2023

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LIST OF ABBREVIATIONS

EIA	Environmental Impact assessment
PEPA	Pakistan Environmental Protection Act
PEPA	Punjab Environmental Protection Act
NEQS	National Environmental Quality Standards
EAR	Environmental Audit Report
ToRs	Term of References
WAPDA	Water And Power Development Authority
WASA	Water and sanitation authority
EMP	Environmental Management plan
EMC	Environmental Monitoring Cell
NOC	No Objection Certificate
NCS	National Conservation Strategy
LAA	Land Acquisition Act
P & D Department	Planning and Development Department
Pak-EPA	Pakistan Environmental Protection Agency
SWM	Solid Waste Management
CSR	Corporate Social Responsibility

TMA	Town Municipal Authority
dB (A)	Decibel
PPM	Part per million
$\mu g/m^3$	Microgram per cubic meter
MTM	Metric Tons Per Month
KVA	Kilo Volt Ampere
PPEs	Personal protective equipment's
TDS	Total dissolve solid
TSS	Total suspended solid
SS	Suspended solid
COD	Chemical oxygen demand
BOD	Biological oxygen demand
HC	Hydrocarbons
PM	Particulate matter
PEQs	Punjab Environmental quality standards

DISCLAIMER

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

Author: _____

EIA Team

Executive Summary

Title and Location of Project:

The subject project is a proposed Construction of Scrap Storage Facility and Copper/Aluminum Smelting Unit under the name of M/S Metal Zone Recycling Pvt. Ltd. located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala. The Total Production capacity of the Subject project will be 1500 Kg/h. The aim of this project is to produce Copper/Aluminum ingot and sell out in local market. The subject project cost is approx. 220 million. The final product will be Copper/Aluminum ingot.

The process of smelting copper/Aluminum in a furnace will involves several stages to transform copper/Aluminum-bearing scrap i.e., Al wire, Al cu wire, ACSR wire, compressors and motor scrap into refined copper/Aluminum. Initially, the copper/Aluminum-bearing scrap will be purchased as raw material, The Aluminum/ copper containing scrap will be break down/segregate to obtain a suitable feed material (copper/Aluminum). Insulated cable wire will be feed into a granulator which will convert and segregate copper and rubber/plastic in form of fine particles. Next step will be feeding of the copper/Aluminum material into smelting furnace. In the furnace, the feed material will be subjected to high temperatures, where reactions take place. Simultaneously, impurities present, such as sulfur, iron, and other elements, are either oxidized or form a slag. The slag, with lower density, floats on top of the molten copper/Aluminum. At regular intervals, the furnace will be tapped, and the molten copper/Aluminum will be drawn off through a tap hole, while the slag is periodically removed. The obtained copper/Aluminum, known as blister copper/Aluminum, the final product will be ingot from furnace and in form of fine particles from granulator.

Location coordinates	**32° 5’10.26”N, 74° 9’28.20”E** (Google map is attached as **Annexure-E**)
North	Road/open area

South	Open area
East	Sheikhupura road
West	Open land

Figure 1: Indication of Project Site on Google Earth Map

Purpose of this Report:

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

- Policy and procedures for filing, review and approval of environmental assessments.
- Guidelines for the preparation and review of environmental reports.
- Guidelines for public participation.

- Guidelines for sensitive and critical areas.
- Detailed sectoral guidelines

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

Identification of the project and proponent

According to the Environmental Protection Agency, Government of the Punjab, Lahore- "List of Projects Requiring an EIA", and the project under consideration categories falls in the category of the projects requiring Environmental Impact Assessment (EIA), Schedule II, sub section B, Clue 19. Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act, PEPA-1997(Amended 2012). TORs of the study under clause 5 (f) of policy and procedure for the filing, review and approval of Environmental Impact Assessment are annexed as **Annexure-A**

Project Proponent:

Table 1: Proponent Details

Name	**Muhammad Nasir S/o Abdul Majeed**
CNIC	34101-5984697-3
Mailing Address	Wapda town, house no. 458, Block C-1, Gujranwala

CNIC and other relevant documents are attached as **Annexure-B**

Objectives of Project

The Objectives of project are:

- Production of the Copper/Aluminum ingot.
- To generate business for the proponent by keeping in view the sustainable development and social soundness aspects of the surrounding society.

- To meet Customer needs and exception through innovative product development in line with changing market trends
- Subject Project has benefit towards local population of district
- To provide job opportunities to local public and to improve their living standards
- To improve the economic activities
- To provide better infrastructure
- Private investment would be beneficial for the national economy and GDP as well
- Project is functioning in a sustainable way for the manufacturing of subject items.

Brief Outline of Project:

Table 2: Brief outline of project

Name of Company	M/S Metal Zone Recycling (Pvt) Ltd.
Purpose of the Project	Scrap storage Facility and Copper /Aluminum Smelting Unit
Land Requirement	
Total Area of the unit	25840 SFT, and the total covered area will be 8154 SFT and open area will be 22251 SFT
Raw Material	
Raw Material ingredients	Used compressors/ motor scrap/ACSR wire, Al-Cu wire
Raw Material Source	Import, Local
Products	
Production Capacity	1500 Kg/h.
Finishing Product name	Copper/Aluminum ingot- Copper – Aluminum Granules
Other precautions	Safety & other hazards.
Final Destination	Local Market
Water Requirement	

Source of water drinking water	Groundwater
Ways of extraction	Motor pump, (Turbine)
Source of Water consumption	Underground.
Source of waste water	Water is not directly involved in the Copper/Aluminum Smelting furnace itself, its use for dust suppression, and equipment cleaning. Only domestic wastewater will be generated.
Solid Waste	
Source of solid waste generation	Domestic and scrap
Mode of disposal	Handed over to contractor, waste bins
Manpower	
Labor Force	About 60-100 person
Power Requirements	
Source of power	WAPDA- 50kv / Solar- 20KV

Summary of Major Impacts & Mitigations related to Construction Phase of the Proposed Project:

Potential Impact	Criteria for determining Significance	Key Mitigation Measures
Dust Emissions— Dust and PM may be generated during road construction and excavation activities. Gaseous emissions from site generators and	An increase in visible dust beyond the boundaries of the construction site or Concentration of PM_{10} in excess of 150 $\mu g/m^3$ PEQS for Ambient Air	Sprinkling of water on dusty roads, tracts and surfaces is recommended; During excavation works drop heights will be minimized to control the fall of materials reducing dust escape;

transportation vehicles may affect ambient air quality in the vicinity of the project site.		Use of wind shield around stockpiles is recommended; Vehicle speed restrictions should be applied in the project area; Raw materials should be transported in covered trucks;
Solid waste Management— If solid waste will not be managed properly, it may cause negative impacts	Generation of excessive waste; Recyclable waste and reusable waste is discarded, Littering, Improper disposal.	Constructional waste should be utilized for road filling and maintenance purposes; Domestic waste should be disposed off properly, handed over to contractors, placed in bins; Proper solid waste management plan should be devised and implemented.
Waste water - water used in construction process and excessive water generate as wastewater and it also produced from campsite domestic activities	PEQS parameters	Waste water after treatment should be drain out in nearby drain
Construction Noise- Noise may be generated during landscaping activities and from generators and transportation vehicles at the project site; which may be a nuisance for	OSHA standards	Activities generating high levels of noise should be minimized at the project site. If the noise level will exceed the permissible limits with reference to national and OSHA standards, following recommendations are

the workers.		suggested to take action against the high noise levels: • Proper tuning of construction machinery and vehicles is recommended. • Ear muffs and ear plugs are recommended in case of high noise levels. • Rubber wounds should be placed underneath the generator to avoid the vibration (in case of installation of generators)
Vegetation Loss/ Soil erosion— Minor negative impact may arise as only some weeds and grasses are present at the project site which will be cleared for the purpose of construction.	Unnecessary or excessive removal of trees and shrubs.	No tree cutting/ vegetation loss issue will be involved in the subject project as project site is free of any dense vegetation and trees. Preparation of a Reinstatement Plan to restore the land after the constructional activities is recommended.
Soil Contamination— Oil and Chemical spills can contaminate the soil.	Presence of visible amount of hydrocarbon in soil	Provision of spill prevention and control kits; Use of impermeable surfaces in workshops, and storage areas; Contaminated soil will be collected and incinerated.
Traffic issues- Traffic	TEPA rules	Speed limit of 10 km/h should be

issues may arise due to the constructional activities at the project site if traffic will not be managed properly.		maintained on the access road; Ample parking area must be allocated at the project site. Guards should be hired to manage the traffic at the project site.
Socioeconomic impacts—Inter-cultural differences between the project staff from other areas and the local community may arise due to the subject project. Positive socioeconomic impacts due to increased infrastructure, employment opportunities and economic growth.	No community complaints. Increased employment facilities in the area; Increased infrastructure	Training of the non-local project staff on local culture and norms; Avoidance of unnecessary interaction of local population with the non-local project staff. Employment opportunities should be provided to the local people.

