project area. Mitigation measures will include:

**Mitigation:**

- Providing basic medical training to specified work staff and basic medical service and supplies to workers
- Firefighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents
- Good workmanship practices are to be followed by the contractor to ensure no health risks for laborers
- Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines
- Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction

- Provision of protective clothing for laborers handling hazardous materials, e.g. Helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc.
- Ensure strict use of wearing protective clothing during work activities
- Instruct foremen to strictly enforce the keeping out of non-working persons off work sites
- Adequate signage, lightning devices, barriers, yellow tape and persons with flags.

### **Impact on Biological Environment:**

Proposed project site is with established operational plant area and no construction activity involved in the process. Plantation of native species is recommended as rehabilitation step.

### **Impact On Socio-Economic Environment:**

#### **Economic activity:**

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

#### **Lifestyle and culture:**

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

### **POTENTIAL IMPACTS DURING OPERATIONAL PHASE:**

#### **METHODOLOGY FOR IMPACT EVALUATION:**

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

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

- On the horizontal axis, the actions which cause environmental impact, and
- On the vertical axis, the existing environmental conditions which may be affected by those actions.

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

The most important blocks marked are evaluated individually, and a number between 0 and 10 is placed in the upper left-hand corner to indicate the relative magnitude of the impact (0 represents the least magnitude, and 10 the greatest). Likewise, a number between 0 and 10 is placed in the lower right-hand corner to indicate the relative importance of the impact (again, 0 represents the least magnitude and 10 the greatest).

**Table: Scale for impact assessment (Significance & Magnitude)**

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

Over all the impact of project is positive in term of employment and infrastructure improvement. Mostly the average values are falling in 1.5 – 3 range which means the overall impact is low e.g., biodiversity, occupational hazards, solid waste and air emissions impact but for wastewater and water consumption score is high if mitigation measures will not adopt. To counter with the negative impacts Environmental Management Plan is formulated which will be ensured by the project proponent. Beside this environmental monitoring plan is also formulated for environmental monitoring of various parameters which will be also implemented by the proponent.

### **Impact analysis and prediction:**

In order to evaluate the socioeconomic and environmental impacts, filed surveys are extremely essential. In addition to the surveys, consultation with the community and their active participation plays a vital role in successful implementation of the project. For the impact analysis and predictions following methods were adopted:

### **Consultations/ case studies:**

To study the impacts of the project on physical and biological environment, site visits were conducted by the environmental practitioners and experts and possible physical and biological

impacts which may arise due to the subject project were identified through consultations and case studies and their mitigation measures were suggested accordingly.

### **Meetings:**

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

### **Impacts during Operation Stage**

Main environmental issues associated with Project operation are as follow.

- Gaseous emission from the said project will be nil.
- Noise may exceed the permissible limit if the mitigations are not placed.
- Waste water will be generated from domestic sources only.
- Occupational health and safety issues may arise if proper training of the staff will not be conducted.

### **Mitigation Measures during Operation Stage**

Following points must be implemented during the operation stage.

- Environmentally Friendly fuel is already in use within the facility to maintain the Environmental Quality Standards. Same will be followed during all the project activities where necessary.
- Ear plugs/muffs should be provided to workers in case of high noise during working hours.
- Monitoring should be conducted on regular basis as per EPA PEQS and record should be maintained.
- Wastewater treatment plant exist at the unit for the treatment of wastewater.
- Compliance of PEQS for Municipal and Liquid Industrial Effluents will be ensured.

- Training of workers should be conducted regarding Health Safety & Environment.
- Use of PPEs should be implemented at workplace.
- Controlled access to the area, only with work permit access should be allowed.
- Adequate firefighting/ emergency response measures should be available at site.
- First aid measures/ medical facility already available at site in case of injury.
- Safety signs should be placed inside the premises and at all sensitive areas etc.
- Machinery/ safety equipment should be marked and tagged properly and should be regularly inspected.
- Inspection of the machinery on a regular basis will be ensure to avoid any safety hazards.
- Due to Plantation within the premises will enhance the flora and fauna.
- Community wellbeing should be considered and anticipated measures are recommended to preserve the local culture and ecosystem.
- Local people should be preferred for the employment if they meet qualification criteria as per company policy.

## **Impacts on Physical Environments**

### **Groundwater Quality and Level**

The proposed project would not affect the quality and level of groundwater directly, only 50 gallons water will be required for domestic use at the project site and the management is involved in recycling of water at the existing Sheikhpura factory.

