LIST OF ABBREVIATIONS

CO_2	**Carbon dioxide**
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environmental Protection Department
EPO	Environmental Protection Ordinance
IEE	Initial Environmental Examination
Ltd.	Limited
LTI	Loss Time Injury
LWI	Loss Work Injury
m^3	Cubic meter
m^3/h	Cubic meter per hour
MW	Megawatt
M/S	Messrs
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
PEPC	Pakistan Environmental Protection Council
PEPA, 1997	Pakistan Environmental Protection Act, 1997

PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipment
Pvt.	Private
SMART	Self-Monitoring and Reporting
SOPs	Standard Operating Procedures
SO_x	Oxides of Sulfur
WAPDA	Water and Power Development Authority

EXECUTIVE SUMMARY

INTRODUCTION

The executive summary presents an overview of the main findings of Environmental Impact Assessment (EIA) report for the **Establishment of Asphalt Manufacturing Plant By M/S Nazim & Qasim (Pvt.) Limited** located at Chak No. 47/S.B, Tehsil & District Sargodha. The main objective of this project is to fulfill the asphalt market demand for the constructing and maintaining roads, parking areas, railway tracks, airport runways and sidewalks. For this instance, Environmental Impact Assessment (EIA) of the Project has been conducted in accordance with the Punjab Environmental Protection Act 1997 (Amended) 2012 and IEE/EIA Regulations 2022. The process for conducting environmental assessment and the results of EIA are described in this document

M/S **EHS Services** (Pvt.) Ltd. has been engaged for conducting Environmental Impact Assessment (EIA) for the Establishment of Asphalt Manufacturing Plant of M/S Nazim & Qasim (Pvt.) Limited.

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

This executive summary presents an overview of the main findings of the EIA Report for the aforesaid project i-e Asphalt Manufacturing Plant of M/S Nazim & Qasim (Pvt.) Limited.

PROJECT OUTLINE (Details are given in Chapter 2)

This report is related to the Establishment of Asphalt Manufacturing Plant having total area of 32.00 Kanals. The main objective of this project is to fulfill the asphalt market demand for the constructing and maintaining roads, parking areas, railway tracks, airport runways and sidewalks. Total cost of

project is approximately PKR 150 million. The said site lies at Latitude 30.365972, and Longitude 72.762194. **Asphalt manufacturing** begins with the **selection of aggregates** such as crushed stone, sand, and gravel, along with bitumen as the binding material. The **aggregates are stored** in separate bins, **dried and heated** in a rotating drum to remove moisture before being **screened and sorted** by size. These **hot aggregates are proportioned** according to the required mix design, while **bitumen is stored** in heated tanks to maintain fluidity. Both materials are then **mixed** in either a batch or drum mixer, ensuring proper coating and uniformity. The finished hot mix asphalt is **stored in silos** before being **transported** in trucks to construction sites.

Salient features of project:

Proponent Name:	Muhammad Qasim S/o Sher Muhammad
Project Title:	Establishment of Asphalt Manufacturing Plant By M/S Nazim & Qasim (Pvt.) Limited
Project Location:	Chak No. 47/S.B, Tehsil & District Sargodha .
Name of organization preparing report	EHS Services Pvt. Ltd.
Total Land Area	32.00 Kanals
Cost	150 million
Capacity	200 Ton/hr
Products	Asphalt.
Source of Water	Groundwater
Nearest Industry	Stone Crusher Unit (2.90km)
Source of Power:	WAPDA Supply generators
Wastewater:	Wastewater is mainly generated from equipment washing, aggregate dust suppression and cooling processes. It will be disposed off after Treatment effluent treatment plant. Municipal sewerage is

	disposed off as per area practices.
Solid Waste Management:	Solid waste is mainly generated from aggregate dust, rejected or leftover asphalt mix, and packaging materials such as bitumen drums or bags. Most of this waste is recyclable—dust and fines are often reintroduced into the mix, Damaged or excess asphalt is commonly reused in new asphalt production. Domestic waste will be handed as per area practices.

MAJOR IMPACTS AND RECOMMENDED MITIGATION MEASURES:

Beneficial/Positive Impacts:

- The establishment of the said project will contribute to enhancing Pakistan's domestic productivity, and help diversify Pakistan's economy
- Provision of employment and stimulation of local economy.
- Provision of local high quality asphalt
- Potential of improvement for social and cultural values of local people's exchange of values and standards through positive social interactions. Positive changes in lifestyles will occur due to availability of income when the natives take up Company jobs.

Negative Impacts:

Impacts	Mitigation measures
Construction/Extension phase	
Dust emissions	Most of the dust generating activities during construction lasts for a brief period. Thereafter, vehicular movement generates most of the dusts. Dusts will be suppressed using water bowser to spray exposed land surfaces and particularly areas likely to be disturbed by trucks and other vehicles during the

	construction of the factory premises. Vehicular speed limits of 20 km/h will be ensured in order to minimize dust generation. Further mitigation measures will be: • Covering haulage vehicles transporting aggregate, soil and cement • Covering onsite stockpiles of aggregate, cement, soil, etc. • Providing workers with the necessary Personal Protective Equipment (PPE) e.g. dust masks and ensure that they are worn • Operating well maintained vehicles and equipment
Wastewater	• Portable toilets with the septic tank were provided to workers during construction phase
Impacts of accidental spillages	• The integrity of storage facilities will be ensured • Drip pans will be made available where necessary
Safety	• Safety signage will be put in relevant places within the construction site • Reckless driving by construction workers will be prohibited and monitored. • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, safety goggles, safety jackets, harnesses etc. and its use will be strictly enforced • Workers will be trained on regular basis regarding personal safety • Incidents will be reported directly to the concerned authority
Solid waste management	• Recycling or reuse of waste wherever possible. • Application of a good strategy to

	collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed as per practices of area • All the idle machinery and equipment will be immediately removed from the site • Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material
Operation Phase	
Particulate emissions and generator stack emissions	• No air emission is likely to be released during operation of the project; except the dust or PM to be produced during floor cleaning and other such operations, which also will not be posing any environmental threat (will not breach the safe standards). Wet suppression is done to control dust emissions. Generator emissions will be controlled by providing proper enclosure, tuning and maintenance.
Degradation of surface waters quality due to process water and sewage direct disposal	• Wastewater is mainly generated from equipment washing, aggregate dust suppression and cooling processes. • It will be disposed off after Treatment effluent treatment plant. Municipal sewerage is disposed off as per area practices.
To minimize loss work injury/hazards/incidents/accidents	• Training regarding EHS should be given on the regular basis • Workers will be given PPEs such as;

	helmets, mask, ear-plugs/muffs, safety boots, etc. • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority
To minimize disturbance of communities due to noise	• All the machinery will be installed and operated in a closed hall and from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will take the precautionary measures to avoid the noise emissions. There is no possibility of Noise pollution • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • Introduction of control and monitoring rooms having good sound insulation properties. • All the workers will be provided with ear plugs. • All the transporters will be advised to carry out regular maintenance of their vehicles.
Solid waste management	• Solid waste is mainly generated from aggregate dust, rejected or leftover asphalt mix, and packaging materials such as bitumen drums or bags. Most of this waste is recyclable—dust and fines are often reintroduced into the mix, Damaged or excess asphalt is commonly reused in new asphalt production • Domestic waste will be handed as per area practices

PURPOSED ENVIRONMENTAL MANAGEMENT & MONITORING PLANS:

During construction, ambient air quality for dust level in particular noise level (tests), solid waste management and soil contamination, and community and workers' safety (visual) need to be monitored. During operation, stack emissions, noise level, air quality, wastewater quality and workers' safety need to be monitored. Plan has been included in **Chapter-6** of this EIA Report.

LIST OF ANNEXURE

Following Documents are attached as annexure.

ANNEXURE I:	PROPERTY DOCUMENTS
ANNEXURE II:	PROPONENT CNIC
ANNEXURE III:	LAYOUT MAP
ANNEXURE IV:	GLOSSARY
ANNEXURE V:	ENVIRONMENTAL MONITORING REPORTS
ANNEXURE VI: TEAM MEMBERS	LIST OF NAMES AND QUALIFICATION OF EXPERT
ANNEXURE VII:	LIST OF INDIVIDUALS AND ORGANIZATIONS CONSULTED
ANNEXURE VIII:	REFERENCES

TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

1 *CHAPTER 1:* INTRODUCTION

As per PEPA 2012 and the IEE/EIA Regulations, 2022 it is mandatory for the proponent of any development project to obtain Environmental Approval from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This Report presents the Environmental Impact Assessment (EIA) for aforesaid Asphalt Manufacturing Plant.

For this purpose, the proponent has engaged environmental consultants, **M/s EHS Services** The purpose of this study is to identify the environmental baseline i.e. physical, biological and socio-economic/cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management Plan (EMP) for implementation of the project in environment-friendly manner.

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

1.1 THE PROPONENT

Name	Muhammad Qasim S/o Sher Muhammad
Address	Al-Fareed Garden, House No. 93 Block-E, Pakpattan

1.2 THE PROJECT

1.2.1 Nature of Project

The Said Project is the Establishment of Asphalt Manufacturing Plant of M/S Nazim & Qasim (Pvt.) Limited. Its salient features have been described later in this Chapter, Chapter 2 and briefly in Executive Summary of this EIA Report.

1.2.2 Location of Project

Said project will be located at Chak No. 47/S.B, Tehsil & District Sargodha .

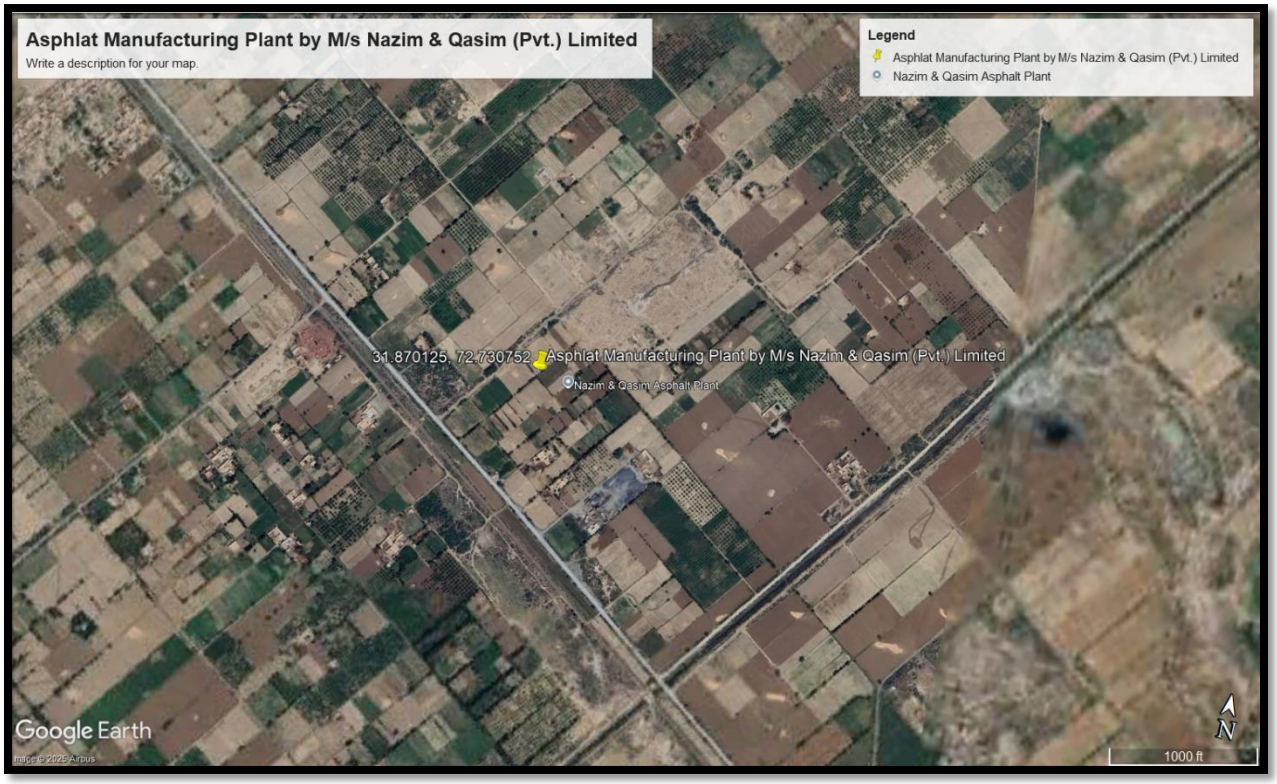


Figure 1-3: Location Site

1.2.3 Total area

Total area of land is approx. 32.00 Kanals.