Summary of Major Impacts & Mitigations related to Subject Project:

Table 3: Summary of impacts and their mitigation

Aspect	Impacts	Mitigation Measures
Project Location	There are no significant negative impacts on the environment due to the project location/ selected site, because the project is Copper/Aluminum ingot producing	Surveillance of environmental management with respect to sustainability is recommended

	unit having no significant impact on the surrounding industrial unit and community.	
Project Design	Possible impacts due to design can be: • Structure of the building • ventilation • Working space • Health & safety	The proposed building will be well ventilated and provided with exhaust duct system (dust collecting system) to provide clean indoor environment. Working space will be enough supporting the working and ergonomic conditions for the workers. Emergency exits points must be available within the project building (can be seen on map)
Waste Water	Waste water will be produced from, washing and cleaning of the equipment. It also includes the sanitary waste	Domestic waste water will be drained out in nearby local drain after initial treatment. There is no process waste water at the unit. There will be two main source of wastewater first; the waste water generated from the domestic source second is the washing of floor and machineries. Monitoring of waste water is recommended as per PEPA, PEQS Rules 2001
Land & Soil	Soil can be contaminated due to leaching of oil, fuel, any stored oil if mishandling of the fuel or oil will be occurred	All the possible soil contaminants are placed on the designated paved area to avoid any soil contamination.
Air pollution and Dust emission	Emissions from furnace will be produced During the operational phase dust is	All project vehicles will be checked regularly to ensure that engines are in sound working condition and will not

	only be generated due to the transportation of final products and that impact will outside the unit on the unpaved roads or non-concreted roads. Flue gases can be generated from the vehicular transportation and generator if these will not be maintained or tuned properly.	emitting smoke. M/S METAL ZONE RECYCLING (Pvt.) Ltd will be provide PPEs to the labor during handling and processing of raw material and product. Grassy area will be established within the premises of the unit to avoid the ambient dust. Tracks are properly paved & proper water sprinkling will be done.
Noise	Noise can be generated due to the Operation of machinery and vehicles transporting materials	Ear plugs/muffs are recommended at all the noise generation points. Trainings for safe driving practices & HSE trainings of the employees and workers is recommended. It is recommended to minimize use of horns by project vehicles. Monitoring are being conducted on quarterly basis as per PEPA, PEQS Rules 2001
Solid Waste	Solid waste will be generated due to domestic sources and scrap.	Scrap will be sold to local vendor and domestic waste will be handed over to contractor Waste bins will be placed at suitable places for the collection of solid waste collection.
Odor	There will be no significant source of odor generation.	In case of odor proper SOP will be followed to cope with odor is recommended.
Health and Safety	Health and safety issues may arose during working hours, by mishandling machinery and	Safe drinking water will be provided to workers, staff, and poor people of the area.

	improper work practices.	Training of workers will be conducted regarding health safety & Environment, by the HSE department of M/S METAL ZONE RECYCLING (Pvt.) Ltd. HSE Resource will be deployed on plant to ensure HSE policy and procedures PPEs will be implemented at workplace. First aid measures/medical facility will be provided to project related employees. Proper housekeeping will be ensured at workplace. Quality and safety manual will be implemented by M/S METAL ZONE RECYCLING (Pvt.) Ltd.

Proposed Monitoring:

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

Ambient Air Quality Monitoring

Regular monitoring of ambient air quality should be conducted during operational phase and report should be submitted to EPA Punjab.

Particulate Matter/Dust

Regular monitoring for particulate matter should be conducted during operational phase and report should be submitted to EPA Punjab.

Flue Gases

Regular monitoring for stack emissions should be conducted during operational phase as per NEQS Rules 2001 and report should be submitted to EPA Punjab.

Noise

Regular monitoring for noise level should be maintained periodically during operational phase and report should be submitted to EPA Punjab.

Water quality

Regular monitoring for waste water should be conducted during operational phase and report should be submitted to EPA Punjab. Record should be maintained regarding the underground water pump and consumption.

Schedules of Proposed Monitoring:

Table 4: Proposed Monitoring

Sr. No.	Parameters	Monitoring Schedules	Monitoring Duration/ description
1	Ambient Air Monitoring (NOx, COx, SOx, H_2S, PM_{10})	As Per NEQs smart rule	24 Hours
2	Noise Level	As Per NEQs smart rule	At boundary
3	Flue Gases (vehicular + stack emissions)	As Per NEQs smart rule	15 min/sample
4	Firefighting Inspection	As Per NEQs smart rule	Throughout the unit
5	Water quality	As Per NEQs smart rule	Some parameters on site & others in lab

Recommendation: Environmental Monitoring data log book should be maintained by the project proponent.

CHAPTER #1
INTRODUCTION

This Section of the report provides an overview of the rational of the Project, objective of project, requirement of the project, purpose of the report and approach adopted to conduct the Environmental Impact Assessment Study.

Purpose of the Report:

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

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

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

M/S Metal Zone Recycling (Pvt.) Ltd intends to submit Environmental Impact Assessment (EIA for the section 12, PEPA, 1997 (Amended 2012), under the name of M/S METAL ZONE RECYCLING (Pvt) Ltd located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala.

Pak Green Enviro Engineering Pvt. Ltd. is submitting Environmental Impact Assessment (EIA) report of the subject proposed project under section-12 of the Punjab Environmental

Protection Act, 1997 (Amended 2012) on the behalf of M/S METAL ZONE RECYCLING (Pvt.) Ltd .

The Pak Green Enviro Engineering Pvt. Ltd.. conducted Environmental Impact Assessment (EIA) as per advised by the Environment Protection Agency of Punjab for M/S METAL ZONE RECYCLING (Pvt.) Ltd . The EIA report covers the examination of the physical, biological and environmental socioeconomic impacts on local area and population during operational stage along with monitoring for environmental parameters of the existing unit, to comply with National Environmental Quality Standards (NEQS)/ Punjab Environmental Quality standards (PEQs).

Identification of the Project

According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2000 for filling, review and approval of environmental assessments, the present project is categorized in the category B (Manufacturing & Processing), Clue 19 of Schedule-II for EIA, of PEPA, EIA/IEE Regulations, 2000 (Amended 2022), requiring Environmental Impact Assessment (EIA). Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

Project Title:

The subject proposed project is the construction of Aluminum/ copper containing scrap Storage Facility and Copper/Aluminum Smelting Unit under the name of M/S Metal Zone Recycling (Pvt.) Ltd located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala.

Project Proponent:

Table 5: Credentials of Proponent

Name	**Muhammad Nasir S/o Abdul Majeed**
CNIC	34101-5984697-3
Mailing Address	Wapda town, house no. 458, Block C-1, Gujranwala

The CNIC and other relevant documents are attached as **Annexure-B**

Brief Description of Nature, Size and Location of Project:

The subject project involves the proposed construction of Aluminum/ Copper containing scrap Storage Facility and Copper/Aluminum Smelting Unit under the name of M/S Metal Zone Recycling (Pvt.) Ltd located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala.

Total area of the project is 25840 SFT, and the total covered area will be 8154 SFT and open area will be 22251 SFT. A complete layout map of the area is annexed (**Annexure-C**) showing the details of length and width of the area occupied by the M/S Metal Zone Recycling (Pvt.) Ltd.

The production capacity of project is 1500 Kg/h. The subject project capital cost is 220 million.

Methodology for EIA Report:

For the purpose of this report, environmental and social baseline data and conditions at/around the project site has been undertaken. The methodology adopted to conduct the EIA Study includes Review of Layout Plan, detail meetings with the representative of proponent, orientation session, development of data acquisition plan, Analysis of Data, review of existing data, primary & secondary data collection survey, Screening of Potential Environmental Impacts and Mitigation Measures and also interviews with people near the project area has been conducted to collect their opinion regarding the project and after findings it has been concluded that the project has mostly positive impacts on the socio-economic environment of the existing community.

Structure of Report:

The EIA report is divided into 9 chapters and appendices as:

Chapter 1: Covers introduction to project

Chapter 2: Alternative

Chapter 3: Presents Project Description

Chapter 4: Describes in detail the Existing Environmental Baseline conditions of the study area

Chapter 5: Exhibits the Impacts Assessment and their Mitigation Measures

Chapter 6: Outlines the monitoring plan and EMP to implement the suggested mitigation measures

Chapter 7: Explains the Stakeholders Participation

Chapter 8: Gives the Conclusion and Recommendations

SCREENING

The proposed project falls under clue 19 of category B of Schedule II of Review of IEE and EIA Regulations, 2000 (Amended 2022).

SCOPING

Scoping is the preliminary stage of Environmental Impact Assessment where initial visits of the project site is done to assess the spatial and temporal boundaries of the project, to asses significant impacts and consult the local community about their issues regarding the project.

SPATIAL AND TEMPORAL BOUNDARIES OF THE PROJECT

The project lies at the industrial area of having several industrial units around its vicinity. The proposed project is the construction of Scrap storage Facility and Copper/Aluminum Smelting Unit under the name of M/S Metal Zone Recycling Pvt. Limited Gujranwala. Project layout is shown in the map attached as **Annexure-C**

IMPORTANT ISSUES AND CONCERNS RAISED DURING THE PROJECT

As it is the proposed construction of Scrap storage Facility and Copper/Aluminum Smelting Unit all safety measures and safety protocols will be taken by M/S Metal Zone Recycling Pvt. Ltd Project area is industrial in nature and many other industrial units are already in process of establishment and operation in the surroundings. The community was also concerned about employment to local people. The proponent made sure that maximum job opportunities will be provided to the residents.