### **Wastewater Generation**

Wastewater generation is very low because in installation phase up to 20-25 people will work. For the treatment of wastewater Nestlé Pakistan Limited has already installed wastewater treatment plant in existing factory for the treatment of processed wastewater. In the said project operation phase, water used in only domestic wastewater will be treated in the existing SBR.

### **Solid waste Generation**

During operation of the Proposed Upgradation in Utilities solid waste will be generated which will be domestic which will be handed over to the certified contractors.

### **Impacts on Biological Environments**

#### **Flora**

The project site is devoid of any significant vegetative cover will be planted within the premises and surrounding as environmental enhancement measures. Overall, there will be positive impact in respect to the flora of the area.

#### **Fauna**

The fauna including wildlife species do not exist at the project site. However, after the plantation and habitat restoration fauna may be enhanced in the area hence it will be the positive impact on the environment.

### **Impacts on Socio-economic Environments**

#### **Land Value**

Land value in the surrounding area will increase due to completion of the present project. Impact will be moderate positive.

#### **Resettlement Issues**

##### ***Dislocation of Population***

The project does not involve dislocation of the people. There is no requirement of resettling a single person. Impact is nil.

##### ***Loss of Property/ Infrastructure***

No movable or immovable property and infrastructure of public and private sectors will be lost or damaged during construction and operation stages because the proposed site exist within the premises of the existing factory. Impact will be nil.

##### ***Employment:***

Positive impact.

### **Environmental Enhancement Measures:**

- Sprinkling of water will be done on dusty road and tracks during construction.
- PPEs will be provided during construction activity.
- Constructional waste and domestic solid waste will be disposed-off or utilized properly.
- Machinery will never be left unattended
- Efforts should also be made to discuss traffic conditions so that regular traffic is not disturbed. Transporters engaged for the project would be forced to adhere to the load specifications of the access road. No overloading would be allowed in any case.
- Safety signs and boards will be placed during installation
- Machinery will be kept maintained/ serviced.
- Proper SOPs will be followed with proper schedule along with the S&E conditions
- Area will be restored with native plants. A proper tree plantation plan is being already implemented
- Noise will be controlled by adopting proper measures
- PPEs will be provided to workers during working
- Firefighting equipment's and system will be installed
- Safety signs will be placed at all locations where required
- Hygienic conditions will be ensured and proper quality will be maintained by quality control testing.

## CHAPTER # 6

### ENVIRONMENTAL MANAGEMENT & MONITORING PROGRAM

#### Purpose and Objectives of the EMP:

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified in the EIA
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters.
- Ensure the complete implementation of all mitigation measures
- Ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations
- Identify training requirements at various levels.

#### Management approach:

The overall responsibility for compliance with the environmental management plan rests with the S&E department.

#### Institutional Responsibilities

Following functionaries will be involved in the implementation of EMP:

- Factory Manager
- S&E Manager
- Project Manager

#### Training of building contractor

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

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

1. Handling of Machineries in a safe way
2. Use of PPEs
3. Maintenance of vehicles and submission of Environmental Monitoring Reports
4. Placement of safety signs/ boards during construction
5. Monitoring of generator emissions (if any)

Training regarding all other aspects of S&E will be ensured by the contractor during the installation phase by S&E.

### **Responsibility of EMP**

Overall responsibility for implementation of EMP will be that of project proponent/ S&E department.

### **Environmental Technical Assistance and Training Plan**

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

### **Proposed Environmental Monitoring Plan:**

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

#### **Gaseous Emission and Particulate Matter/ Dust**

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

#### **Noise**

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

### **Ambient Air Quality**

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

### **Water**

Quarterly monitoring of PEQs in this regard will be performed by EPA certified laboratories and reporting will be submitted to the EPA, as collectively of the Sheikhupura factory, on quarterly basis.