1.3 DETAILS OF CONSULTANTS

For the preparation of the EIA Report of the said project, the proponent has hired the services of the environmental consultants; **M/S EHS Services.** Team comprising of environmental engineers, chemical engineers, environmental

experts and environmentalists has worked on this report. EHS Services is one of the pioneers Environmental Consultancy Companies in Pakistan with an unrivalled reputation for providing expert, tailored services and solutions. EHS Services provides the environmental services, litigation and consultancy to clients both industry and government.

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

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

Contact Details:

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

Study team:

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

Table 1-1: List of Experts

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

1.4 PURPOSE OF REPORT

The development of any Project leads to positive and adverse changes in environmental and change in social settings of the Project Area. The intensity and level of change, however, depends upon the nature of the Project and the baseline environmental conditions of the area. The development and commencement of said project will cause minor to moderate adverse environmental and social impacts on the surrounding area. Thus, an environmental and social study is mandatory to establish the baseline conditions, evaluate the possible adverse impacts if any, and devise the mitigation measures.

Section 12 of Pakistan Environmental Protection Act, 1997 (PEPA, 1997) states “No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an Initial Environmental Examination (IEE) and, where the project is likely to cause an adverse environmental effect, an Environmental Impact Assessment (EIA), and has obtained approval from the Provincial Agency in respect thereof.” Later on,

Punjab Environmental Protection Agency (Review of IEE and EIA) Regulations, 2022 provided the guidelines for categorizing the Projects. The main objectives of this EIA study were:

- To determine and document the state of the environment of the project area to establish a baseline in order to assess the suitability of the Said Project in that area.
- To identify pre-construction, construction and operation activities and to assess their impacts on environment.
- Provide assistance to the proponent for planning, designing and implementing the project in a way that would strengthen environment, improve ecological resilience, eliminate or minimize the negative impact on the biophysical and socio-economic environment and maximizing the benefits to all parties in cost effective manner.
- To present Mitigation and Monitoring Plan to smoothly implement the suggested mitigation measures and supervise their efficiency and effectiveness.
- To provide opportunity to the public for understanding the project and its impacts on the community and their environment in the context of sustainable development.
- Prepare an EIA Report for submittal to the Environmental Protection Agency, Punjab for according Environmental Approval.

1.5 Structure of Report

This EIA reviews information on existing environmental attributes of the Study Area. Geological, hydrological and ecological features, air quality, noise, water quality, soils, social and economic aspects and cultural resources are included. The report predicts the probable impacts on the environment due to the said project. This EIA also proposes various environmental management measures. Details of all background environmental quality, environmental

impact/pollutant generating activities, pollution sources, predicted environmental quality and related aspects have been provided in this report. The structure of the assessment report will be as follow;

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

SCREENING & SCOPING

Screening

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said Asphalt Manufacturing Plant falls under **Schedule-II** i.e., the project requiring an EIA study **Sub-category-J** (Other Projects).

Scoping

Temporal and Spatial Boundaries:

Temporal Boundaries:

Construction period of said project is approx. 2 years. Operation Lifespan will be more than 25 years.

Spatial Boundaries:

Said project will have positive and negative impacts at local and national level. The establishment of the said project will contribute to enhancing Pakistan's domestic productivity, and help diversify Pakistan's economy. It will create potential of improvement for social and cultural values of local people's exchange of values and standards through positive social interactions. Positive changes in lifestyles will occur due to availability of income when the natives take up Company jobs.

Important issues and concerns raised during consultation

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

- All emissions and effluents shall be managed properly to avoid public nuisance.

Significant Impacts identified in scoping:

Construction Phase	Operation Phase
Dust emissions	Particulate emissions
Wastewater	Degradation of surface water quality due to process water and sewage direct disposal
Impacts of accidental spillages	Work injury/hazards/incidents/accidents
Safety	Disturbance of communities due to noise
Solid waste management	Solid waste management

ALTERNATIVES

Site Alternatives

Said project is the establishment of M/S Nazim & Qasim (Pvt.) Limited. Selected site is surrounded by other industries and no other alternative site is considered for Said Project. The site is well located in regard to the following:

- Within vicinity of existing unit
- Plot near other industries
- Easy road access to the market
- No settlements in close vicinity
- No watercourse within a safe distance
- No ecologically sensitive or declared protected area within safe radius of the selected site

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

Distance of selected site from different receptors is as follows:

Sr. No	Receptors	Distance (Km)
1	Stone Crusher Unit	2.90
4	BHU	3.11
5	Govt. School	0.88
6	Shaheenabad Bypass Road	0.20
7	Chak 48/SB	2.16

Considering the facts that said site is at a safe distance from sensitive receptors. The said site has advantage of not only to be environment friendly but also potentially sound to enhance sustainable development in the region. Therefore, given site is the most suitable for establishment of said project.

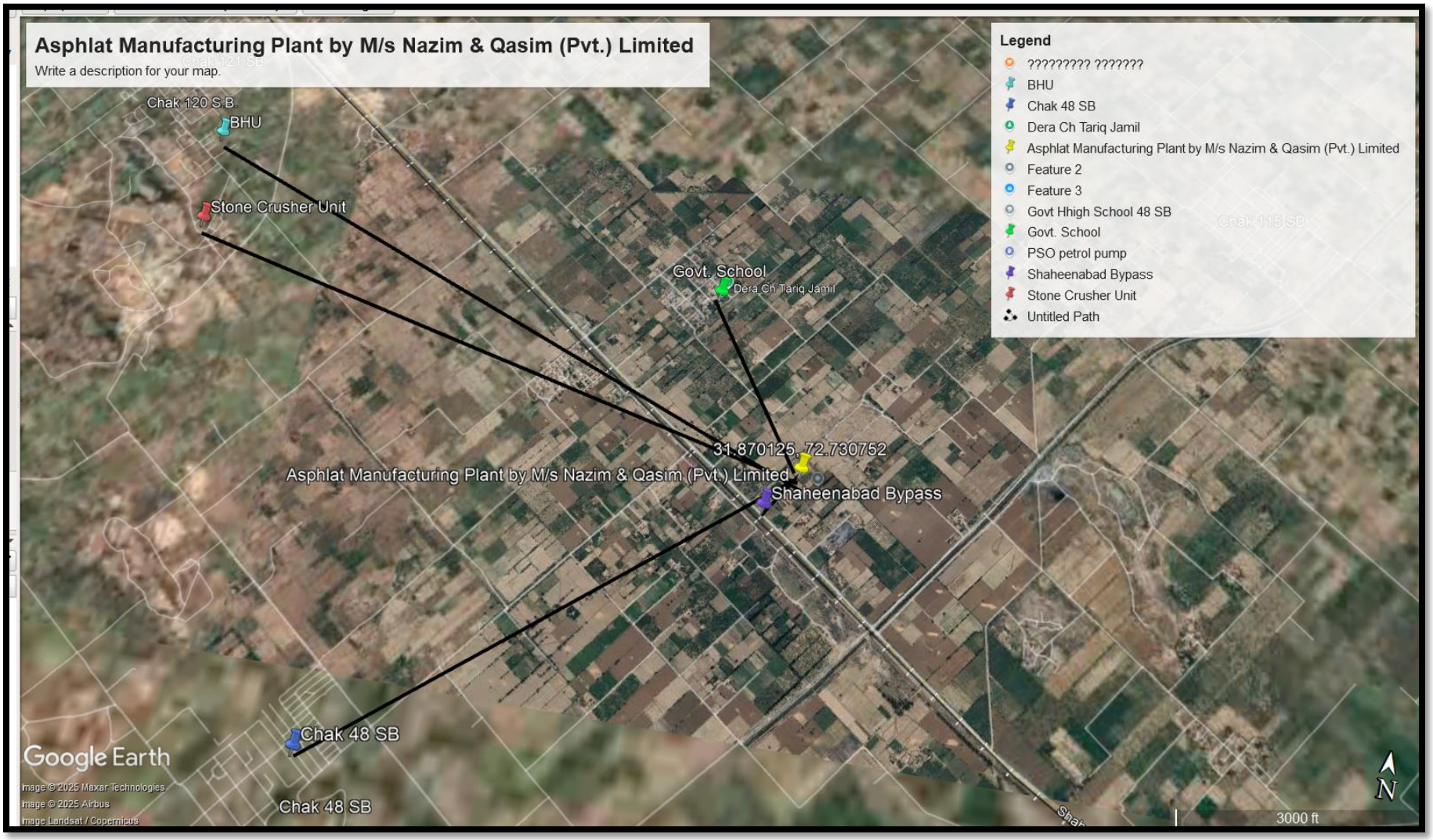


Figure 1-1: Distance of site from nearest receptors

2 *CHAPTER 2:* DESCRIPTION OF PROJECT

2.1 GENERAL

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

2.2 TYPE AND CATEGORY OF PROJECT

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the Said Asphalt Manufacturing Plant falls the said project falls under category. i.e., the project requires an EIA study

.

2.3 OBJECTIVES OF PROJECT

The primary objectives of said project are to:

- To fulfill the asphalt market demand for the constructing and maintaining roads, parking areas, railway tracks, airport runways and sidewalks
- Create new employment opportunities as a part of the project activities.

2.4 LOCATION AND LAYOUT OF PROJECT

2.4.1 Location of the Project

Said Project site is located at Chak No. 47/S.B, Tehsil & District Sargodha . The said site lies at Latitude 31.870125 and Longitude 72.730752.

Figure 2-1: Location Map of the Site

2.5 GOVERNMENT APPROVALS

After acquiring the environmental approval proponent will apply for other approvals.

2.6 LAND USE ON SITE

Land is under the ownership of proponent property document are attached as annexure. Minor renovation will be done and machinery will be installed for operation of said industry.

2.7 ROAD ACCESS

The site is approachable via Shaheenabad bypass Road at 0.20 km.

Figure 2-2: Road Access

2.8 VEGETATION FEATURES OF SITE

Various local plants are grown at the project site in the open areas, and along the boundary.

2.9 RESTORATION AND REHABILITATION PLANS

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

- All temporary construction built for the site development will be removed.

- Site for construction camps should be restored to its previous conditions as much as possible.
- Any debris from construction activities should be removed properly from the site.
- All fencing and gates will be removed and pits will be backfilled.
- Whole of the site will be covered with the original soil to the original levels and grades and re-vegetation will be done, where required.