CHAPTER #2

CONSIDERATION OF ALTERNATIVES

Alternative Consideration and Reason for Their Rejection:

Technology Alternative:

The subject project will be used imported technology for copper/Aluminum ingot. Alternate conventional technologies for the Scrap storage Facility and Copper/Aluminum Smelting Unit are complex, expensive and involving generation of by-products does not seem economical. the technology used by the project is more efficient as compared to conventional technology because it prevents material loss and produce very low waste.

Reasons for selection of current technology:

- Low waste production
- High efficiency
- Imported advance technology
- Environment friendly

Activity/Demand Alternative:

The subject proposed project is the scrap storage Facility and Copper/Aluminum Smelting unit. There is not any hazardous activity or manufacturing being done. The subject project is using environmental friendly and modern technology by hygienic processing for the manufacturing of Copper/Aluminum ingot. The design has been improved to make it environmental friendly and sustainable.

Process Alternative

The company will produce Copper/Aluminum ingot. The process involves hygienic processing of imported and locally available compressors to produce the final products. Domestic and slag waste Solid waste will be generated from the project that will be collected in solid waste bins and handed over to contractors. Wastewater from domestic sources and wastewater from washing area will be treated in allied treatment facility and drained into nearby drain while water used for cooling purpose is recycled within the process.

CHAPTER #3

DESCRIPTION OF THE PROJECT

Type & Category of Project:

The subject project involves the Scrap storage Facility and Copper/Aluminum Smelting Unit under the name of M/S METAL ZONE RECYCLING (Pvt.) Ltd located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala over an area of 25840 SFT, and the total covered area will be 8154 SFT and open area will be 22251 SFT.

Production capacity of project is 1500 Kg/h. The aim of this project is to sale products in the market to overcome the increasing demand in the country. The subject project cost is about 220 million.

According to the Punjab Environmental Protection Act 1997 (Amended 2012) and its interpretation as per Review of IEE & EIA Regulations, 2000 (Amended 2022) for filling, review and approval of environmental assessments, the present project is categorized in the category B (Manufacturing & Processing), Clue 19 of Schedule-II for EIA, of PEPA, Regulations, 2022, requiring Environmental Impact Assessment (EIA). Further, the client is required to fulfill the legal requirements of the Section-12 of the Punjab Environment Protection Act 1997(Amended 2012).

Objectives of Project:

Present Project has following objectives;

- Production of the Copper/Aluminum ingot.
- Subject Project has benefit towards local population of District.
- To provide job opportunities to local public and to improve their living standards
- To improve the economic activities
- To provide better infrastructure
- Private investment would be beneficial for the national economy and GDP as well
- Project is functioning in a sustainable way for the manufacturing of subject items.

Status of Project

The said project is the proposed construction of Scrap storage Facility and Copper/Aluminum Smelting Unit.

Land Use on the Site:

The project site is situated in the Industrial/Agriculture area. All laws and by laws are applicable to any land planning and use as well. Proponent is the owner of land, Land documents are attached as **Annexure-G.**

Location and Site Layout of Project:

The subject unit is located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala

Location coordinates	**32° 5'10.26"N, 74° 9'28.20"E** (Google map is attached as **Annexure-E**)
North	Road/open area
South	Open area
East	Sheikhupura road
West	Open land

Cost and Magnitude of Operation:

The cost of the proposed project is about 220 million.

Schedule of Implementation:

The subject project proposed construction of unit. The construction will be completed within few months after obtaining the Environmental Approval.

Figure 2: Arial View of Project Site & nearby Industries

Description of the Project:

The said project is the proposed construction of Scrap storage Facility and Copper/Aluminum Smelting Unit. The process in detail is discussed below.

Making Process of Copper/Aluminum ingot

The process of smelting copper/Aluminum in a furnace will involves several stages to transform copper/Aluminum-bearing scrap i.e. Al wire, Al cu wire, ACSR wire, compressors and motor scrap into refined copper/Aluminum. Initially, the copper/Aluminum-bearing scrap will be purchased as raw material, The Aluminum/ copper containing scrap will be break down/segregate to obtain a suitable feed material (copper/Aluminum). Insulated cable wire will be feed into a granulator which will convert and segregate copper and rubber/ plastic in form of fine particles. Next step will be feeding of the copper/Aluminum material into smelting furnace. In the furnace, the feed material will be subjected to high temperatures, where reactions take place. Simultaneously, impurities present, such as sulfur, iron, and other elements, are either oxidized or form a slag. The slag, with lower density, floats on top of the molten

copper/Aluminum. At regular intervals, the furnace will be tapped, and the molten copper/Aluminum will be drawn off through a tap hole, while the slag is periodically removed. The obtained copper/Aluminum, known as blister copper/Aluminum, the final product will be ingot from furnace and in form of fine particles from granulator.

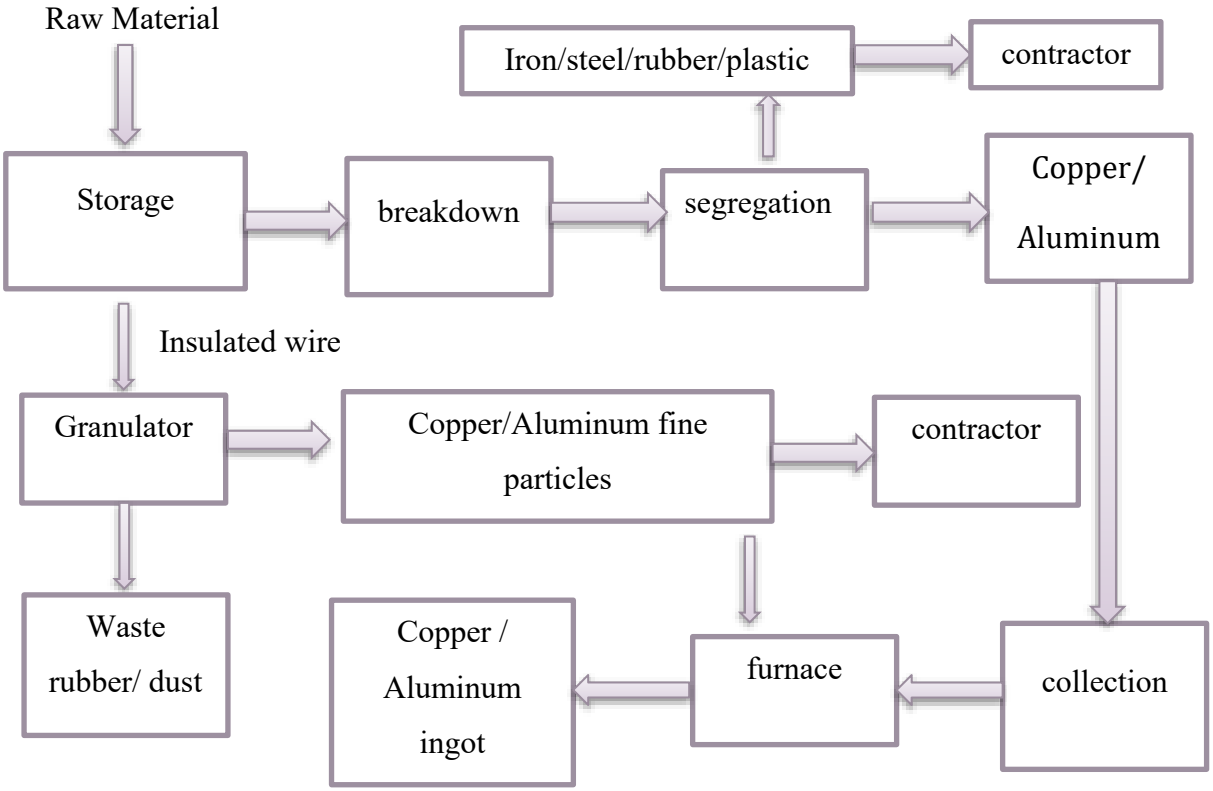
Raw Material

The Raw material includes Aluminum/Copper containing Scrap i.e., Aluminum-copper Wire, ACSR Wire, Compressors and motor scrap etc.

Product

The fine product will be in two forms, it may be sold to contractors in the form of fine particles after granulation in granulator and can be in the form of ingot after smelting in furnace.

Process Flow Chart:



Salient Features of Project:

Table 6: Silent Features of Project

Name of Company	M/S Metal Zone Recycling (Pvt.) Ltd
Purpose of the Project	Scrap storage Facility and Copper/Aluminum Smelting Unit
Land Requirement	
Total Area of the unit	25840 SFT, and the total covered area will be 8154 SFT and open area will be 22251 SFT
Raw Material	
Raw Material ingredients	Used compressors, motor scrap ACSR Wire, Al-Cu wire
Raw Material Source	Import, Local
Products	
Production Capacity furnace	1500 Kg/h.
Production capacity granulator	10 ton per day
Finishing Product name	Copper/Aluminum ingot
Other precautions	Safety & other hazards.
Final Destination	Local Market
Water Requirement	
Source of water drinking water	Groundwater
Ways of extraction	Motor pump
Source of Water consumption	Underground.
Source of waste water	Water is not directly involved in the Copper/Aluminum Smelting furnace itself, its use for cooling, dust suppression, and equipment cleaning. Only domestic wastewater will be

	generated.
Solid Waste	
Source of solid waste generation	Domestic and scrap
Mode of disposal	Handed over to contractor, waste bins
Manpower	
Labor Force	About 60-70 person
Power Requirements	
Source of power	WAPDA Stand by-Generator

Waste Products of Project Process

Waste Water

Main source of wastewater is from domestic and washing of floor and machineries. There will be no wastewater from the project process.