## ENVIRONMENTAL MANAGEMENT PLAN FOR PROPOSED EXTENSION PROJECT OF M/S NESTLÉ PAKISTAN LIMITED

| Sr. No.             | Aspects          | Impact & mitigations to be taken                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                                    |
|---------------------|------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|
|                     |                  | Impacts                                                                                   | Mitigation measures<br>Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Responsibility | Monitoring                                         |
| AMBIENT AIR QUALITY |                  |                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                                    |
| 1                   | Gaseous Emission | Air pollution due to site machinery i.e., Boiler, standby generator and project vehicles. | <ul style="list-style-type: none"><li>• Industry should ensure the PEQS compliance and should not be allowed to emit hazardous pollutants.</li><li>• Air Emission Control Measures are recommended to control the air emissions.</li><li>• Maximum possible plantation is recommended as it absorbs gaseous emissions as well as prevent lower atmospheric dust to move along with the air action.</li><li>• All project related machinery, standby generators, vehicles will be checked regularly to ensure that are in sound working condition and</li></ul> | S&E Department | Environmental Consultant/ S&E Dept./ Project Dept. |

|                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |                                                    |
|--------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------------------|
|                    |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>are not emitting smoke.</p> <ul style="list-style-type: none"> <li>• Regular monitoring as per PEQS is recommended for ambient air and stack emissions.</li> <li>• Proponent should keep the records of monitoring and equipment maintenance.</li> </ul>                                                                                                                                                                                                                                                                                                                                            |                |                                                    |
| <b>NOISE LEVEL</b> |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |                                                    |
| 2                  | Noise & Vibration | <p>The major sources of the noise at proposed site is due to industrial activity, vehicles, machinery and generators, which can be a nuisance for the workers in the working area.</p> <ul style="list-style-type: none"> <li>• Heavy machinery operation and generators at the site is the main source of noise &amp; vibrations.</li> <li>• High noise level may cause hearing loss, deafness, high blood pressure, headache, depression and mentally disturbance.</li> <li>• Noise level will not exceed 75 dB(A) at the boundary walls of</li> </ul> | <ul style="list-style-type: none"> <li>• PPEs as Ear plugs/muffs should be provided to workers in case of high noise during working hours</li> <li>• Proper maintenance and tuning of the vehicles should be done.</li> <li>• Sound proof room/ covering should be built for generator to control the noise</li> <li>• Rubber wounds should be placed underneath the generator to avoid the vibration.</li> <li>• Speed/ horn restriction should be imposed on all vehicles.</li> <li>• Maximum plantation is recommended within site area as it absorbs the noise waves and act as barrier</li> </ul> | S&E Department | Environmental Consultant/ S&E Dept./ Project Dept. |

|                           |                    |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                     |
|---------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|
|                           |                    | <p>industrial activity site and is located at a safe distance from the nearest human settlement.</p> <p>The maximum threshold level for the vibration is between 50 and 100 mm/S pp have been suggested by Grimshaw (1971) as critical threshold level.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                     |
| <b>SOIL CONTAMINATION</b> |                    |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                     |
| 3                         | Soil contamination | <ul style="list-style-type: none"> <li>• Soil may be contaminated due to raw material storage on un suitable area, oil and other chemicals storage, transportation</li> <li>• Soil contamination due to untreated wastewater disposal</li> </ul>            | <ul style="list-style-type: none"> <li>• SOPs should be developed for the transportation, storage of raw material, oil and other hazardous substance handling and transportation</li> <li>• Soil contamination should be controlled by adopting mitigation measures such as storage of raw material, oil, fuels etc. on paved/ covered area, by maintaining leakage record and by regular inspection.</li> <li>• Treated wastewater should be disposed off in drain.</li> </ul> | S&E Department | S&E Dept./ Area manager/ Supervisor |

| HEALTH AND SAFETY |                   |                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |                                                               |
|-------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------|
| 3                 | Health and safety | <ul style="list-style-type: none"> <li>• Health &amp; safety issues of workers and nearby community</li> <li>• Health and safety issues will be arose during transportation, handling, loading and unloading, other industrial activities, by release of flue gases, operation of machinery, improper practices of work etc.</li> </ul> | <ul style="list-style-type: none"> <li>• Training of workers should be conducted regarding health safety &amp; environment.</li> <li>• Use of PPEs should be implemented at workplace.</li> <li>• First aid measures/medical facility should be provided to project related employees.</li> <li>• Safe drinking water will be provided to workers, staff &amp; poor people of the area.</li> <li>• Water consumption records should be maintained</li> <li>• Safety signs &amp; boards should be placed at during operation activity.</li> <li>• smoking or any drugs should be prohibited during working hours or performing work</li> </ul> | S&E Department | Environmental Consultant/ S&E Dept./ Area Manager/ Supervisor |