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

Residence	Distance
Chak 48/SB	2.16km

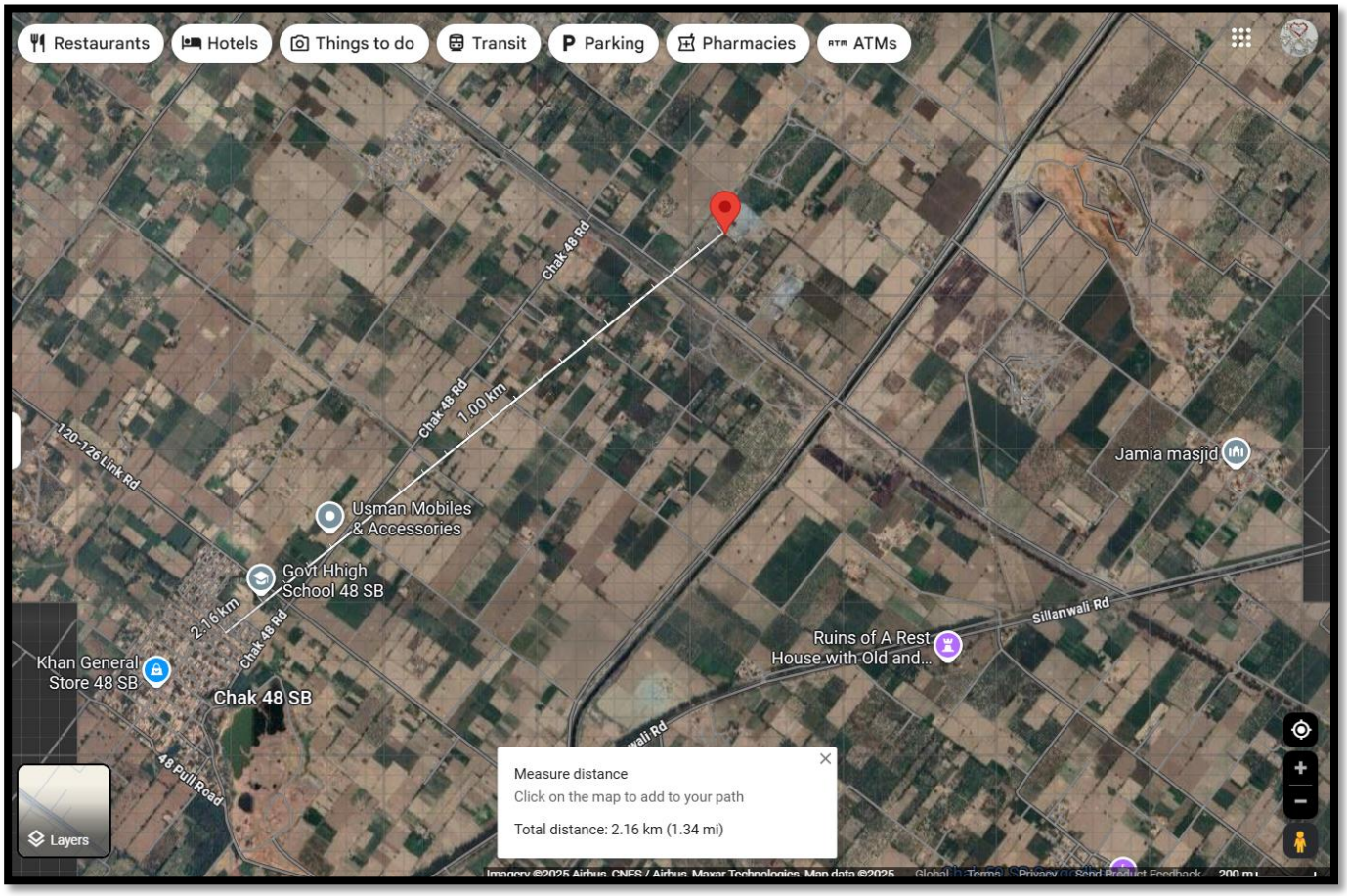


Figure 2-3: Distance of site from nearest residence

2.10 DESCRIPTION OF PROJECT

2.10.1 Raw Material and products

Raw Material

- Bitumen
- Aggregates

Product =

- Asphalt

2.10.2 General Process

Nazim & Qasim (Pvt.) Limited. is involved in manufacturing of asphalt for market demand. Generalized procedure for manufacturing of asphalt is given below:

2.10.3 Step 1 – Cold Feed Bins

Aggregate cold feed bins hold the necessary aggregates to produce asphalt. At this point the aggregates are cold and wet. Then, aggregates are conveyed to the dryer.

2.10.4 Step 2 – Drying

The drying process is designed for three purposes:

- To take moisture away from the aggregates.
- To heat up the aggregates. This is important when all the ingredients are put together as the high temperature will give workability to the mix.
- Take very fine aggregate through the air and reuse it as filler in the final mix.

2.10.5 Step 3 – Hot Elevator

After the aggregates are heated up, they are transported through an elevator. It also helps to transfer the heat throughout the aggregate.

2.10.6 Step 4 – Screening

At the top of the plant, the aggregate is divided by size. Each screen has holes of different sizes, allowing the aggregate to filter properly. The rocks that are too big are sent down through the right side elevator.

2.10.7 Step 5 – Mixer

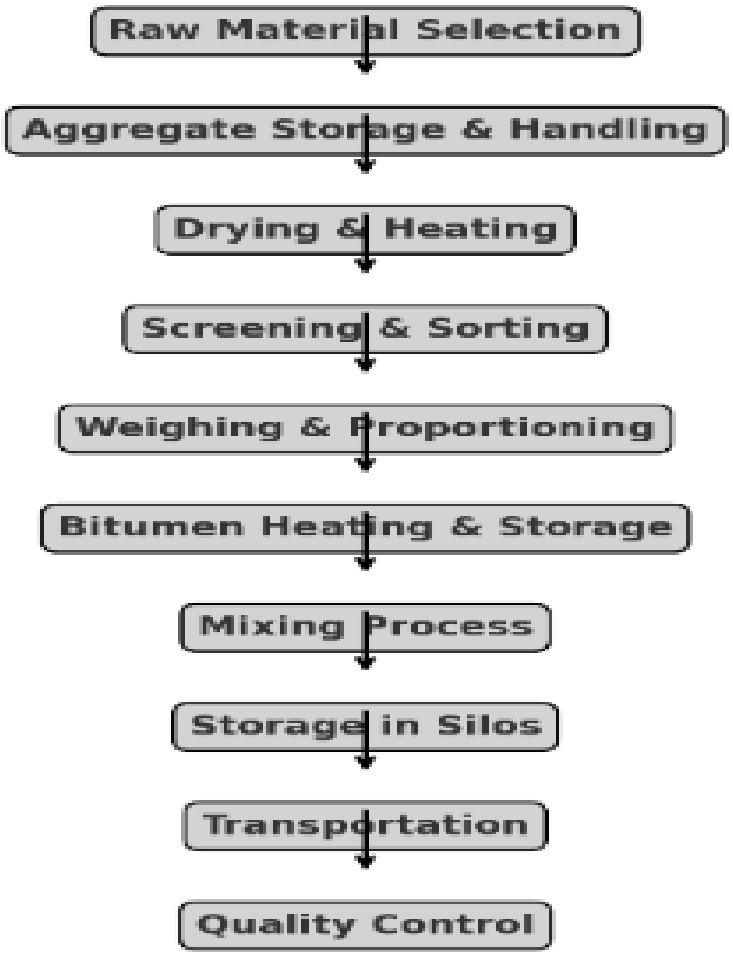
The aggregate has been divided in four sizes. The sizes of aggregate used in the mix will depend on the type of asphalt to be prepared. Recycled Asphalt is conveyed into the mixer. Bitumen is added to the mix from the tanks.

2.10.8 Step 6 – Transport to Site or Hot Storage

The asphalt is now ready to be transported to the working site or hot storage

.

Asphalt Manufacturing Process Flow Chart



2.11 SUPPLIES.

2.11.1 Manpower(Direct & Indirect)

The Project requires manpower during both the construction and operational phases. During construction phase 20-30 workers were involved. During the operation phase of the project, the total manpower requirement is estimated to be 80 people (Both Direct & Indirect) comprising administrative, technical, and non-technical persons. These include chemists, computer operators, accountants, administrative assistances, secretaries, etc. All recruited staff will be given appropriate training in order to educate them on the specific job tasks to be performed.

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

The fire-fighting system includes water and gas devices / extinguishers. Plant has established a proper fire-fighting system. Indoor and outdoor fire hydrants are installed according to the codes and standards.

A proper evacuation plan is formulated to cope with any emergency situation. Assembly points are set and marked. Fire frightening and emergency plan is mentioned in layout plan.

2.11.3 Electricity

WAPDA will be the main source of electricity for the said unit. Stand-by generator will provide electricity for this Unit in load-shedding conditions. one standby diesel fired generator are also provided in existing unit.

2.11.4 Water supply

The water requirement for the project includes drinking water, Process water and water for fire hydrants. Ground water supply is used to fulfill this demand.

2.11.5 WASTEWATER

Wastewater is mainly generated from equipment washing, aggregate dust suppression, and cooling processes. It will be disposed off after Treatment effluent treatment plant. Municipal wastewater generator from domestic use and cleaning is disposed off as per area practices.

2.11.6 AIR EMISSIONS

No air emission is likely to be released during operation of the project; except the dust or PM to be produced during floor cleaning and other such operations, which also will not be posing any environmental threat (will not breach the safe standards). Wet suppression is done to control dust emissions. Generator emissions will be controlled by providing proper enclosure, tuning and maintenance.

2.11.7 NOISE

All the machinery will be installed and operated in a closed hall and from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will take the precautionary measures to avoid the noise emissions. There is no possibility of Noise pollution.

2.11.8 SOLID WASTE

Solid waste is mainly generated from aggregate dust, rejected or leftover asphalt mix, and packaging materials such as bitumen drums or bags. Most of this waste is recyclable—dust and fines are often reintroduced into the mix, Damaged or excess asphalt is commonly reused in new asphalt production. Domestic waste will be handed as per area practices. For collection of solid waste dust bins are kept in the unit premises to manage the waste.

2.11.9 AREA

Total Area of the said project is 32.00 Kanals.

2.11.10 COST AND MAGNITUDE OF OPERATION

Cost of project is approx. PKR 150 million Raw Material, Operation and maintenance of the Production machinery are the costly activities involved in the operation phase of the project. Equipment safety will be assured if these operations are carefully managed. No separate fund allocation is required. However, budget will be allocated for purchase and maintenance of standardized PPEs for workers and for waste management and environmental enhancement. Despite these costs, this project was found to be financially feasible in the feasibility report. Magnitude of operations includes:

1. Applying for and getting all necessary approvals and contracts
2. Construction of boundary wall and other structures
3. Installation of machinery
4. Installation of firefighting equipments
5. Marking of emergency exits, assembly points
6. Tree plantation and land-scapping

Cost Breakup

Operation	**Cost**
Land Cost	50million
Construction Cost	50 million
Machinery Cost	50million

2.11.11 SCHEDULE OF IMPLEMENTATION

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

Sr. #	**Activities**	**6 Months**			**6 Months**			**6 Months**			**6 Months**		
		2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M	2M
1	Detailed Designing												

2	Mobilization of Contractors												
3	Lean Construction Period												
4	Peak Construction Period												
6	Installation of machinery												
7	Installation of firefighting equipments & emergency exits												
M=Month													

3 *CHAPTER 3:* DESCRIPTION OF THE ENVIRONMENT

3.1 GENERAL

This Section of the report covers a comprehensive description of the baseline conditions of the project and its related influential area with respect to the physical, biological and social aspects. In addition to the secondary data, the field survey was carried out and the environmental baseline conditions were established based on socioeconomic interviews, impact location profiles; environmental profile questionnaires and public consultations. A social survey was carried out through consultation with various communities. Interviews were conducted from the locals near the project area. The main intention of these interviews were to acquire feedback associated with the project as well as its impacts on their daily life on short term as well as long term basis.