Waste Water System:

Wastewater will be reused for sprinkling purpose or irrigation purpose after treated in treatment facility.

Atmospheric Emissions:

Air emissions from stacks of generator & particulate matter generated from the process are within NEQs/PEQs. The air quality assessment report is attached with report in **ANNEXURE-D**.

Solid Waste Disposal:

Domestic and Solid waste will be produced about 30-70 kg which are placed in solid waste bins within the project boundary wall and handed over to contractors.

Plantation:

Sufficient plantation will be done within the premises of the unit and in the surrounding

Infrastructure of Project:

Piped water from the civil water supply will not be available to the area. Water demand will be fulfilled by the Motor Pump. Electricity will be supplied by the Water and Power Development Authority (WAPDA) provided to the project. Generator facility will also be present to cope with load shading hours.

Fire Protection System

Addressable fire protection equipment's like fire extinguishers and foam trolley units will be provided to protect the workplace against any fire hazards.

Safety Trainings

Workers and all the staff will be provided with proper training about the work and safety practices pre-employment and during employment. The proponent will be conducting training regarding HSE, Firefighting, and usage of PPES, handling of products etc. and to improve the training modules.

Use of Drugs and Narcotics

Drugs and narcotics will be strictly prohibited in the unit. Smoking will only be allowed in rest timings at properly isolated places. Unit/Company has designated smoking place.

Quality Lab

M/S Metal Zone Recycling (Pvt.) Ltd will establish its own Quality lab to inspect the raw material after receiving and product before slag.

Parking

Ample parking for cars, motor bikes, loading/unloading of vehicles will be available in the premises of project.

Road access:

Main Sheikhupura-Gujranwala Road is the access road present on the east side of the subject project.

Vegetation Features of Site:

The proponent will be done plantation within the premises of project site.

Restoration & Rehabilitation Plans:

All possible precaution will be taken to prevent an untoward incident in terms of life and property losses. All measures will be undertaken for ensuring occupational safety, security and clean environment in the project area. Local species of trees and flowering plants have been planted within the unit premises.

CHAPTER #4
DESCRIPTION OF ENVIRONMENT

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

Physical Environment:

Topography & Geography

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

Physical Environment/ Resources

Geography and Climate

The climate of the district is hot, dry during summer, and moderately cold in winter. The summer season starts in April and continues till September. June is the hottest month with maximum and minimum temperatures of 40ºC and 27ºC, respectively. The winter season begins in November and lasts till March. January is the coldest month. The maximum and minimum temperatures during this month are 19ºC and 5ºC, respectively. The average annual rainfall in the district is 888 millimeters. The soil is alluvial and fertile. It is a flat strip of land running roughly east to west.

Gujranwala sits at the heart of the so-called *Rechna Doab* - a strip of land between the Chenab in the north, and Ravi River in the south. Gujranwala is also part of the *Majha* - a historical region of northern Punjab. The city was built upon the plains of Punjab, and the surrounding region is unbroken plain devoid of topographical diversity.[23]

Gujranwala is 226 metres (744 ft) above sea level, sharing borders with Ghakhar Mandi and several towns and villages. About 80 kilometres (50 mi) south is the provincial capital, Lahore. Sialkot and Gujrat lie to its north. Gujrat connects Gujranwala

with Bhimber, Azad Kashmir, and Sialkot connects it with Jammu. About 160 kilometres (99 mi) southwest is Faisalabad. To its west are Hafizabad and Pindi Bhattian, which connect Gujranwala to Jhang, Chiniot and Sargodha.

Gujranwala has a hot semi-arid climate (BSh), according to the Köppen-Geiger system, and changes throughout the year. During summer (June to September), the temperature reaches 36–42 °C (97–108 °F). The coldest months are usually November to February, when the temperature can drop to an average of 7 °C (45 °F). The highest-precipitation months are usually July and August, when the monsoon reaches the Punjab. During the other months, the average rainfall is about 25 millimetres (0.98 in). The driest months are usually November to April, with little rainfall.

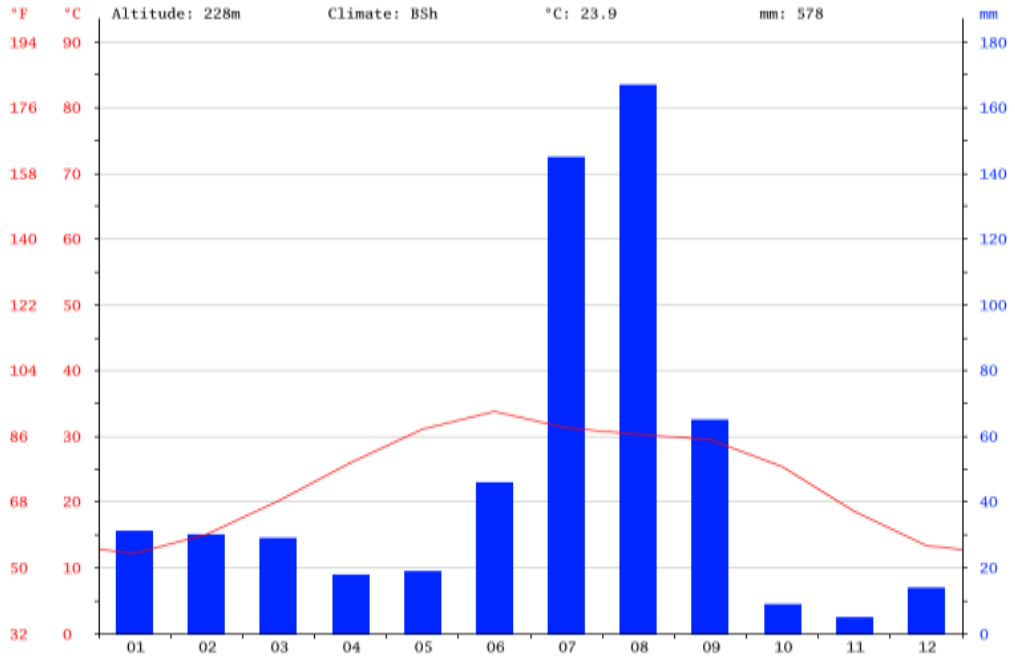


Figure 3 Temperature Graph in the whole year

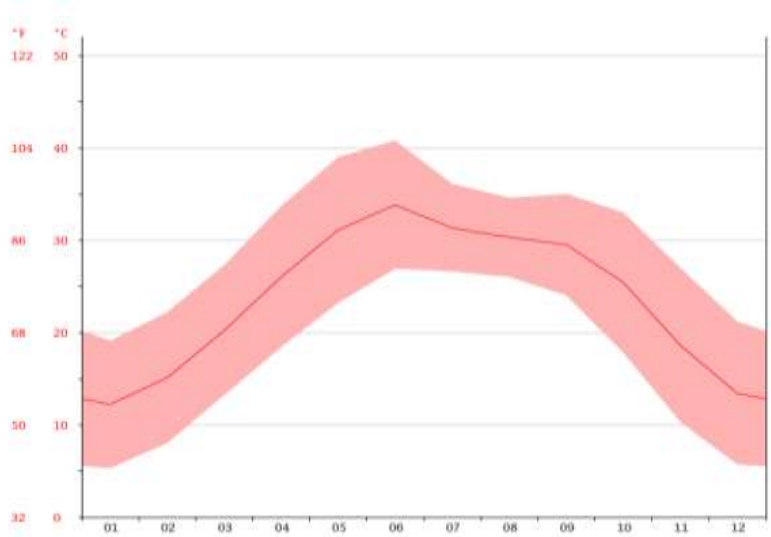


Figure 4 Temperature Graph in the whole year

GUJRANWALA WEATHER BY MONTH // WEATHER AVERAGES

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	12.2	15.1	20.2	26	31.1	33.8	31.3	30.3	28.8	25.4	18.8	13.4
Min. Temperature (°C)	5.3	8	13.2	19.4	23.2	28.6	26.6	26	24	17.8	10.3	5.7
Max. Temperature (°C)	19.1	22.2	27.3	33.7	39	40.8	36.1	34.6	33	33	27	21.2
Avg. Temperature (°F)	54.0	59.2	68.4	78.8	88.0	92.8	88.3	86.5	83.1	77.7	65.5	56.1
Min. Temperature (°F)	41.5	46.4	55.8	66.1	73.8	83.4	79.9	78.8	75.2	64.0	50.5	42.3
Max. Temperature (°F)	66.4	72.0	81.1	92.7	102.2	105.4	97.0	94.3	91.0	91.4	80.6	70.2
Precipitation / Rainfall (mm)	31	30	29	18	19	46	145	167	65	9	5	14

Between the driest and wettest months, the difference in precipitation is 162 mm. The variation in temperatures throughout the year is 21.6 °C.

Air Quality:

The major sources of air pollution in the area are vehicular traffic and transportation. To record the baseline ambient air quality of the project area, monitoring was conducted at specified locations to assess the concentration of priority pollutants (Carbon monoxide, Nitrogen dioxide, Sulphur dioxide and PM_{10}) in the air. The results of the samples are within the PEQs limits. Result table is as follow:

Instruments used for monitoring Ambient Air Quality.