|                               |                        |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                       |
|-------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------|
|                               |                        |                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Do not place any flammable or hazardous substance near the explosive material</li> </ul>                                                                                                                                                                                                                                                                                                              |                |                                       |
| <b>WASTEWATER</b>             |                        |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                       |
| 4                             | Waste water            | <ul style="list-style-type: none"> <li>Wastewater generation from domestic &amp; process activities in operation. Waste water may cause Spread of diseases, underground and surface water contamination</li> </ul>                                              | <ul style="list-style-type: none"> <li>Waste water generated from the site should be treated in WWTP before disposal</li> <li>Monitoring should be conducted as per EPA PEQS</li> </ul>                                                                                                                                                                                                                                                      | ETP Manager    | Environmental Consultant/ ETP Manager |
| <b>SOLID WASTE GENERATION</b> |                        |                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                       |
| 5                             | Solid Waste Generation | <ul style="list-style-type: none"> <li>Solid waste generation may cause land &amp; soil contamination, aesthetic degradation, foul smell etc. Solid waste may generate from the operational raw material &amp; packaging material, domestic sources.</li> </ul> | <p>A solid waste management team should be formulated.</p> <p>Solid waste generated from the various activities should be utilized by recycling and reuse to the possible extent</p> <p>Solid waste from the domestic sources should be disposed off properly by placing separate waste bins for reusable/ recyclable and other waste sources.</p> <p>Hazardous waste should be handed over to certified contractor for proper disposal.</p> | S&E Department | S&E Dept./ Area Manager/ Supervisor   |

| SOCIO ECONOMIC IMPACTS |                               |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |
|------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 8                      | Culture and norms of the area | <p>Socioeconomic impacts may arise due to:</p> <ul style="list-style-type: none"> <li>• Change in cultural language</li> <li>• Change in social behavior and economic gains</li> <li>• Social performance of the individuals in the area</li> <li>• Change in culture by the influx of nomadic people</li> <li>Gender inequality</li> </ul> | <ul style="list-style-type: none"> <li>• Community wellbeing should be considered and anticipated measures are recommended to preserve the local culture and ecosystem</li> <li>• Local people should be preferred for the employment</li> <li>• The project proponent will initiate educational awareness program with the coordinator of local people.</li> <li>• The project proponent will assist the local impacted community for the improvement of local community.</li> <li>• Subject project will uplift the economic status of the nearest human settlements.</li> </ul> | Admin/ HR Manager |
|                        |                               |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ---               |



## **Equipment Maintenance Detail**

The subject project is the Proposed Upgradation in Utilities by installing the new technologies, modification in the existing infrastructure to save the energy. The authorized person will maintain the records for Health Safety & Environment and that person is responsible to check and deal with the S&E issues.

## **Environmental Budget**

The cost required to effectively implement the mitigation measures is important for the sustainability of the Project both in the construction and operation stages of the Project.

Company allocated the Environmental Budget for the Training, maintenance and management of Environment is specific amount of total cost annually that will include maintenance of equipment, restoration, plantation, and availability of PPEs, strategic planning to cope with any emergency situation and formulate the disaster management plan to cope with natural disaster. Any equipment or devices failure or replacement will not be included in this budget.

## CHAPTER # 7

### STAKEHOLDERS PARTICIPATION

Public discussions were held with the inhabitant of the surrounding area. They are quite positive to the project and see the project as growing business. The people observe strong positive impacts regarding employment, business and structural development due to this project. EIA findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility but they were also concerned with scenic beauty of the area and employment which the proponent has ensured to maintain the aesthetics of the area, reclaim the land and also to provide jobs/employment during installation and at the time of functioning of the project. Moreover, project proponent admitted to adopt all the mitigation measures to control any impacts resulting from the subject project.

#### **Methodology of consultation:**

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

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the locals and feedback in the form of checklist is attached with the report as **Annexure-E**.
- Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

#### **Stakeholder identification:**

Stakeholders must be considered at all levels according to the importance of the project. They may be at provincial, district and village level. The process of consultation is an ongoing process which

continues during the project life cycle and even after the submission of this environmental assessment report and so on. Therefore, three-tier approach was adopted. Stakeholders were identified, categorized and work consulted

### **Proponent's Environmental Management Team**

Possible impacts and mitigation measures related to the project were discussed with the S&E department. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environmentally friendly.

### **Responsible Authority**

S&E department of M/s Nestlé Pakistan Limited is the responsible authority to take all measures prior to the process activity.