3.2 PHYSICAL ENVIRONMENT

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

3.2.1 Topography & Geography

Sargodha is one of the oldest districts on the subcontinent and is lies at 32°5′1″N 72°40′16″E. it is bordered by Faisalabad District to the south, Jhang District to the west. The geology of the proposed project region is closely related to the formation process of Himalayan ranges resulting in intense deformation with complex folding, high angle strike-slip faults and crust thickening expressed in a series of thrust faults. The important tectonic changes which have had so much influence in the region are feebly visible particularly in the

Indus Plain, and it is only by considering the geology on a broader regional scale.

- Hydrology& Water Resources
- Groundwater Resources

Project site:

Groundwater from depth of 200-250ft can be used for drinking and other purpose. Lab reports of water quality are annexed.

- **Temperature**

Project area falls in Punjab. Being flat topography, essential climate features are the same. The maximum temperature in summer reaches 50 °C (122 °F) in the summer. In winter, the minimum is 1°C. The mean maximum and minimum temperatures in summer are 41°Cand 27°C; and in winter 19°C and 4°C respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season on the other hand starts from November and continues until March, December, January and February are the coldest months. Detail description of the seasons is as under:

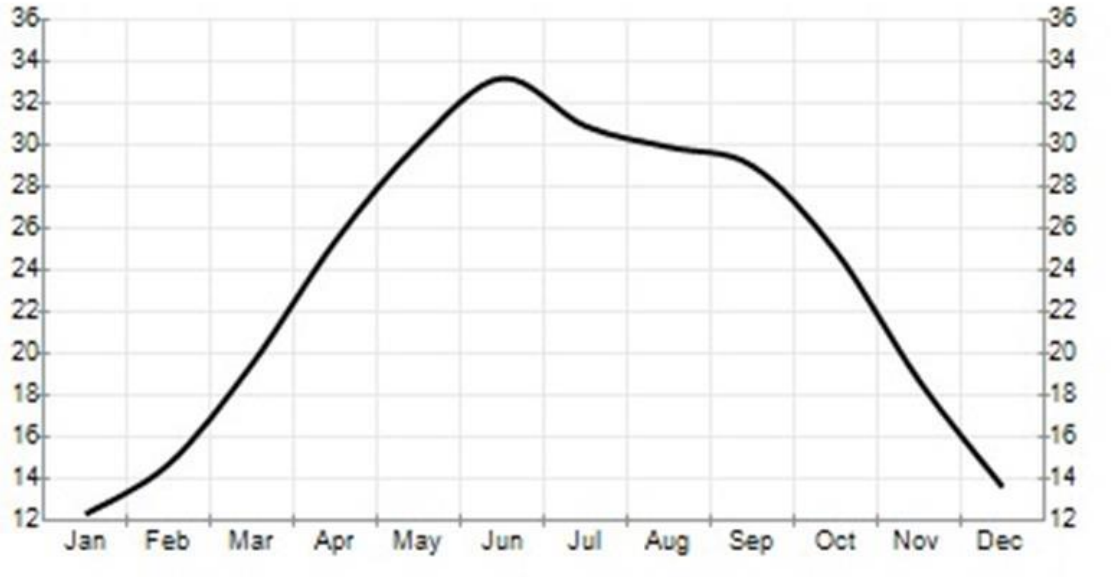


Figure 3-2: Average temperature per month

- **Rainfall**

The rainy season starts in July and ends in September. More rains occur in July and August than any other months. Most of the winter rains are received in the months of January, February and March. Yearly precipitation is 400 mm.

Figure 3: Precipitation amounts

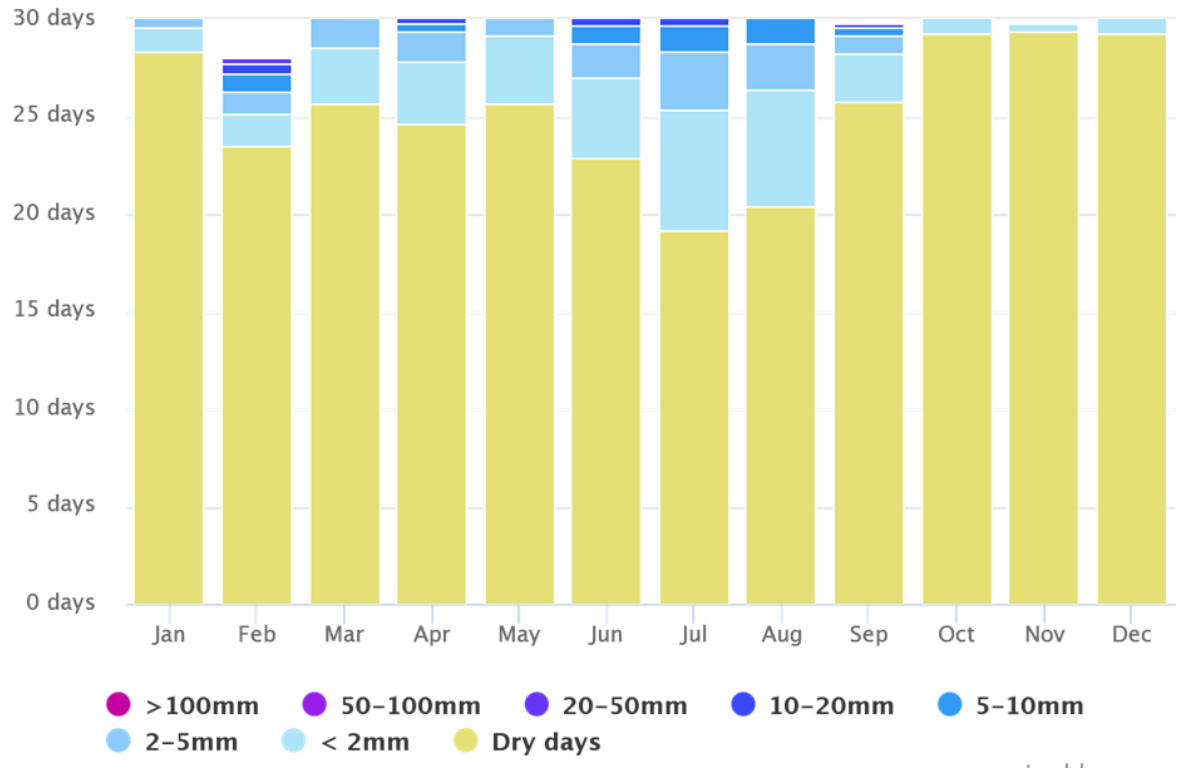


Figure 3-3: Precipitation amounts

- **Wind**

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

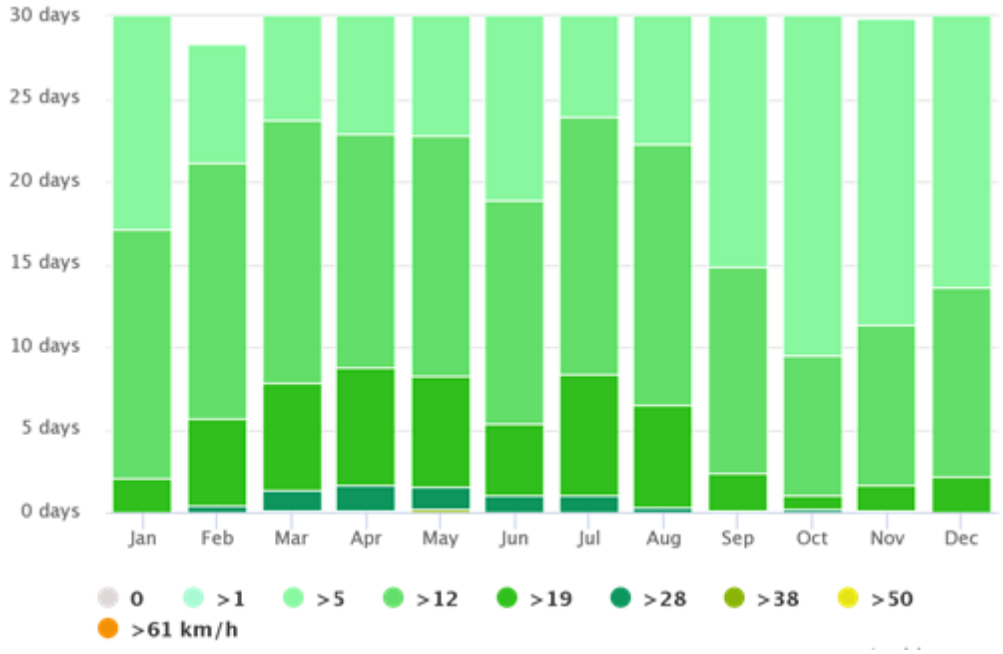


Figure 3-4: Wind speed

- **Noise Level**

At proposed project the main source of noise emission are the construction activities. Noise from vehicles and other powered mechanical equipment is intermittent. Use of power equipment's at proposed project is just once during unloading of material and is being of temporary nature. Maintenance vehicle came only on requirement basis. As such, there is no noise threat at the proposed subproject sites, where construction activities are being proposed.

- **Ambient Air Quality**

The primary source of air pollution at the project sites is the vehicular emissions, and the key pollutants likely to be found at project proposed locations are carbon monoxide (CO), oxides of nitrogen (NOX), sulfur dioxide (SO2), and particulate matter (PM). Other source of air pollution is dust arising from construction activities. In order to determine the air quality of the area, air quality monitoring was carried out by the APEX Environmental Services; Lahore being EPA approved Lab and has the requisite air-sampling device and expertise for collection of samples. The project location is well outside the metropolitan center. There does not exist any large industry or any

other significant pollution source near these sites/routes. As a result, the ambient air quality of these sites is expected to be well within the acceptable limits, and no major criteria pollutants are likely to be found in excess of the limits prescribed by national and international standards. Copy of detail Report is annexed at the end.

3.3 Biological Environment

3.3.1 Flora

The district's trees consist of jand (Prosopis spicigera), karir (Capparis aphylla), beri (Zizyphus jujuba), van (Salvadora oleoides), kikar (Acacia nilotica), shisham (Dalbergia sissoo) and aak (Calotropois spp). Various herbs can also be found, including harmal, akrey and bathoo.

3.3.2 Fauna

The fauna of Sargodha, located in the Punjab province of Pakistan, is diverse and reflective of its agricultural and semi-arid environment. Common bird species include pigeons, doves, sparrows, partridges, and occasionally peacocks and mynas in rural areas. Mammals such as jackals, mongooses, wild boars, and various rodents like rats and mice are found in and around fields and scrublands. Domesticated animals such as buffaloes, cows, goats, and sheep are widespread due to the region’s reliance on farming and livestock. Reptiles, including lizards and snakes like cobras, inhabit the warmer and less populated areas. Amphibians such as frogs and toads are commonly seen near water bodies and during the monsoon season. The region's canals and fish farms support a variety of freshwater fish species. Insects are abundant, particularly mosquitoes, bees, butterflies, and other pollinators, which play a vital role in the local ecosystem. Overall, Sargodha's fauna supports both its rural lifestyle and ecological balance.

3.3.3 Protected areas / National Sanctuaries

In Pakistan there are several areas of land devoted to the preservation of

biodiversity through the dedication of national parks and wildlife sanctuaries. There are no protected areas near proposed site.

3.4 SOCIOECONOMIC ENVIRONMENT

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

3.4.1 Socio-Economic Environment

3.4.2 Industries

The Most famous industries lying in this area include Cotton, and Textile, Beverages, flour & Cottage Industries, automobiles industry, pipe industries are the most important industries playing fundamental role in the economy of the area.