Ambient air monitoring was conducted by using ambient air quality analyzer.

Particulate Matter (PM_{10})

For PM_{10} mini volume air sampler was used. In PM_{10} Sampler air is drawn into the omnidirectional inlet head at a flow rate of 16.67 LPM. The air is then accelerated toward the first impaction stage where particulate with aerodynamic diameters greater than 10mm are collected (filtered out). The air stream, carrying particulate 10 microns and smaller, continues down the inlet toward the second impaction stage where particles larger than 2.5 microns are collected. Finally, particulate 2.5mm and smaller continue down the inlet where they are collected on a 46.2 mm diameter, ring supported filter media disc

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

Noise Level:

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

Result table is given below and Lab reports are annexed as **Annexure-D.**

Ground water:

Ground water testing at the project site was conducted by the team of Pak Green Laboratories. Lab reports are annexed as **Annexure-D.**

Ecological Resources

Fisheries:

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

Biodiversity:

Flora:

Project site is free from any protected species.

Fauna:

Project site is free from any protected species.

Rare or endangered species:

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

Social and Cultural Study

Total population of the nearest area:

According to information provided by local people during the visit total population of nearest village is about 1500-1700 people. Average 4-5 person per house is living in nearest village.

Educational Institutions

Educational institute is present at the distance of approximately 1-2 km.

Hospitals

Different health care center are present near the project site within the radius of almost 3 km.

Sports

Popular games are Cricket, Hockey, Kabbadi, Pehlwani, and Body Building etc.

The project area has not any private recreational facilities.

Aesthetic Values:

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

Customs and traditions:

Project area has a typical rich Punjabi Culture. People speak Punjabi with two clearly distinct accents. People belong to different castes which include Jatt, Rajput, Araeen, Kathia, Kharal,

Fatiana, Wattu, Wehniwal and Khagga, etc. Shalwar, Qameez is the dress of majority of people however, people of urban areas also wear pant, shirt and of rural areas dhoti, kurta. Pant is now becoming equally popular among young generation both in urban and rural areas.

Quality of Life Values:

Recreational Resources and Development:

The project area has not any private recreational facilities.

Aesthetic Values:

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

Power Supply

WAPDA is the source of power Supply at site along with all the nearest places.

Natural Gas Availability

At present natural gas is available in the area.

Archaeological and Historical Treasures:

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

CHAPTER #5
POTENTIAL ENVIRONMENTAL IMPACTS & THEIR MITIGATION MEASURES

The following chapter describes the overall possible impacts of project on the physical, biological and socioeconomic environment because of construction and operation phases and mitigation measures to minimize the significance of the possible impacts up to an acceptable level.

Methodology of Impact Evaluation:

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

Leopold Matrix

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

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

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

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

Table 7: Type of impacts and their scale of importance and magnitude

Sr. No.	Type of Impact	Scale of Magnitude (0 – 10)	Scale of Importance (0 – 10)
1	No Impact	0	0
2	Low Impact	1 – 4	1 – 4

3	Medium Impact	5 – 6	5 – 6
4	High Impact	7 – 10	7 – 10

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

The next step is to evaluate the numbers which have been in the slashed boxes. The high or low numbers on any one box indicates the degree of impact of the appropriate action on the given characteristic of the environment. The assignment of magnitude and importance numbers is based, to the extent possible, on factual data rather than on the evaluator's preference. For the rating design regarding the probable impacts requires the evaluator to quantify his\her judgment. The rating scheme\scheme allows the reviewers to thoroughly follow the evaluator's line of reasoning, to aid in identifying points of agreement and disagreement. In fact, matrix is the abstract for the text of the environmental impact assessment

Table 8 Leopold Matrix

Magnitude / Importance	Physical Environment							Biological Environment		Socio-Economic Environment								Total Impact	Average Impact
	Drainage	Soil Quality	Landscape	Surface water quality	Ground water quality	Air quality	Noise	Flora	Fauna	Agricultural Land	Health & Safety	Disruption of Public Utilities	Employment	Population Disturbance	Social Disorder	Cultural Values	Traffic Management		
Transportation of raw material / products	3/5	2/2	1/1	1/2	1/2	4/6	4/5	3/4	3/4	2/3	2/2	1/1	6/6	3/4	5/6	4/5	6/7	51/65	3/3.8
Production Process	1/1	0/0	0/0	4/5	5/6	2/2	6/6	1/1	1/1	2/2	5/5	1/1	6/7	2/2	1/1	1/1	0/0	38/41	2.2/2.4
Cooling Water	2/1	1/1	1/1	0/0	5/6	2/2	1/1	0/0	0/0	1/1	1/1	1/0	0/0	0/0	0/0	0/0	0/0	15/14	0.83/0.82
Operation of Funace	1/1	1/1	0/0	0/0	0/0	6/7	6/6	1/1	1/1	0/0	3/3	0/0	0/0	1/1	1/1	0/0	0/0	21/22	1.2/1.2
Operation of generators	1/1	1/1	0/0	0/0	0/0	6/7	6/6	1/1	1/1	0/0	3/3	0/0	0/0	1/1	1/1	0/0	0/0	21/22	1.23/1.29
Operation Phase	2/2	2/3	1/1	2/2	4/5	5/6	5/5	2/1	2/2	2/3	6/6	2/1	5/6	3/2	2/2	4/4	5/6	54/57	3.17/3.35

Water consumption	5/6	2/2	1/1	3/4	6/6	1/1	1/1	1/1	1/1	2/2	2/2	1/1	0/0	0/0	0/0	0/0	0/0	26/28	1.5/1.6
Wastewater generation	5/6	2/2	1/1	3/4	6/6	1/1	1/1	1/1	1/1	2/2	2/2	1/1	0/0	0/0	0/0	0/0	0/0	26/28	1.5/1.6
Storage of raw materials	1/1	3/3	4/4	1/1	4/4	3/4	1/1	2/2	2/2	1/1	3/3	1/1	2/2	1/1	1/1	3/3	2/2	35/36	2/2.1
Social activities	1/1	3/4	2/2	1/1	3/4	4/4	4/4	3/3	3/3	4/4	5/5	5/5	7/7	3/4	6/6	4/4	5/5	63/66	3.7/3.8
Public welfare	1/1	2/2	1/1	1/1	2/2	2/2	2/2	1/1	1/1	2/2	3/3	4/4	5/5	4/5	3/3	3/3	5/5	42/43	2.4/2.5
Economic activities	3/4	3/4	2/2	1/1	3/3	4/4	4/4	1/1	1/1	1/1	4/3	4/4	5/5	4/5	6/6	5/4	7/6	58/58	3.4/3.4
Infrastructure improvement	2/2	3/4	2/2	1/1	3/4	4/4	4/4	3/3	3/3	4/4	5/5	5/5	7/7	3/4	6/6	4/4	5/5	64/67	3.7/3.9
Total Impact	28/32	25/29	16/16	18/22	42/48	44/50	45/46	20/20	20/21	23/25	44/43	26/24	43/45	25/29	32/33	28/28	35/36		
Average Impact	2.1/2.4	1.9/2.2	1.2/1.2	1.3/1.6	3.3/3.6	3.3/3.8	3.4/3.5	1.5/1.5	1.5/1.6	1.7/1.9	3.38/3.3	2/1.8	3.3/3.4	1.9/2.2	2.4/2.5	2.1/2.1	2.6/2.7		

Discussion

The minimum value of an activity causing impact on overall environment is 0.8 and maximum is 3.9. These values indicate the overall impact of this project is very low and mostly positive in terms of employment, economical activities and infrastructure development.

Impacts Analysis & Prediction:

In order to give correct categorization to the present project Rapid Environmental Assessment Procedure was followed. It revealed that there are no major adverse impacts of the project although it has many positive impacts on local public and economy. Only a few and moderate/minor impacts are projected.

Screening:

It is the first step of the environmental study. It identifies the factors that may influence the project environments. Level of the assessment is also determined.

Characterization:

Categorization of the project is done as per Pak EPA, Review of IEE and EIA Regulations, 2022. Accordingly, the project falls in Schedule-II for which an EIA level study is needed.

Meetings:

For the impact analysis and predictions detailed meetings were held with local government officials, management of M/S METAL ZONE RECYCLING (Pvt.) Ltd and local peoples. Issues were discussed that may affect the environment at any stage. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Consultation

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders, shopkeepers and workers in the area. These included local government departments, NGOs, public representatives and local residents.

Concerns of Stakeholder:

During these discussions the participants gave their candid views about the environmental issues and their potential impacts. There was unanimous positive view about the project. However, they

opinioned that mitigating measures can be minimized the environmental degradation and ward off an untoward incident/accident. Some of their main concerns are given below:

- The locals should be consulted during every phase of the project.
- Maximum employment should be provided to local area/
- Health facilities would be provided to the workers of the project.
- The project would not cause environmental degradation in any shape
- Workers would have job security during operational phase.

Mitigation & Impact Assessment Criteria:

Impact Assessment Criteria:

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

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

Mitigation Assessment Criteria:

The Mitigation Hierarchy establishes a structure to guide development and application of measures to mitigate impacts on environmental values and associated components. The term "mitigation" applies to four steps, or levels, in the mitigation hierarchy.