### **Other departments and agencies**

Environment protection department and food authority are the main relevant agencies for the said project and engineers will inspect the machinery periodically. EPA Punjab and food authority has already granted the approval for existing Nestlé Sheikhpura factory.

### **Environmental Practitioners and Experts**

Feedback from the environmental practitioners has been incorporated in the report.

### **Affected & Wider Community**

There is no affected community present in the radius of our study area. PGEE team has consulted with the inhabitants of the different area. They provided remarks regarding the project which has been incorporated in the report as the mitigation measures. Stakeholders' participation Performa & socioeconomic questionnaire annexed in **Annexure-E**.

Pictorial evidence of consultation is attached.

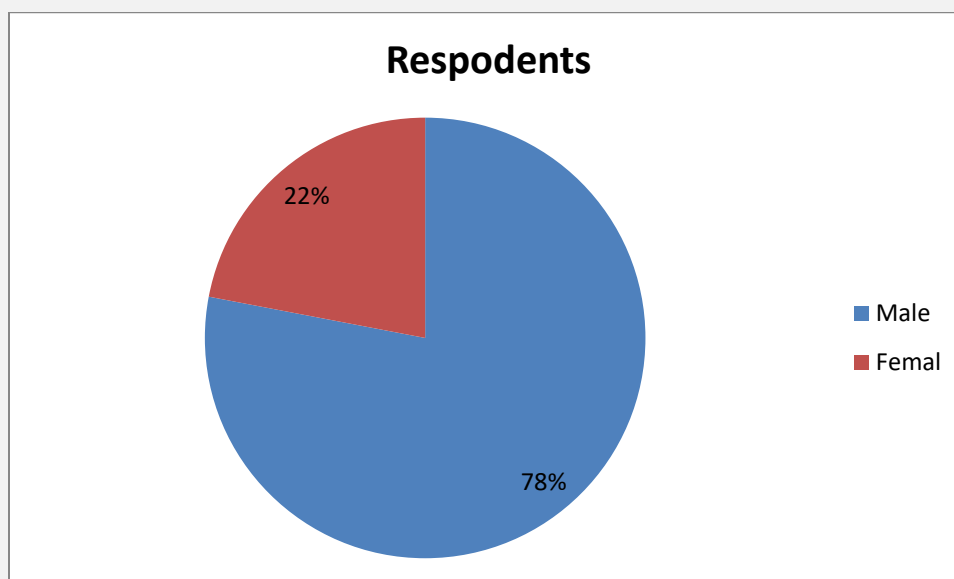
### **Sample size**

15-20 sample sizes were selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information.

## Statistical Analysis

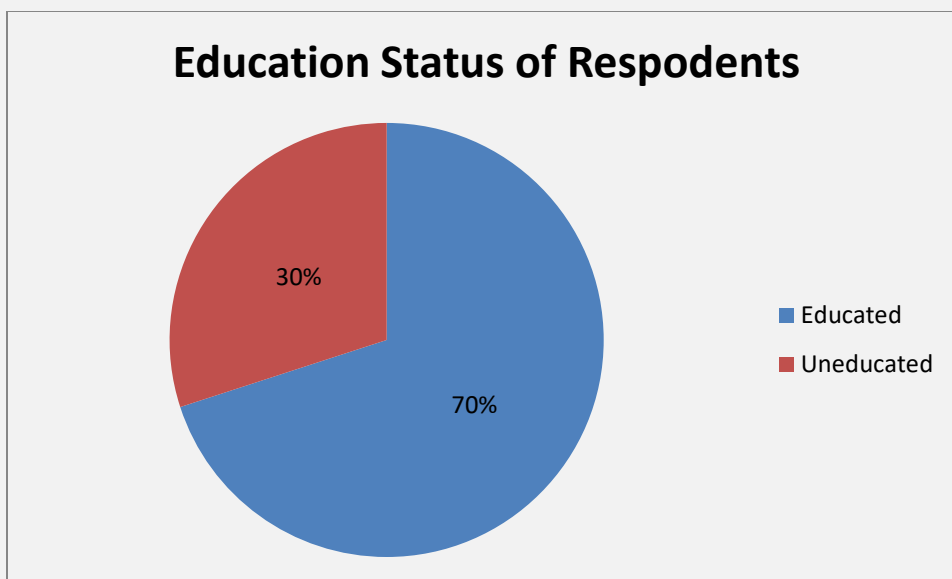
SPSS 19.0 has been used for the statistical analysis of the data collected during the visit of study site villages through questionnaires.