Industries nearby site are:

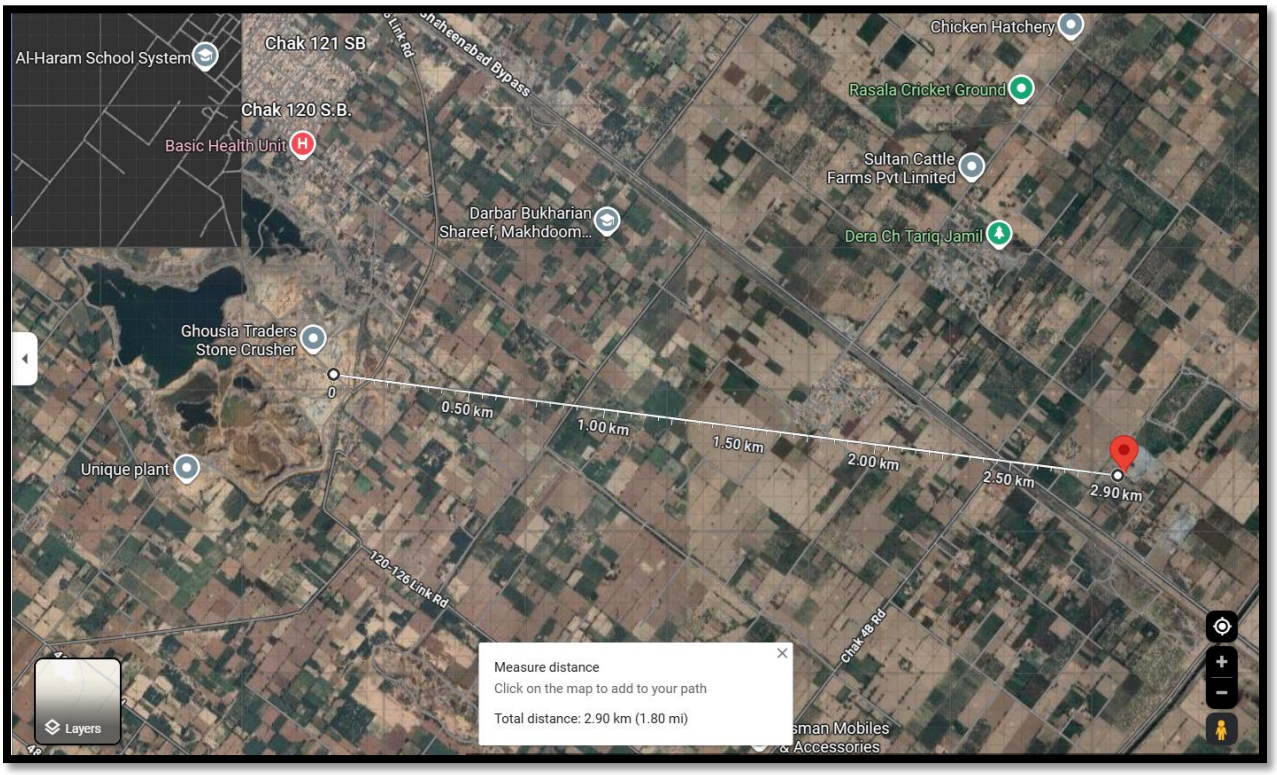


Figure 3-1: Industries nearby site

3.4.3 Educational facilities

Educational facilities nearby project site are:

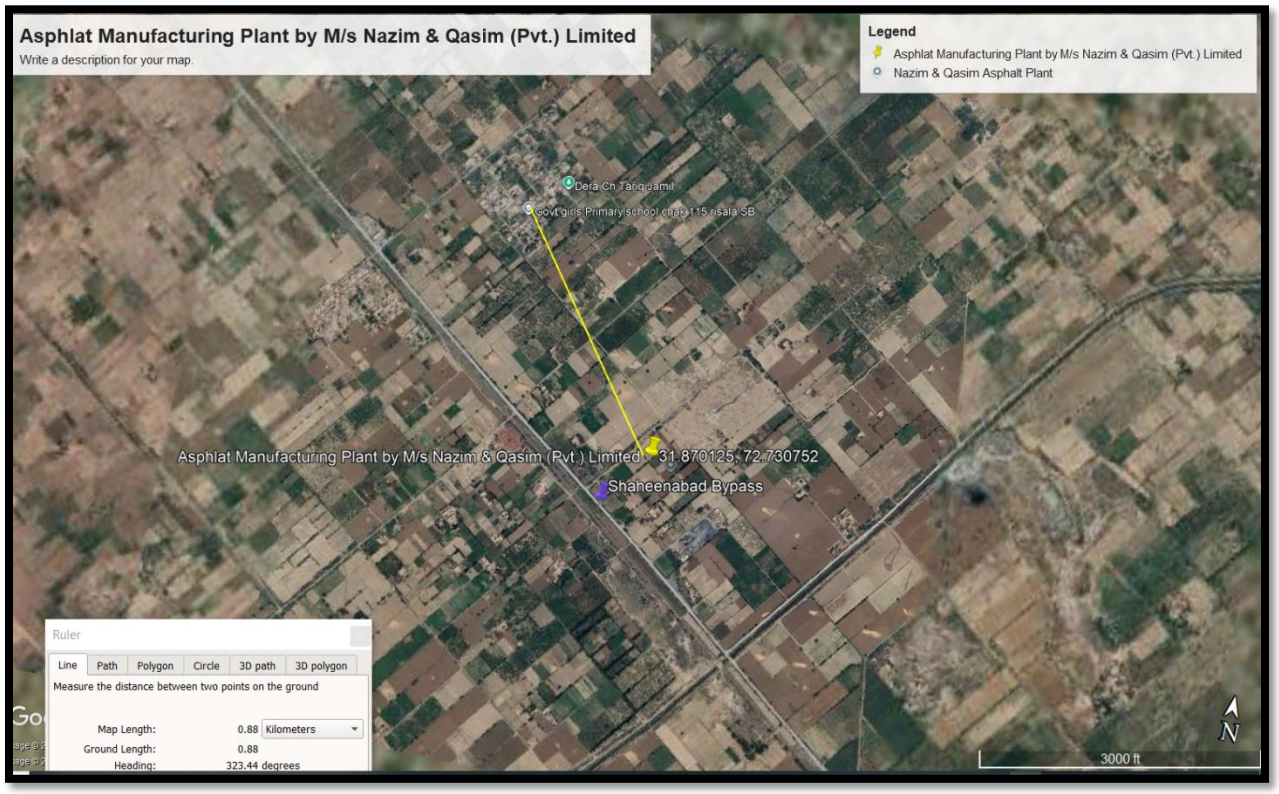


Figure 3-2: Schools nearby site

3.4.4 Health facilities

Nearest hospital from the project site

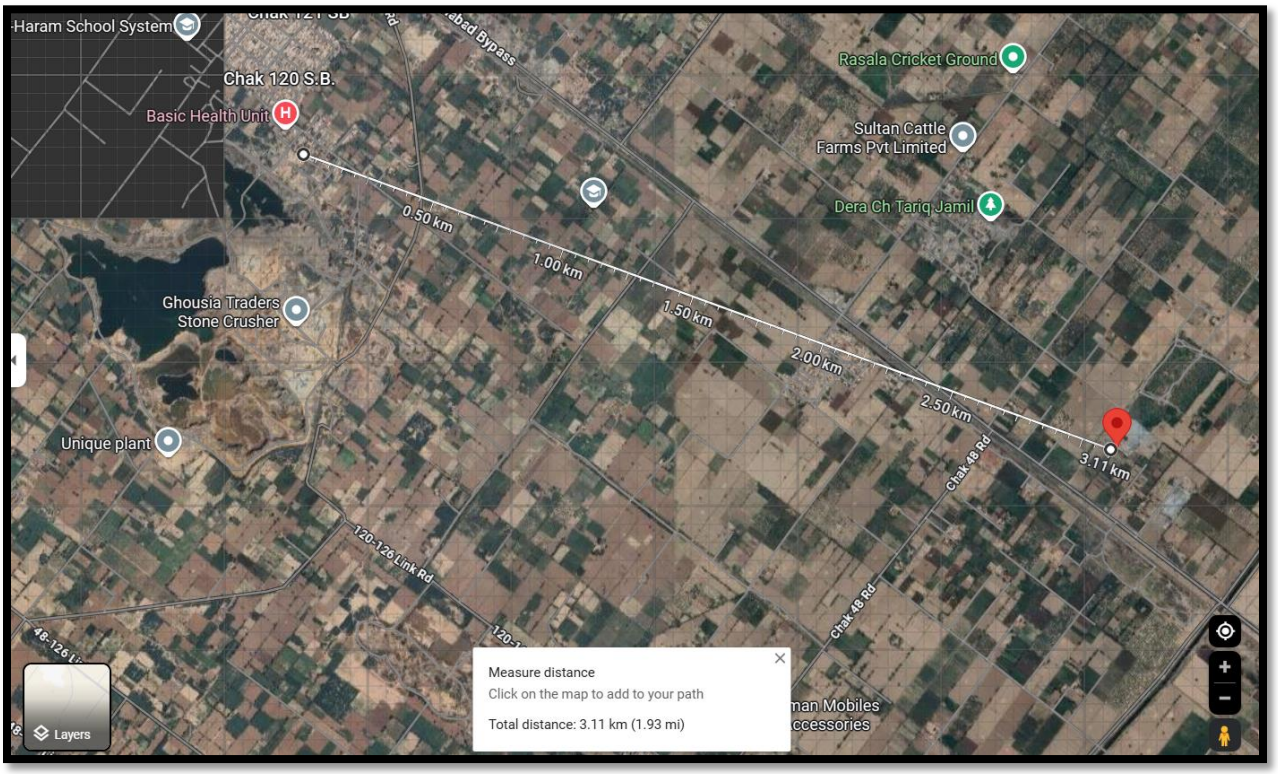


Figure 3-3: Hospitals nearby site

3.4.5 Reconnaissance Field visit

A reconnaissance visit to the project, before conducting detailed survey was conducted by the consultant, that helped in collection of necessary data/information for primary assessment through consultations with project stakeholders including project beneficiaries and project affected persons.

3.4.6 Data Collection and Field Survey

The Consultant conducted field survey/investigation on various socio-economic aspects to assess the existing socio-economic environment of the project as well as identify likely impacts under a changing situation with and without the proposed Project. Accordingly, the social study covered the beneficiaries, the affected people and concerned stakeholders in the area and elicited their views / suggestions for mitigation / enhancement of different types of impacts.

3.4.7 Community/Stakeholders' Participation

Community consultations with different stakeholders, beneficiaries and affected communities of the Project Area were organized to facilitate stakeholders' / peoples' participation in the project activities of the proposed project and their views and feedbacks were incorporated for planning/preparation of the project. Such consultations would strengthen the commitment of a wide cross-section of the affected people, public representatives, government employees and professional groups by giving them an opportunity to participate in key decisions.

3.4.8 Population

The following table shows the population of the district and its tehsils as per 2017 Census:

Urban Population	17.5%
Rural Population	82.5%
Total Population	**2,897,446**

3.4.9 Religion

The main religious groups in the area are Muslims and Christians. The population of the surveyed settlement is predominately Muslims.

3.4.10 Language

Punjabi is the most common language spoken by majority of population in the area. Urdu is spoken as secondary language.

Table 3-1: Sarghoda Languages

Urdu	5.2%

Punjabi	82.9%
Sindhi	Negligible
Pushto	0.2%
Balochi	Negligible
Siraiki	11.4%
Others	0.3%

3.4.11 Agriculture

The district belongs to the Northern Irrigated Plains Agro-Ecological Zone of Pakistan. It produces one of the best quality cotton in the region.

The crops of the district include cotton, sugarcane, wheat, maize, rice, groundnut, gram, guarseed, jowar, bajra, moong, maash, masoor, rapeseed & mustard, sunflower, barley, sesanum, and linseed.