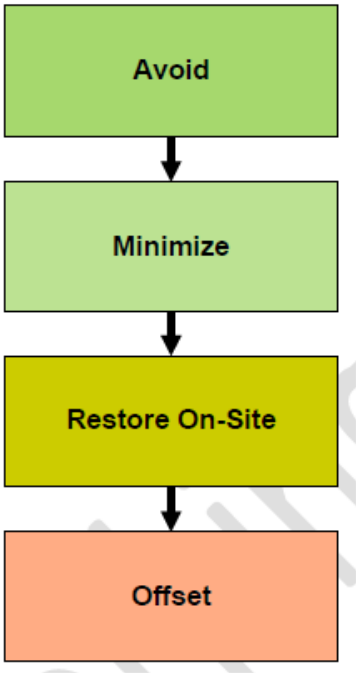


Figure 5: Mitigation Assessment Criteria

General Principles

1) Maintaining the integrity and natural functions and processes of ecosystems, and the resilience of ecosystems, is prerequisite to sustainable use of natural resources, and essential to maintaining ecosystem goods and services over time.
2) The mitigation hierarchy is applied in order of priority as follows:
   - Avoid
   - Minimize
   - Restore On-Site
   - Offset (Off-Site or On-Site)
3) Generally, the "higher" the priority of the environmental value and associated component, the more protective the mitigation measures.
4) For an action or measure to be considered "mitigation", a party must accept responsibility for implementation of appropriate mitigation measures, and there must be certainty that the mitigation measures will be carried out.

5) Implementing mitigation measures can help resolve issues that may delay or prevent a project or activity.

General Considerations

1) Which environmental values and associated components will be impacted by the said project or activity? (This will be determined from the output of the environmental impact assessment, i.e., the Environmental Impact Assessment and Mitigation Plan)
2) Have mitigation measures for impacts on environmental values and associated components, at all scales, been considered?
3) What is the current condition of each environmental value and associated component actually present within the footprint and area of influence of the said project or activity?
4) Can impacts on one or more environmental values or associated components be more fully mitigated than impacts on other environmental values and associated components?
5) Are there multiple environmental values and associated components with conflicting management needs and potential conflicts that need to be considered?
6) Is sound guidance available and being used, e.g., are best management practices (BMPs) and guidelines available for affected environmental values and associated components?
7) Is there opportunity to collaborate with other proponents that may have interest in overlapping mitigation measures?

Environmental Impacts due to Project Location:

Project Location:

The Subject project is located at Mouza Kot Bhano Shah, Near Shaheen Kanta, Main Sheikhupura Road, Gujranwala.

Impact

There are no significant negative impacts on the environment due to the project location/ selected site, because it was already constructed and the project is beverage producing unit having no significant impact on the surrounding industrial unit and community. The employment has been given to the local community of the district. A-priori it can be said that the project have positive impact in the area.

Impact significance: Positive
Nature of impact: Direct
Duration: long-term
Timing: Operation phase
Reversibility: NA

Mitigation Measures

- Surveillance of environmental management with respect to sustainability is recommended.

Environmental Impacts due to Project Design

Possible impacts due to design can be:

- Structure of the building
- ventilation
- Working space
- Health & safety

Impact significance: Low to moderate
Nature of impact: Direct
Duration: Long-term
Timing: Operation phase
Reversibility: Applicable

Mitigation Measures & Recommendations

Following are the mitigation measures and recommendation to minimize the anticipated impacts

- The building is well ventilated and provided with exhaust system.
- Working space is enough supporting the working and ergonomic conditions for the workers.
- Emergency exits points are available within the project building
- Firefighting system installation points have been kept for the emergency situations and emergency evacuation plan
- Electricity system has been designed safe and sound. Wires are covered by thick plastic/electricity resistant covers.

Environmental Impacts due to Construction Stage

The construction of the subject project has been done and now the project is in operation so the impacts during construction are out of question.

Environmental Impacts during Operation Phase

The subject project deals with the operational phase so, operational phase positive and negative impacts are discussed below:

Impacts on Physical Environments

Changes in Land Use:

There is no change in land use occur due to project transformation and operation of this project.

Solid Waste/ Sludge Management:

Proper solid waste management system is present for the prompt, timely and efficient disposal of solid waste & sludge for the reduction of its impacts. Impacts due to solid waste & sludge are temporary and minor in nature.

Nature of impact:	Direct
Duration:	Short term
Timing:	Operation
Reversibility:	Applicable
Likelihood:	Low (unlikely) as mitigation measures ensures that Solid waste management in efficient way.
Consequences:	Mild, as it is removed from site within few hours
Impact significance:	Low, based upon low likelihood and mild to moderate consequence.

Residual Impact:

Improper or non-management of waste handling will cause smell, cleanness issues, fire issues, land contamination and other aesthetic issues.

Mitigation Measures:

- Devise plan & develop guidelines for the safe handling, storage & disposal
- Sludge is placed at the site after cleaning of wastewater treatment facility
- PPEs are strongly recommended for workers for the handling of sludge

Air Quality Potential Impact:

Air emissions from project-related activities are likely to include:

- Dust raised on dirt tracks by project-related vehicles.
- Combustion products (nitrogen oxides, sulfur dioxide, particulate matter, carbon monoxide, and volatile organic compounds) from vehicles, generators and furnace used for project-related activities.

Assessment of Impact

Dust Emissions

Dust emissions caused by vehicular traffic on dirt track are an important concern, primarily when such traffic passes near community settlements. Dust emissions cause the amount of particulate matter in the air to increase, and thus become a health concern. Dust clouds also reduce road visibility, creating a traffic hazard.

Gaseous Emissions

Emissions produced by generators, furnace and vehicles and equipment were similar to those produced by generators in terms of the resulting pollutants (SO2, NOX, PM, etc.). However, the extent to which they are produced would kept considerably lower, since much smaller engines were used in vehicles and construction machinery.

Nature of impact: Direct
Duration: Long term
Timing: Operation
Reversibility: Irreversible
Likelihood: Moderate as mitigation measures ensure that air pollution remains within acceptable limits.
Consequences: Moderate, as pollutant levels in the ambient air are within acceptable limits.
Impact significance: Moderate, based upon low likelihood and mild to moderate consequence.

Mitigation Measures

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

- All equipment and vehicles used during the project properly tuned and maintained in good working condition in order to minimize exhaust emissions.
- Vehicle speed reduced on track passing through or close to shops
- Imposing speed limits and encouraging more efficient journey management worked to reduce the dust emissions produced by vehicular traffic. Water sprinkled where necessary to contain dust emissions.
- Management would make sure process is environmental friendly

Residual Impact:

After implementing the mitigation measures listed above, the residual impact of the project activities on ambient air quality will become more less.

Soil

Soil may be contaminated if proper handling and storage of material/liquid are not ensured.

Impact significance: low
Nature of impact: Direct
Duration: Long-term
Timing: Operation phase
Reversibility: NA

Mitigation Measures:

- Fuels are being stored at paved area.
- Availability of shovels, plastic bags and absorbent materials are being ensured near fuel and oil storage areas.
- Spills and leakages will be controlled by proper handling and storage of material/liquids.

Waste Water:

Waste water will be generated from floor cleaning, RO rejected and domestic activities.

Impact significance: low
Nature of impact: Direct
Duration: Long-term

Timing: Operation phase
Reversibility: NA

Mitigation Measures:

- Septic tanks are constructed within the unit
- Domestic waste water is being treated in septic Tanks
- After treatment in septic tank the water will be drained into nearby local sewage drain

Drinking water/Water Resource

Water resources may be depleted if water is overexploited.

Impact significance: low to moderate
Nature of impact: Direct
Duration: Long-term
Timing: Operation phase
Reversibility: NA

Mitigation Measures:

- Maintenance and repair of water supply lines has been done properly.
- Maintenance of water record and annual water audit is recommended.

Odor

Odor may generate from spoilage batch and solid waste if not properly disposed of.

Impact significance: Moderate
Nature of impact: Direct
Duration: Short-term
Timing: Operation phase
Reversibility: NA

Mitigation measures:

- Solid waste is being managed by handed over to the waste contractor
- There is no such source of odor from the process.
- Spoilage batch is handed over to waste contractor

Noise Level:

Noise is the major concern during the operation phase. It can be generated from the traffic on the road and from the machinery used for operations. Generators and furnace are another source of noise pollution.

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

Mitigation Measures:

- Traffic load aligned and minimum during working hours of project
- Machinery and vehicles are well tuned and maintained
- Limits imposed on unnecessary use of horns
- Safety signs displayed, public & drivers are well aware of them

Impact on Biological Environment

Natural Vegetation

Project activities didn't impose any potential impact on the area's natural vegetation and plantation.

Fauna

The fauna including wildlife species were not exist at the project site**.**

Potential Impact on Socio-Economic Environment

Employment Opportunities:

Subject project M/S METAL ZONE RECYCLING (Pvt.) Ltd helped in generating new jobs for the local population. The requirement of managers, engineers, workers, technicians, skilled and unskilled labor etc. generated employment opportunities. About 91 persons employed during operations phase. Hence, there is large number of employment opportunities especially for the locals of District.

Improved Infrastructure:

Operational phase of M/S METAL ZONE RECYCLING (Pvt.) Ltd improved the infrastructure of the area as proponent has incorporated aesthetic values and regeneration of site in its present stage.