## Results & Discussion



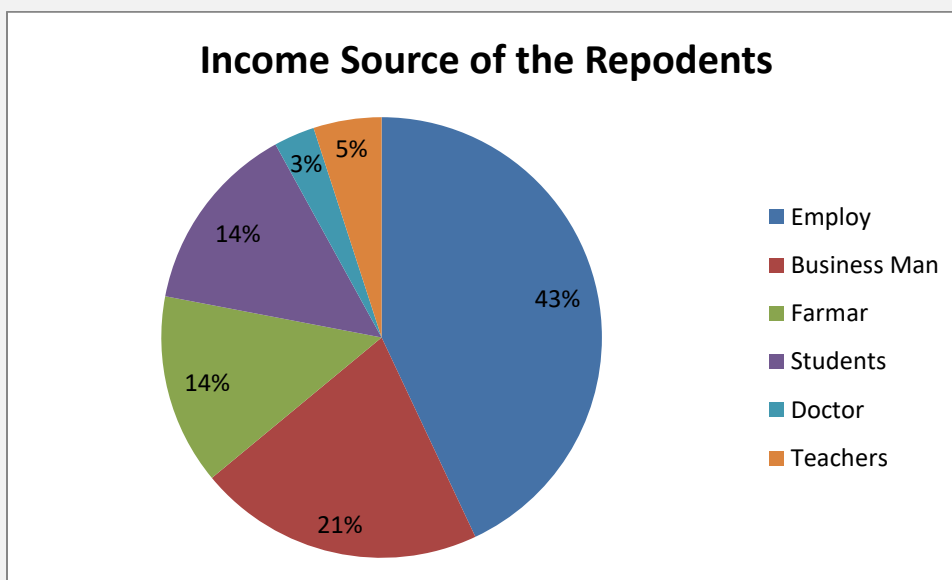
### **Discussion:**

According to graphical representation, 78% respondents were male while 22 % respondents were female. The number of female respondents is less as compared to male respondents because according to the social binding female hesitates to respond or communicate comfortably.



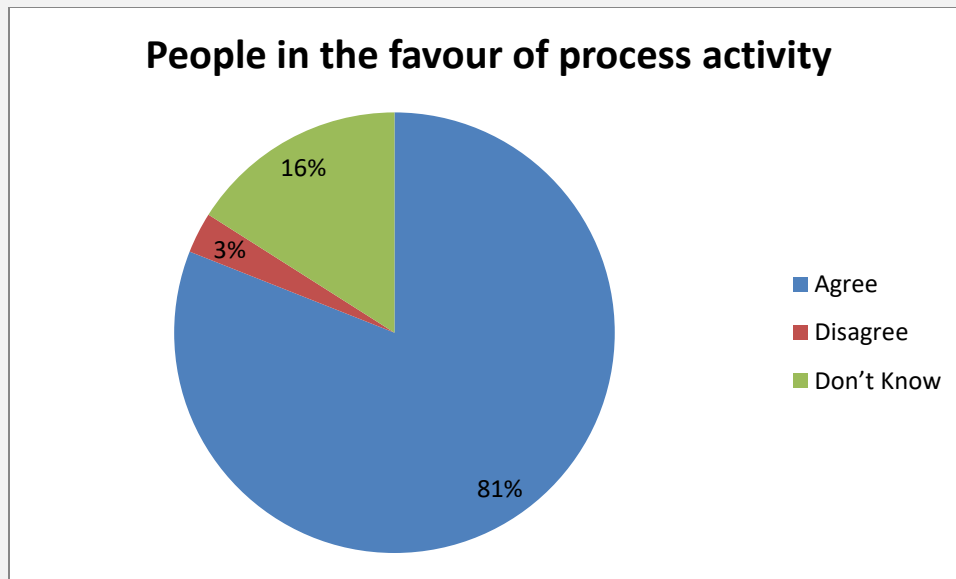
**Discussion:**

According to above graphical representation, 70 % respondents were educated while 30 % were uneducated. So, according to the survey overall education status of the area is good.