Fruits of the district include citrus, mango, guava, jaamun, pomegranate, phalsa, banana, and dates.

Vegetable produce of the district includes potatoes, onions, cauliflower, bitter gourd, okra, turnip, peas, tomatoes, garlic, chilies, sugarbeet, and coriander.

are shown in fig 4-7.

3.4.12 Gender Situation Analysis

Women in the project area have no recognized role in the authority structure of the city. Most of the women stay at home and only travel outside the village in case of visiting relatives, and weddings and to hospitals in nearby towns. However, the traditional attitude of not sending girls to school is changing now, because parents realized and understand that basic education is necessary for each individual without the discrimination of sex.

3.4.13 Social and Cultural Values

The existing communities reflect rural culture with its characteristic norms and values. Women do all household work by themselves. Mostly women do the teaching job. Majority of the population follows Islamic tradition. Common food is wheat bread. Yogurt, Lassi and milk are also used. The common dress for males is Shalwar Qameez and for females Shalwar, Qameez and Dupatta/Chadar. Marriages are celebrated in traditional manners.

3.4.14 Conflict Resolution Mechanism

The people of the area were found to be loving, caring and hardworking. They reported that for petty conflicts resolution, they involve the senior and influential people of the area, who after listening to both the parties try to reach an unbiased decision which is acceptable to the aggrieved. Generally, the people accept the decisions of the influential

3.4.15 Means of Transportation

The modes of transport among the local villagers are buses and wagons. Personal transport includes bicycles, motor cycles and cars owned by the residents of area

3.4.16 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

Testing of different parameters was done by Services laboratory to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis and noise) is given in annexure.

3.5 SUITIBILITY OF SITE

Said project is the extension of M/S Nazim & Qasim (Pvt.) Limited. Selected site is surrounded by other industries and no other alternative site is considered for Said Project. The site is well located in regard to the following:

- Within vicinity of existing unit
- Plot near other industries
- Easy road access to the market
- No settlements in close vicinity
- No watercourse within a safe distance
- No ecologically sensitive or declared protected area within safe radius of the selected site

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

Distance of selected site from different receptors is as follows:

Sr. No	Receptors	Distance (Km)
1	Stone Crusher Unit	2.90
4	BHU	3.11
5	Govt. School	0.88
6	Shaheenabad Bypass Road	0.20
7	Chak 48/SB	2.16

Considering the facts that said site is at a safe distance from sensitive receptors. The said site has advantage of not only to be environment friendly but also potentially sound to enhance sustainable development in the region. Therefore, given site is the most suitable for establishment of said project.

4 CHAPTER 4: STAKEHOLDER CONSULTATION

4.1 GENERAL

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

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

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

This report includes all the comments, which were taken into account in preparing the definitive development concept for the establishment of said project. Public consultation performa is attached as Annex-VIII of this EIA Report.

4.2 OBJECTIVES OF CONSULTATION

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

4.3 IDENTIFICATION OF STAKEHOLDERS

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

Project stakeholders include the settled families, either property owners or the tenants, businessmen (land owners, traders, shopkeepers, vandors, transporters, restuarent owners etc.), employees of the commerical entities. PAPs are of two types, for instance:

4.3.1 Direct

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

4.3.2 Indirect

Indirect impact will occur on those who are living or doing business within

project area of influence. Indirect respondents include;

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

4.4 PUBLIC DISCLOSURE

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

4.5 CONSULTATION PROCESS

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

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

Various meeting with the stakeholders were held the following objectives:

- Share information with stakeholders on the said project and expected impacts on community in the vicinity of the project
- Understand stakeholders' concerns regarding various aspects of the

project, including the existing condition of the upgrading requirements, and the likely impact of construction and operation activities

- Provide an opportunity to the public to influence the project design in a positive manner
- Obtain local and traditional knowledge, before decision making
- Increase public confidence about the proponent, reviewers and decision makers
- Reduce conflict through the early identification of controversial issues, and work through them to find acceptable solutions
- Dissemination of information through discussions, education and liaison
- Documentation of information narrated by the stakeholders and mitigation measures proposed by the stakeholders
- Incorporation of public concerns and their address in the EIA; and eliciting their comments and feedback

4.5.1 Consultation Methodology

The methodology adopted for consultations is summarized below.

4.5.1.1 Consultation Material

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

4.5.1.2 Consultation Mechanism

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

and suggestions raised were recorded in field notes for analysis, and interpretation.

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

Secondary stakeholder consultations were more formal as they involved government representatives and local organizations, consulted during face-to-face meetings. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

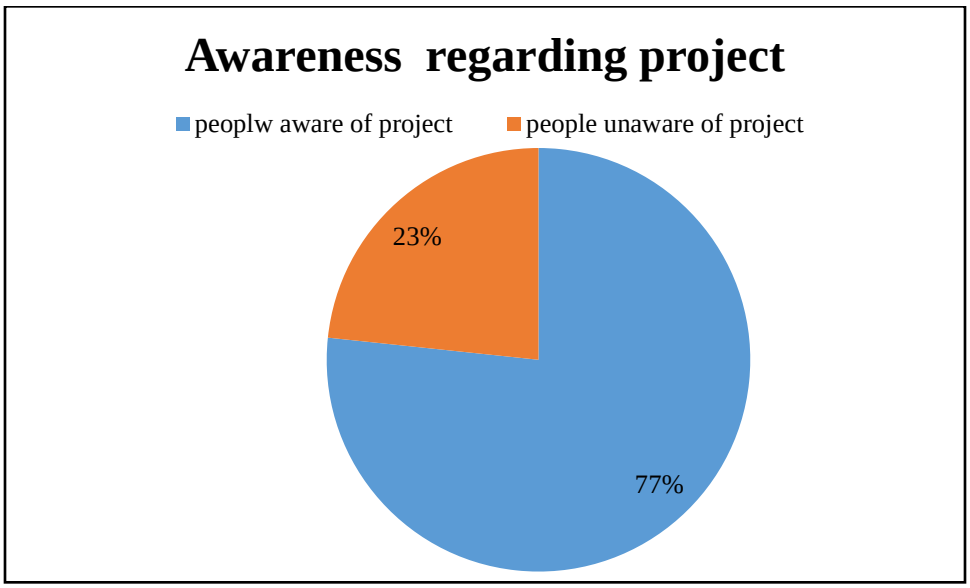
4.5.2 Primary Stakeholders Consultation

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

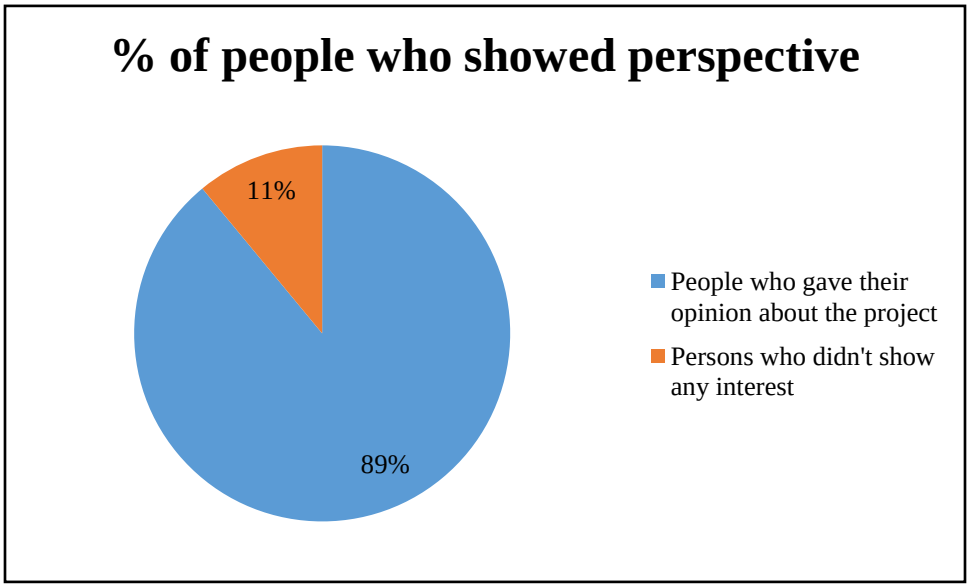
4.5.2.1 STAKEHOLDER CONCERNS AND RECOMMENDATIONS

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

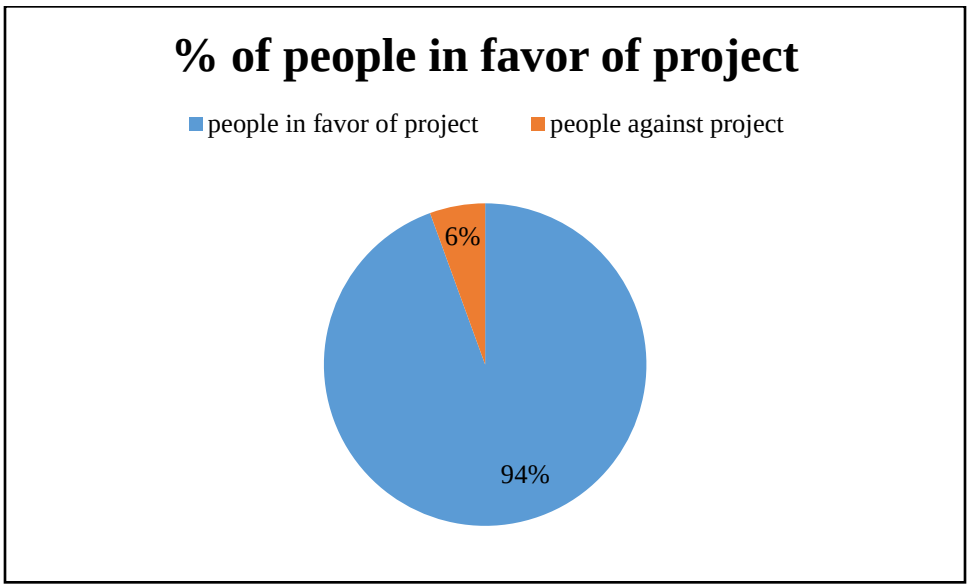
Out of total respondents of, 77% knew about the project whereas 23% were not aware of the project planning and implementation. All people were then briefed about the project.



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



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



Majority of people were in favor of project. They said that project will result not only in direct jobs opportunities for locals but also will enhance subsidiary business, trade, education, and community development. The people were of the view that industry might also elevate education standards, struggle for career enhancement besides improvement in standard and quality of living in area. People were also of the view that industry may also be instrumental in connecting the local people with major cities and will result in increase in GDP.