Economic Benefits:

M/S METAL ZONE RECYCLING (Pvt.) Ltd is a unit in the country; they are expanding their business in Punjab. It is a great investment if the economy of our country. In the long run it will positively impact not only the local population but also the economy of Pakistan.

Inconvenience due to Raw Material & Product Transporting Material

During the operational period a minor impact was the movement of vehicles from the main G.T. road to the subject project plant boundary; it affected the traffic on other roads and caused minor annoyances to the residents and other industrialists of the area.

Nature of impact:	Direct
Duration:	Short term
Timing:	Operation phase
Reversibility:	Reversible
Likelihood:	Low
Consequences:	Low, as it links the main Sheikhupura Road and vehicles rarely used the sub roads
Impact significance:	Slightly significant

Mitigation Measures

- Efforts made to discuss traffic conditions so that regular traffic might not disturbed.
- Traffic management plan should be made.

Cultural Issues

Induction of outside workers could cause cultural issues with the local community as the local community is very sensitive about their cultural values. Also theft problems to the local community arose by the labor force and vice versa.

Nature of impact:	Direct
Duration:	Short term
Timing:	Operation phase
Reversibility:	Reversible
Likelihood:	low

Mitigation Measures:

Good relations with the local communities promoted by encouraging management to provide opportunities for skilled and unskilled employment to the locals, as well as on-the-job training in construction for young people. Project manager restricted his staff to mix with the locals to avoid any social problem.

Health & Safety

People from the project area regularly travel to other cities, and thus cannot be considered isolated from the rest of the country. They are regularly exposed to illnesses common to urban populations, and have similar levels of immunity. The project is therefore very unlikely to lead to an epidemic of any sort among local communities. Project activities might become a hazard as it located in populated area local people, especially children, are likely to gather around to watch the activity.

Nature of impact: Indirect
Duration: Long term
Timing: Operation phase
Reversibility: Reversible
Likelihood: Moderate
Consequences: Low to moderate
Impact significance: Significant

Mitigation Measures:

- Regular medical check-ups of all the workers conducted to ensure the health of workers and local population.
- Local people informed in advance when work is about to start in an area.
- This results in people keeping young children away from work areas.
- Machinery should never be left unattended.
- Safe driving practices adopted, particularly while passing through settlements.

Conclusion:

Management of M/S METAL ZONE RECYCLING (Pvt.) Ltd has achieved the following goals.

- Identification of regulatory requirements that apply to the project activities in the context of environmental protection.

- Identification of the environmental features of the project area and the likely impact of the project on the environment.
- Recommendation of appropriate mitigation measures that management will incorporate into the project design to minimize all adverse environmental impacts.
- Baseline environmental and socioeconomic information was collected from a variety of sources, including field surveys.

The impacts of subject unit in area will be insignificant, provided the generic mitigation measures proposed in this report are implemented. In areas where project site may have a significant impact, additional mitigation measures are given to reduce impacts to as low as reasonably possible.

After assessing the subject project activities and investigating the project area, the environmental consultants, PGEE, have concluded that, if the activities are undertaken as described in this report, and the recommended mitigation and environmental management measures are adopted, the project will not result in any long-term or significant impacts on the local community or the environment.

Potential Environmental Enhancement Measures:

M/S METAL ZONE RECYCLING (Pvt.) Ltd is a proposed construction of Construction of Scrap storage Facility and Copper/Aluminum Smelting Unit at the district Gujranwala. Following necessary measures have been adopted by the M/S METAL ZONE RECYCLING (Pvt.) Ltd . Wastewater treated by treatment facility than release into irrigation drains

- Well maintained generators that are within NEQS/PEQs Limits
- A Satisfactory Firefighting Network and fire hydrants are present at the existing unit.
- Proper SOPs has been followed with proper schedule along with the HSE conditions
- Any possible measure has been adopted to make the project or mining safe and environmental friendly.

Purpose of Mitigation Measures

Purpose of mitigation measures should include:

- **What is the problem i.e. in terms of "major environmental impacts" which may arise by the subject project activity?**
- **When the problem will occur and when it should be addressed**
- **Where the problem should be addressed**

The major impacts may arise by the subject project are firefighting, and gases emissions from the generators and furnace, particulate matter, dust, noise. Other impacts are of minor importance. These impacts may be arise during the operational activity of Copper/Aluminum ingotion unit but precautionary measures have already been adopted by the M/S METAL ZONE RECYCLING (Pvt) Ltd.

Any impact that would arise due to the subject project activity will be addressed on site. Trainings will be conducted on site prior to start work while other precautionary measures will also be adopted to make the project safe and environmental friendly.

HSE manager/environmental manager along with site manager will be appointed to assess any impact that could be arisen during both phases. He would be responsible to address the problem and to mitigate it.

Ways of Achieving Mitigation Measures

- **Changing in planning and design**

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

- **Improved monitoring and management practices**

Management M/S METAL ZONE RECYCLINGy (Pvt.) Ltd shall take appropriate measures to provide pollution free and safe environment during the project activity by implementing improved management practices and monitoring techniques suggested in EMP.

- **Replacement, relocation and rehabilitation**

NBC will develop Restoration/ reclamation or tree planation plan to restore the project area. Maximum Plantation will be done with native species within the building, along the boundary wall and along the road side if directed by EPA. Also, in-front of main area, horticulture plan will be formulated and area for this will be kept reserved.

CHAPTER #6
ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

Purpose and Objectives of the EMP:

Environmental management plan is designed to improve the environmental conditions, health and safety and provide the mitigation measures for further improvements.

The primary objectives of the EMP are to:

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

Management Approach regarding EMP:

The overall responsibility for compliance with the environmental management plan rests with the project proponent.

A certain degree of redundancy is inevitable across all management levels, but this is in order to ensure that compliance with the environmental management plan is crosschecked.

Institutional Responsibilities:

Following functionaries will be involved in the implementation of EMP:

- Project Proponent
- HSE/Project Manager
- In-Charge Administration
- Supervisor of project

- Environmental Engineer

Training Schedules:

Training for the management/contractors/engineers and workers on environmental aspects of the project will be conducted periodically. Training Schedule is given below.

Responsibility of EMP:

Overall responsibility for implementation of EMP will be that of project proponent. He will appoint a HSE/Project Manager of relevant qualification. HSE/Project Manager will act as Environmental Manager and will manage the all HSE condition at the NEQS/PEQs.

Environmental Technical Assistance & Training Plan:

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

HSE/Project Manager will provide training to staff and workers about the best environmental management practices at the operation site and affective implementation of the EMP

The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, National Environmental Quality Standards (NEQS), Usage of personal protection equipments, and health and safety related issues on the construction site.

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

HSE/Project Manager is being conducted Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid. Training schedule has been provided under training schedule.

Aim of Monitoring

The aim of monitoring is to oversee the environmental performance of the project through its lifecycle enforcing the NEQS. Timely implementation of mitigation measures leads to sustainable environmental management of the project.

Objectives of Monitoring

Salient objectives of the environmental monitoring program are as under:

- To ensure effective surveillance of the environmental parameters at various stages of the project development
- To enable the management undertake the required mitigation measures when needed
- To ensure compliance with the NEQS and legal obligations

Environmental Monitoring Cell (EMC)

EMC of the project undertake monitoring of the Safety, Health and Environmental Aspects. It will ensure implementation of EMP and apprises the General management of the unit on fortnightly basis.

Training of Monitoring Staff

Training of the monitoring staff arranged at site and off site special cadres ran about functioning of the project and apparatus including the firefighting and first medical aid.

Monitoring of Quality

The EMC will arrange monitoring of the quality of air, water, noise and waste water on quarterly or monthly basis from any EPA Certified/approved laboratory if required.

Monitoring Plan

- The monitoring will be carried out in accordance with NEQS.
- Monitoring program will be undertaken for compliance of mitigation measures.
- Monitoring for various parameters is done before the construction phase as per direction from EPA.

Following aspects need to be monitored regarding the subject project.

- Air quality
- Water quality
- Noise level
- Management of utility services including firefighting, water supply, sewerage disposal, electric supply and solid wastes.

M/s Pak Green Laboratories has conducted the monitoring for ambient air quality, water quality, and noise at the Beverage production unit.

Water Sampling

Following methodology was adopted for water sampling and analysis:

Sample Collection:

The water samples were collected from identified sampling points. The sampling was carried out in accordance to the SOP based on the recognized methods of United State Environmental Protection Agency (USEPA), World Health Organization (WHO) and American Public Health Administration (APHA) for water sampling and analysis.

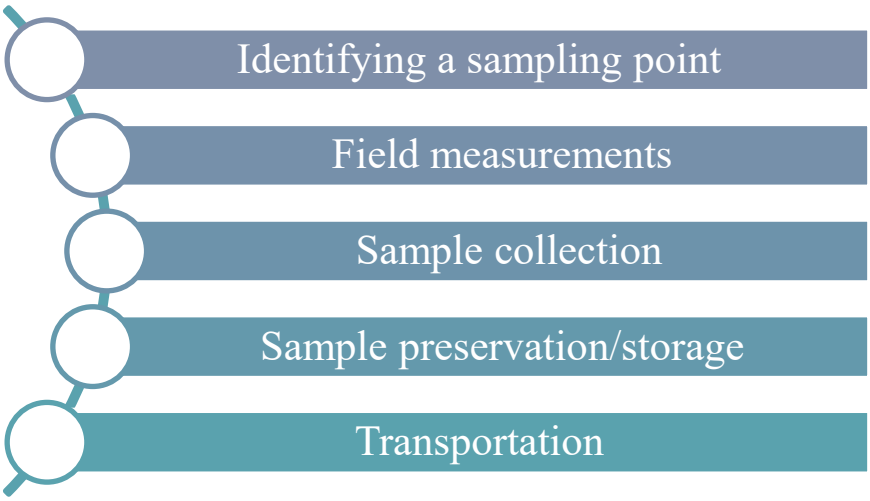


Figure 6 Steps involve in Water Sampling

Measurement of Field Parameters:

Parameters that quickly degrade after they were sampled must be tested in the field. Following parameters were measured in field that can significantly change during storage and transportation.