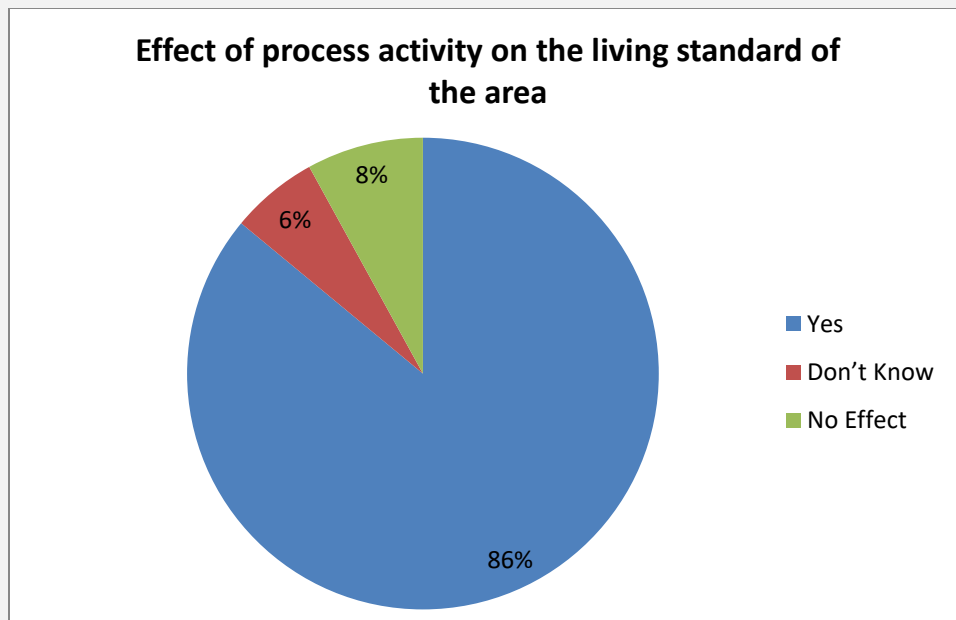
**Discussion:**

According to above graphical representation, source of income of majority of the respondents in the area was mainly employee in the private and government sectors while all other respondents' source of income was business man, farmers, students, doctors and teachers.



**Discussion:**

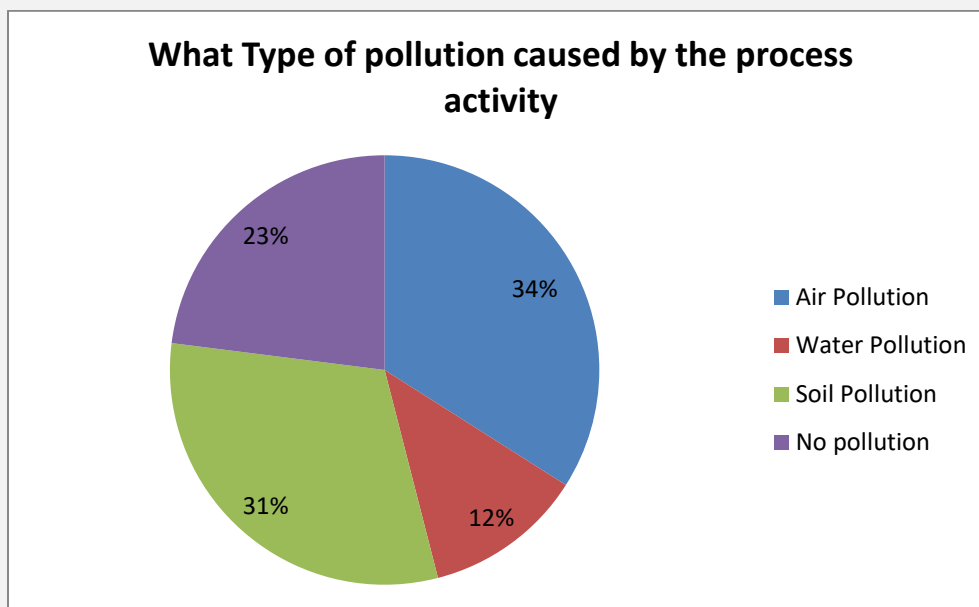
As per survey, 81% people were in the favor of the said project activity and they gave positive remarks regarding the subject project while 16% respondents were having no opinion regarding the project and only 3% respondents were not in the favor of the subject project due to their concern regarding the aesthetic degradation of the and no preference to local people for jobs.