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

4.6 STAKEHOLDERS CONSULTED

Names and CNIC of consulted stakeholders are given in table below:

Table 4-1: List of consulted stakeholders

Sr. No	Stakeholder name	CNIC Number
1.	Muhammad Hakim	32301-0899669-5
2.	Abdulaziz	32302-8865076-7
3.	Asghar Ali	32301-6707794-1
4.	Kashif Ali	32301-1042443-9

5.	Parvez Hussain	31304-3641875-7
6.	Muhammad Naeem	32301-7769904-3
7.	Muhammad Zulfiqar	32302-1923668-3
8.	Muhammad Waqar	32301-2286586-7
9.	Muhammad Arif	32301-3560885-7
10.	Muhammad Javed	32301-2306631-7
11.	Muhammad Jalal	32301-3712974-7
12.	Muhammad Tofail	31301-1430910-3
13.	Syed Barat Hussain	32301-0911865-5
14.	Arif Khan	32302-9944089-5
15.	Basheer Hussain	32301-1072234-5
16.	Saddam Hussain	32302-6563777-9
17.	Muhammad Javed	32301-6984887-3
18.	Muhammad Aslam	32302-1531131-3
19.	Hameed Ahmad	32301-5823956-3
20.	Muhammad Zafar	32302-8161811-7
21.	Muhammad Maqsood	32301-6784699-1
22.	Muhammad Aslam	32301-8661151-9
23.	Muhammad Akram	32301-5319694-7
24.	Muhammad Aslam	32301-7149972-1
25.	Muhammad Arshad	32301-0750673-3
26.	Muhammad Amir	32302-4496559-7
27.	Muhammad Hashim	32301-0899299-1
28.	Muhammad Tariq	32302-4890073-5
29.	Muhammad Parvez	32301-4365044-1
30.	Syed Irfan Mehdi	32301-2072338-5
31.	Sajjad Ahmed	32302-4578228-1
32.	Muhammad Waqas	32303-1119009-9
33.	Hafeezullah	32301-0269175-5
34.	Bahadur Abbas	32301-9404522-9

4.6.1 Secondary Stakeholders Consultation

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

1. District Office Environment, Kasur
2. Livestock Department

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

S#	Participant	Designation	Concerns/Remarks
Responsible Authority			

1	Mr.	Inspector Environment	• EHS plan should be enforced strictly • Proponent should install proper wastewater treatment plant • Should work for local people benefit • Preventive measures should be adopted to avoid any unfortunate incident • Environmental enhancement measures such as; Tree plantation, monitoring and safety should be ensured
Departments and Agencies			
Livestock Department			
1	Dr. Muhammad Sohail Khan	Assistant Director Livestock	• He said that as per market response the standard and quality of the asphalt manufactured should be satisfactory • Said plant will provide jobs to local communities • Project will lead to community development • Will raise living standard • He also expressed that local people should be first preference for jobs and CSR works.
Proponent Environment Management Team			
1	Proponent Environment Management Team	Proponent Environment Management Team	• Local employment will be ensured • Tree plantation will be done to make project environment friendly • Wastewater treatment plant has been installed • No waste will be dumped improperly
Environmental Practitioners and Experts			
1	Dr. Muhammad Faqir Irfan	PhD. Environment Lawyer	• To avoid violation of section 11 Wastewater Treatment Plant should be installed
Affected and Wider Community			
1	Mr. Khurram	NGO (Parho Barho Punjab)	• Local employment should be ensured • Proponent shall work for betterment of community

5 *CHAPTER5:* POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 GENERAL

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

5.2 IDENTIFICATION OF POTENTIAL IMPACTS

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

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

5.3 CLASSIFICATION OF IMPACTS

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

Category of Receptor	Description

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

5.4 SCOPING CRITERIA FOR IMPACTS

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

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

5.5 METHODOLOGY FOR IMPACT ASSESSMENT

5.5.1 What is the problem?

The project is about asphalt manufacturing industry, namely "Nazim & Qasim (Pvt.) Limited.". The major impact associated with the construction and operation of the said industry includes solid waste management, wastewater management, noise emissions, tree plantation and fire-fighting arrangements.

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

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

5.5.3 Where problem should be addressed?

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

5.5.4 How the problem should be addressed?

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

5.5.5 Ways of Achieving Mitigation Measures:

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

5.5.5.1 Changing in Planning Design

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

5.5.5.2 Improved Management and Monitoring Practices

The anticipated impacts will be reduced significantly by adopting better management activities, as it will be carried out for the betterment of the society. While environmental monitoring will be conducted on the regular basis to keep the sources of the air pollution, wastewater generation, noise and public nuisances in-check. Following practices that need to be adopted to reduce the impact significantly:

5.5.5.3 Compensation in Money Terms

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

5.5.5.4 Replacement/Relocation/Rehabilitation

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

5.6 IMPACT ASSESSMENT

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

- The impacts are further classified based on their spatial distribution, i.e. *local,* when impacting an area of approximately 1 km radius from the project area, *moderate spread,* when impacting an area of 1 to 2 km radius and *regional* beyond 2 km.

- The impacts are classified as *short term, moderate term* and *long term* in terms of their existence in temporal scale. Impacts less than 1 year existence as *short term,* while those with 1 to 3 years as *moderate term* and more than 3 years as *long term.*
- The negative impacts are termed as *adverse impacts* while positive impacts as *beneficial.*

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

Table 5-1: Impact Significance Criteria

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

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

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

impact upon health of individuals and ecology in the surroundings.

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

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

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

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

Health & Safety		✓		✓							

5.7 IMPACTS DUE TO PROJECT LOCATION

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

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

5.8 DESIGN PHASE

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

5.9 IMPACTS ASSOCIATED WITH CONSTRUCTION PHASE

This section explains how said project affected different environmental aspects and its mitigation measures to manage the impact. The

impacts during construction phase will be temporary and localized. Even though, the proper mitigation measures will be followed to minimize such impacts.

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

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

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

5.10 IMPACTS ASSOCIATED WITH OPERATION PHASE

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

1. Environmental Impacts

- Air emissions
- Noise
- Traffic
- Solid waste and by-products
- Wastewater

- Resource Consumption
- Abnormal conditions
- Occupational Health and Safety

2. Socioeconomic Impacts

- Employment Opportunity
- Community Development

5.11 ENVIRONMENTAL IMPACTS

5.11.1 AIR EMISSIONS

POTENTIAL IMPACTS

Air emissions from the project are relatively small. Particulate emissions are typically not significant. Fugitive dusts and emissions may result during raw material handling and storage which is relatively less likely to occur. Other potential sources for air emissions are combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide) from standby diesel generators and combustion products from vehicles used for project activities. The emissions from standby generators will be less in concentration. The emission levels depend on the type and quality of fuel and the manner in which it is burnt.

MITIGATION MEASURES

The following mitigation measures will be implemented. The proposed mitigation measures to reduce the impacts on air quality during the proposed operation activities are:

- Clean and maintain a sufficient level of temperature and humidity in every section.
- Proper handling of raw material to minimize the likelihood of fugitive dust and emissions during storage.
- Monitoring of Ambient air parameters (Particulate matter, SOx, NOx) emissions should be carried out on regular basis to ensure compliance with the PEQS.

- Plantation of indigenous trees within the premises and along the boundary.

RESIDUAL IMPACT

If proper mitigation measures are effectively implemented, the residual impact of the proposed activities on the area's air quality is expected to be low in terms of significance.

5.11.2 NOISE

POTENTIAL IMPACTS

The main sources of pollution from noise are during raw material and finished good loading and unloading, vehicle movements, operation of machines. The increased noise may be a source of disturbance to workers, working near to the machines. Noise level during operation phase of said unit will be limited to operational site. Workers could be exposed to high noise levels, however only concerned staff will be working in the area with required personal protective equipment (PPE) to minimize or reduce the noise exposure. The residential area is located at a distance of more than 1.5 km away from the project site and there will be no significant impact on the community.

MITIGATION MEASURES

The following mitigation measures will be undertaken in order to further reduce the noise levels:

- Effective noise suppression design and plan will be made for all noise producing equipment i.e. high noise generating machines will be kept in isolation from other machines to minimize the overall cumulative noise.
- It will be ensured that generators, vehicles and other potentially noisy equipment are in good condition. Noise from generators, vehicles, other equipment and machinery will be kept to the minimum through regular maintenance.
- Noise monitoring will be carried out periodically.

RESIDUAL IMPACTS

Implementation of the mitigation measures proposed above will result in negligible to no residual impact due to said unit noise on the surrounding environment.

5.11.3 TRAFFIC

The operational phase of the said unit will result in increased traffic. However, the impact will be minimal. Vehicles will be well maintained to prevent unnecessary exhaust emissions and drivers will be appropriately trained.

MITIGATION MEASURES

The following mitigation measure will be implemented.

- Nighttime driving of project vehicles will be limited where possible.
- Vehicles will remain confined to defined access.
- Speed limits will be maintained.
- Road signage relevant to the project traffic will be placed, where necessary.
- Community complaint register and other means will be adopted for the community to complain about non-adherence of traffic to speed limits, safe driving and other safety related concerns.
- All vehicle drivers will be trained in community safety aspects. Drivers will be trained in responsible and safe driving practices; safe speed limits for vehicles will be followed.

5.11.4 SOLID WASTE

Solid waste is mainly generated from aggregate dust, rejected or leftover asphalt mix, and packaging materials such as bitumen drums or bags. Most of this waste is recyclable—dust and fines are often reintroduced into the mix, Damaged or excess asphalt is commonly reused in new asphalt production. The generated domestic solid waste will be handled as per area practices. If the waste management is not carried out properly, it can affect health of workers, pollution of soil, surface or ground water. All waste generated from the project will be managed by proposed controls. The environmental impacts will be minimized after the implementation of the proposed mitigations.

MITIGATION MEASURES

The following mitigation measures will be implemented:

GENERAL WASTE MANAGEMENT PRACTICES

During operational phase of the project, a proper waste management plan will be devised and implemented. Key elements of the waste management system will include the following:

ON-SITE HANDLING

- Proper waste collection system will be ensured. For this purpose, waste bins will be placed inside the boundary.
- Records of generated waste should be maintained.
- Solid waste mainly includes Solid waste is mainly generated from aggregate dust, rejected or leftover asphalt mix, and packaging materials such as bitumen drums or bags. Most of this waste is recyclable—dust and fines are often reintroduced into the mix, Damaged or excess asphalt is commonly reused in new asphalt production.

OTHER MANAGEMENT MEASURES

- Training will be provided to personnel for identification, segregation and management of waste.
- All containers of waste will be labeled properly.
- In-house audits of the waste management will be undertaken on regular basis.

RESIDUAL IMPACTS

Proper implementation of the mitigation measures will minimize the residual impact from waste. Monitoring and inspection will be undertaken to ensure the implementation of mitigation measures.

5.11.5 WASTEWATER

wastewater is mainly generated from equipment washing, aggregate dust

suppression, and cooling processes.. It will be disposed off after Treatment effluent treatment plant. Municipal wastewater coming from various municipal works, such as cleaning will be generated, which will be as per area practice.

RESIDUAL IMPACTS

Implementation of the proposed mitigation measures and regular monitoring is not likely to leave any significant impact of the waste water from the said unit.

5.11.6 ABNORMAL CONDITIONS

Abnormal events might include loss of power and fire outbreak. The said unit will have its own backup power supply using diesel generator to protect against a loss of power. The facility will be equipped with a proper fire-fighting and emergency evacuation plan to tackle in case of any fire outbreak.

5.11.7 OCCUPATIONAL HEALTH AND SAFETY

This section discusses the occupational health and safety impacts of the operation of said unit. Physical hazards may include exposure to same-level fall hazards due to slippery conditions especially during cleaning of syrup tanks. In a variety of situations, a worker can be exposed to lifting, carrying, and repetitive work and work posture injuries.

MITIGATION MEASURES

In order to reduce the physical hazards and other health and safety issues that may be encountered at workplace, following will be followed.

- Proper training will be provided for the proper usage of machineries and personal protective equipment (PPE) will be provided. It will be ensured that the individual who has received the correct training is operating a particular machine.
- Regular housekeeping practices will be ensured by keeping the floor dry and during washing; proper protective equipment are being used. Restricted entry should be ensured during washing.

- Training of staff in the handling of lifting materials.
- Timely maintenance and repair of electrical equipment will be conducted.
- Implementation of work rotations, provision of regular work breaks.
- At workplace, first aid facilities will be maintained at readily accessible places.

5.12 SOCIOECONOMIC IMPACTS

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

Table 5-4: Potential Socioeconomic impacts of the project

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

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

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

- Maximum number of unskilled and semi-skilled jobs will be reserved for the local communities.

EMPLOYMENT OPPORTUNITIES

The project is expected to have positive impact on economic condition of locals. Employment opportunities will be generated due to said project activities. The project will generate approximately 80-100 jobs during operation phase of the project.

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

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

5.13 POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

GREENBELT DEVELOPMENT

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

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

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

6 *CHAPTER 6:* ENVIRONMENTAL MANGEMENT AND MONITORING PLANS

6.1 GENERAL

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

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

6.2 OBJECTIVES OF ENVIRONMENTAL MANAGEMENT PLAN

The primary objectives of the EMP are to:

- Facilitate the implementation of the mitigation measures identified
- Define the responsibilities of the project proponent and contractor and provide a means of effective communication of environmental issues between them.
- Identify monitoring parameters in order to ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations.
- Identify training requirements at various levels.

6.3 MANAGEMENT APPROACH

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

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

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

6.4 COMPONENTS OF THE EMP

THE EMP CONSISTS OF THE FOLLOWING:

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

6.5 ENVIRONMENT MANAGEMENT PLAN

It lists all the mitigation measures identified in the EIA and the associated environmental or social aspect in line during operational phase with the administrative framework involving all the responsible implementing authorities who are required to take the planned actions/measures. It enhances project benefits by reducing its impacts and making it environmental friendly.

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

Objective	Management Action	Responsibility	Time framework	Residual impact
Construction phase				
Employment Opportunities				
To promote the employment of local persons	Recruitment of local workers will be undertaken without discrimination and in accordance with company recruitment policy by contractors involved in construction	Contractor	On commencement of construction activities	Unemployed people of area will get job opportunities and their standard of living improved
To promote the use of local service providers	Local procurement of goods and services will be undertaken wherever possible and cost effective and where practicable to the project	Contractor	On commencement of construction activities	Indirect job opportunities
Safety during construction				
To ensure safety on construction site	• Safety signage will be put in relevant places within the construction site • Construction drivers are subjected to public safety awareness • Reckless driving by construction workers will be prohibited and monitored • Workers will be given PPEs such as; helmets, mask, ear-	Contractor/Compliance Department	On commencement of construction activities	Safety of workers will be ensured by implementing proposed mitigation measures

	plugs/muffs, safety boots, etc. and its use will be strictly enforced • Workers will be trained on the regular basis regarding personal safety • Incidents will be reported directly to the concerned authority			
Construction waste management				
To prevent the contamination of soils and water resources due to inappropriate management and disposal of waste	• The construction site has litter bins for waste collection • Recycling or reuse of waste wherever possible. • Application of a good strategy to collect, remove and safely dispose of waste on daily basis to ensure a clean environment in the factory site • Integrated waste management system will be adopted for the proper management of the waste at site • At the end of the construction phase, left-over waste will be removed by using the standard waste management procedures • All the idle machinery and equipment will be immediately removed from the site	Contractor	Throughout construction stage	Waste will be disposed of/reused/ recycle or resale as per practices of area

	• Scrap and the debris will be removed from the site at the end of the construction stage after appropriate segregation of the material			
Pollution control management				
To contain spillages	• Proper maintenance of construction vehicles and equipment will be undertaken • Appropriate environmental security measures including shovels and plastic bags etc will be provided to prevent accidental release to ground. • Appropriate procedures and protocols will be established and monitored for materials transport and handling whilst on the site.	Contractor	On-site establishment	Potential for accidental release of materials during transport and handling on the site will be minimized.
To manage sewage	Existing toilets will be used	Contractor	On commencement of construction	
Protection of biodiversity				
To avoid unnecessary disturbance of and quick recovery of biodiversity in the plant site	• Avoid destruction of biodiversity outside the designated factory construction site • Minimize clearing of vegetation during construction	Contactor	Throughout construction phase	Vegetation loss cannot be avoided, but successful restoration, improvement and long-term management of the surrounding areas and maintenance of

	• Surface soil excavated during construction to be placed back on the sub-soil to fast vegetation recovery • Prepare and implement an appropriate landscaping programme to help in re-vegetation of affected project areas after construction • The flora of the site will be restored at the end of the construction phase by landscaping and planting native vegetation			planted trees will be provided
Air quality & dust management				
To minimize the dust entrainment during construction	• Regular surface wetting will be implemented on dusty sections in the factory construction site • Strict on-site speed controls will be enforced for construction vehicles • All trucks hauling soil, sand and other loose materials will be covered • No excavation activity will be carried out during windy days • Fuel-efficient and well-maintained haulage trucks will be employed to minimize exhaust emissions	Contractor	On commencement of construction activities	Dust propagation was limited to construction area and did not influence local community. However workers will be supplied with dust masks especially on dry days.

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

	• Adequate security for workers will be be provided during construction • Sensitize workers to operate in teams			
Operation phase				
Wastewater management				
Degradation of surface waters quality due to process water and sewage direct disposal	wastewater is mainly generated from equipment washing, aggregate dust suppression, and cooling processes.. It will be disposed off after Treatment effluent treatment plant. Municipal wastewater generator from domestic use and cleaning is disposed off as per area practices.	Nazim & Qasim (Pvt.) Limited.	Throughout project life cycle	None
Air quality management				
Particulate emissions and generator stack emissions	• No air emission is likely to be released during operation of the project; except the dust or PM to be produced during floor cleaning and other such operations, which also will not be posing any environmental threat (will not breach the safe	Nazim & Qasim (Pvt.) Limited.	Throughout operation phase	Local air quality will be virtually unaffected and will be based on PEQs

	standards). Wet suppression is done to control dust emissions. Generator emissions will be controlled by providing proper enclosure, tuning and maintenance.			
Noise & vibration				
To minimize disturbance of communities due to noise	• All the machinery will be installed and operated in a closed hall and from operation of machinery noise will not be a problem for the residents in the area nearby. Further Administration of the unit will take the precautionary measures to avoid the noise emissions. There is no possibility of Noise pollution • A thick greenbelt will be developed all around the plant which will be acting as noise barrier. • Introduction of control and monitoring rooms having good sound insulation properties. • All the workers will be provided with ear plugs. • All the transporters will be advised to carry out regular	Nazim & Qasim (Pvt.) Limited.	Throughout project life cycle	Noise level will be based on PEQs

	maintenance of their vehicles.			
Traffic & transport				
Increased heavy vehicles traffic both locally and nationally.	• Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion	Management of Nazim & Qasim (Pvt.) Limited.	Throughout project operation	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.
EHS				
To minimize loss work injury/hazards/incidents/accidents	• Training regarding EHS should be given on the regular basis • Workers will be given PPEs such as; helmets, mask, ear-plugs/muffs, safety boots, etc. • It should be strictly enforced to wear PPEs while working • Workers will be trained on the regular basis regarding personal safety and disaster management • Incidents should be reported directly to the concerned authority	Compliance Department	Throughout life cycle of project	Potential of injuries will be minimized
First aid				
To ensure safety	• First aid box will be available	Compliance	Throughout life	None

and health	at the site • First aid training will be given to the employees on the regular basis • Numbers of all the concerned/authorized persons that will be contacted in the case of emergency will be displayed on-site	Department	cycle of project	
Fire hazard				
To prevent any disaster	• Firefighting equipment including DCP type fire extinguisher, CO2 Type extinguisher, sand buckets, sand drums with spade and hose pipe cabinet will be installed inside the plant • All the equipment will be placed at strategic locations where the risk of out-burst of the fire is high. List of fire posts is annexed. • Smoking will not be permitted in the vicinity of the plant • Regular site inspection will be done to eliminate all the chances of the hazards • Checking and maintenance of the fire-fighting equipment will be carried out on the regular	Compliance Department	Throughout life cycle of project	Potential of disaster will be minimized by suggested mitigation measures implementation

	basis • Emergency evacuation plan is annexed.			
Employment				
To provide job opportunities and helping in improving living standard of people	• During this phase, skilled and unskilled labour will be required. • Employment opportunities for the un-skilled workers will therefore increase which will enhance the positive benefits for the local people who are in dire need of income for sustenance. • Indirect opportunities for employment will arise from the provision of services to the construction teams, such as sale of raw-material such as cement, bricks, sand etc., as well as food and beverages for the labour and after completion of construction phase serve as a permanent business opportunity.	Nazim & Qasim (Pvt.) Limited.	During construction and operation phase	Direct and indirect jobs

6.6 ENVIRONMENTAL MONITORING PLAN

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

Table 6-2: Environmental Monitoring Plan

Env. Components	Project Stage	Parameters	Instrument	Standards	Monitoring			Institutional Responsibility
					Location	Frequency	Duration	
Air	Construction	PM_{10}, SO_2, NO_2, CO, SPM ,O_3	Air Quality Monitors/Gadgets	PEQS	Project site	Twice during construction	As per approved testing method	Contractor through approved monitoring lab
	Operation	Stack emissions	Air Quality Monitors/Gadgets	PEQs	stack	Monthly	As per approved testing method	Through approved third party/monitoring lab

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

6.7 ROLES & RESPONSIBILITIES OF ENVIRONMENT MANAGEMENT TEAM

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

6.7.1 Primary Responsibilities

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

6.7.2 Operation Management & Control

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

6.7.3 Supervision & Monitoring

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

6.8 REPORTING & REVIEWING PROCEDURES

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

6.8.1 MEETINGS

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

- Kick-off meetings
- Weekly meetings

The purpose of the kick-off meeting will be to present the EMP to project staff and discuss its implementation and to discuss any event of environmental significance that has happened in the under-discussion industry or a similar industrial unit to investigate its route causes and develop its solutions.

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

environmental report.

6.8.2 CHANGES-RECORD REGISTER

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

6.9 ENVIRONMENTAL TRAINING

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

Table 6-3: Training Program

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

6.10 EQUIPMENT MAINTENANCE DETAILS

The project is about Asphalt Manufacturing Plant namely “Nazim & Qasim (Pvt.) Limited.”. Machines in said unit will be maintained on the regular basis. The fire-fighting equipment that would be installed in the halls/buildings will also be checked and maintained or regular basis. Only fire safety equipment such as; portable fire extinguishers will be installed which will need regular

maintenance and check in order to eliminate hazards of associated the fire risks. Following is the maintenance details for the machines and equipments:

Task	Weekly	Monthly	Semi-Annually	Annually
Visual Inspection	✓			
Testing and Inspection			✓	
Maintenance of Machines		✓		
Fire Mains and Nozzles		✓		
Containers/Cylinders			✓	
Control and Section Valves			✓	

6.11 ENVIRONMENTAL BUDGET

Approximately PKR 0.2 Million budget will be reserved for tree plantation, solid waste management, wastewater management and environmental monitoring. Monitoring tests for ambient air quality, noise and groundwater quality will also be conducted.

Table 6-4: Schedule for Implementation & Environmental budget

Amenities	Frequency	Cost in PKR (Million)	
Ambient air monitoring	Construction: Biannualy Operation: quarterly	20,000/-	0.2 Million
Noise monitoring	Construction: Biannualy Operation: quarterly	10,000/-	
Water quality monitoring	Construction: Biannualy Operation:	20,000/-	

	quarterly		
Health & safety	Daily	30,000/-	
Tree Plantation/Green Belts Development	Monthly	60,000/-	
Solid Waste Management	Monthly	60,000/-	
Total Cost		**PKR 0.2 Million**	

7 *CHAPTER 7:* CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

The report presents Environmental Impact Assessment (EIA) of the said Asphalt Manufacturing Plant .

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

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

Based on overall assessment of the environmental impact of the project, it is concluded that the economic benefit from the project is not at the cost of environment. From the historical records and vast experience in sustainable development keeping environment as integral part of manufacturing system, Nazim & Qasim (Pvt.) Limited. is worthy of Environmental approval. Further the project is not likely to cause any significant adverse impact on the physical and biological environment but positive impact on social development and economic prosperity of the area, provided that suitable mitigation measures as identified in this study are implemented.

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

7.2 RECOMMENDATIONS

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

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