**Discussion:**

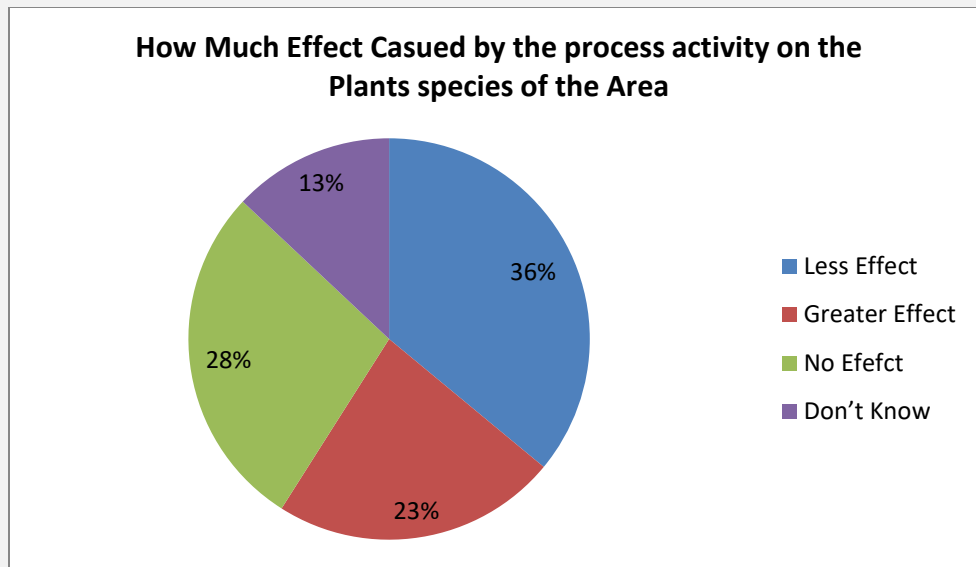
As per survey, 64 % respondents remarked that there will be less effect caused by the project process activity on the area environment while 14% respondents had no point of view regarding

the project process activity, 13% respondents remarked that subject activity will cause greater effect on the environment of area and only 9% remarked that project process activity will have no effect on the environment of the area.



#### Discussion:

As per survey of the area and graph indicates, some people gave remarks that there will be higher air pollution (i.e. 34%) by the subject process activity, some people said that there will be soil pollution (i.e. 31%) by the subject activity, some people said that there will be no pollution caused by the subject project while some people said that there will be water pollution (i.e. 23%) caused by the subject activity.



**Discussion:**

As above graph indicates, 36% of the respondents remarked that there will be less effect caused on the plant's species by the project process activity, 28% said that there will be no effect caused on the plant's species by the subject activity and 23% said that greater impact will be caused by the subject project on the plants species while 13% respondents had no remarks regarding the subject project effect on the plant's species.

## CHAPTER # 8

### CONCLUSION AND RECOMMENDATIONS

#### Conclusions

- The EIA study reveals that the project is economically viable, socially acceptable and environment friendly.
- On completion of the project, the GHG emissions will be reduced for the existing Nestlé Sheikhpura factory and there will be significant reduction of GHG's emissions.
- The project will provide process safety, operational continuity and sustainability.
- It will generate additional jobs during construction and operation phases.
- The proponent has committed to implement the project in the environment friendly manner.
- M/s Nestlé Pakistan Limited has already S&E department for the implementation of mitigation measures and EMP.
- The S&E department has already SOPs for emergency and firefighting etc.

#### Recommendations

- In view of the comprehensive screening process and findings of the present study there is no need of conducting further investigations.
- Tree plantation is recommended.
- The monitoring should be conducting on regular basis.
- The untreated wastewater will not be reused for irrigating the vegetation and lawns or drained out into drain without treatment.
- High standards of biosecurity and safety will be enforced during operation stage. Safety of the workers will be top priority for the management.

- The HR department will continue to assist the local communities as a corporate/social responsibility.
- Water treatment system is already installed in the Sheikhupura factory and has the enough capacity to treat the additional wastewater generated by the proposed facility.
- Use of narcotics and smoking will be prohibited during working.
- For proper solid waste management, the company has already signed agreement with certified firm.
- MSDS should be followed
- Safety signs, safety boards, exit arrows etc. will be placed on site.
- Machinery will never be left in running condition.
- First Aid measures, health & safety Equipment (PPEs) will be provided to workers.
- An Assembly point will be kept within the unit to gather in case of emergency situation such as fire hazards.

The present EIA report is enough to meet the administrative and legal framework. Therefore, the environmental approval may be accorded for the present project.