- pH
- Odor
- Color
- Clarity
- TDS
- Temperature

Preservation:

Preservation is important in order to minimize the changes in the sample. The collected water samples were preserved in appropriate containers as per APHA Guidelines.

Sample Identification & Chain of Custody

The collected samples were labeled and assigned a unique sample identification number, sampling date and time of collection to collected samples. All the relevant information (sample location, time of collection, sample identification, temperature, pH, collected by, preservation techniques etc.) was recorded immediately on the Chain of Custody form signed by Pak Green field Analyst.

Transportation:

A shipping container (Ice box with eutectic cold packs instead of ice) with maintained temperature of 4° C ± 3 °C was used for transporting the sample from the collection site to the environmental laboratory.

Purpose and Objectives of the EMP:

- Environmental management plan is designed to improve the environmental conditions, health and safety and provide the mitigation measures for further improvements.
- The primary objectives of the EMP are to:
- Facilitate the implementation of the mitigation measures identified in the EMP.
- Define the responsibilities of the project proponent.
- Define a monitoring mechanism and identify monitoring parameters in order to:
    - Ensure the complete implementation of all mitigation measures
    - Ensure the effectiveness of the mitigation measures
- Provide a mechanism for taking timely action in the face of unanticipated environmental situations
- Identify training requirements at various levels.

Management Approach Regarding EMP:

The overall responsibility for compliance with the environmental management plan rests with the project proponent.

A certain degree of redundancy is inevitable across all management levels, but this is in order to ensure that compliance with the environmental management plan is crosschecked.

Summary of Impacts & their Mitigation Measures:

As proponent buy the constructed building so impact related construction is out of the question in this case. Only operational phase impacts and mitigation will be discussed here.

Table 9: Summary of impacts and their mitigation measure

Aspect	Impacts	Mitigation Measures
Project Location	There are no significant negative impacts on the environment due to the project location/ selected site, because the project is Copper/Aluminum ingot producing unit having no significant impact on the surrounding industrial unit and community.	Surveillance of environmental management with respect to sustainability is recommended
Project Design	Possible impacts due to design can be: • Structure of the building • ventilation • Working space • Health & safety	The building should be well ventilated and provided with exhaust duct system (dust collecting system) to provide clean indoor environment. Working space will be enough supporting the working and ergonomic conditions for the workers. Emergency exits points must be available within the project building (can be seen on map)
Waste Water	Waste water is produced during the production process, cooling, washing and cleaning of the equipment. It also includes the sanitary waste	Domestic waste water is being drained out in nearby local drain after treated in septic tanks There is no process waste water at the unit. There are two main source of waste water first; the waste water generated from the

		domestic source second is the washing of floors and machines. Open evaporation pits should be constructed to treat the RO rejected water. Monitoring of waste water is recommended as per PEPA, PEQS Rules 2001
Land & Soil	Soil can be contaminated due to leaching of oil, fuel, any stored oil if mishandling of the fuel or oil will be occurred	All the possible soil contaminants should be placed on the designated paved area to avoid any soil contamination.
Air pollution and Dust emission	There is no process related to indoor dust generation During the operational phase dust is only be generated due to the transportation of final products and that impact is outside the unit on the unpaved roads or non-concreted roads. Flue gases and Particulate Matter (PM) can be generated from the vehicular transportation and generator if these will not be maintained or tuned properly.	All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. NBC should be provided PPEs to the labor during handling and processing of raw material and product. Grassy area has been established within the premises of the unit to avoid the ambient dust. Tracks should be properly paved & proper water sprinkling must be done. Scrubber should be installed.
Noise	Noise can be generated due to the Operation of machinery and vehicles transporting materials	Ear plugs/muffs are recommended at all the noise generation points. Trainings for safe driving practices & HSE trainings of the employees and workers is recommended. It is recommended to minimize use of horns by project vehicles. Monitoring should be conducted on

		quarterly basis as per PEPA, PEQS Rules 2001
Solid Waste	Solid waste will be generated due to domestic sources and also due to slag (minor).	Both slag and domestic waste will be handed over to contractor or properly treated. Waste bins will be placed at suitable places for the collection of solid waste collection.
Odor	There is no significant source of odor generation.	In case of odor proper SOP will be followed to cope with odor is recommended.
Health and Safety	Health and safety issues may arose during working hours, by mishandling machinery and improper work practices.	Safe drinking water will be provided to workers, staff, and poor people of the area. Training of workers will be conducted regarding health safety & Environment, by the HSE department of M/S METAL ZONE RECYCLING (Pvt) Ltd . HSE Resource will be deployed on plant to ensure HSE policy and procedures. PPEs will be implemented at workplace. First aid measures/medical facility is will be provided to project related employees. Proper housekeeping will be ensured at workplace. Quality and safety manual will be implemented by NBC.

Equipment Maintenance Details:

The subject project is the Scrap storage Facility and Copper/Aluminum Smelting Unit. The company has maintained the records for Health Safety & Environment and hired HSE/operation manager to check and deal with the HSE issues and to improve HSE conditions of the workplace. The company has maintained PPEs, medical facilities, firefighting Equipment as fire buckets and fire extinguishers and records for their periodic filings or replacement.

Environmental Budget:

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

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

Environmental Management Plan

TABLE 10 EMP OF M/S METAL ZONE RECYCLING (PVT) LTD

Sr. No	Environmental Aspects	Impact & Mitigations to be Taken		
		Impacts	Mitigation Measures of Operation Phase	Responsible Authority
1.	Waste Water	• Waste water is produced during the production process, cooling, washing and cleaning of the equipment. It also includes the sanitary waste. • It can degrade the surface water quality	✓ The waste water to be generated is being discharged into the waste water wastewater treatment facility (septic Tanks) for its treatment and then it will drain into local drains for irrigation purposes. ✓ Tarpaulin sheets placed under generator (s), underground tanks and other leaching substances. ✓ Sewage and other waste effluents handled to avoid contaminating surface and groundwater. ✓ No contaminated effluents released into the environment without having been treated. ✓ There is no hazardous chemical or pollutant release from the subject unit. Only domestic water contains organics that comes from the washing or cooling. Subject water is healthy for the irrigation purposes because there are no hazardous chemical/pollutants or metal present in the water.	HSE Department of proponent

			✓ The integrity of the entire system is being and will be maintained and monitored. ✓ Periodic cleaning of the wastewater treatment facility will be insured ✓ Water conservation program is recommended ✓ Waste water analysis report attached in the Annexure -D ✓ Monitoring should be conducted on monthly or quarterly bases by EPA certified lab.	
2.	Surface and ground Water contamination	• Surface and ground water contamination from oil leakage of operational machinery & generators. • Contamination of surface water because of transportation and temporary storage of sludge	✓ Proper arrangement for collection of oil base products. ✓ Proper maintenance of route plan and timings for the removal of waste material from working site ✓ Secondary containment for the oil storage is also present within the industry around the oil storage tank.	HSE Department of proponent
3	Air Quality	Particulate Matter and fugitive dust Emissions Dust emission due to vehicles on un-metaled roads. Dust raised on dirt tracks by project-related vehicles. Gases emissions from the	✓ Air emissions controlled devices must be installed to control the air pollution ✓ Vehicle emissions inspection should be done on regular basis. ✓ Sprinkling should be done on the unpaved area to avoid dust pollution/ particulate matter. ✓ Vehicles/ trucks should be serviced regularly	HSE Department of proponent

		vehicles Air pollution due to site visiting vehicles/ transported trucks, hauled trucks, machinery, generator and furnace	✓ All project vehicles will be checked regularly to ensure that engines are in sound working condition and are not emitting smoke. ✓ There is no dust emission/generation point in the M/S Metal Zone Recycling Pvt. Ltd. Engineer HSE is authorized person to check all the PM related issues. HSE Engineer stated the consultant during the visit of the unit that, PPEs has been provided to workers in case of particulate matter/dust. ✓ 24 hour PM monitoring conducted by the laboratory to check the actual PM Level in the ambient air. PM Level was found within the prescribe limits of the NEQS/PEQs for the PM. ✓ Minimize exhaust emissions from machinery and vehicles. ✓ Regular Sprinkling of water on road to minimize dust emissions. ✓ Furnace and generator are the main sources of the gases emissions from the Construction of Scrap storage Facility and Copper/Aluminum Smelting Unit. NBC has already been installed the scrubbing system at the furnace exhaust. Monitoring reports for the Gases emissions are attached in the Annexure-D. All the results are found within the	

			NEQS Limits. ✓ Technical Engineer told the consultant during the visit of unit that M/S Metal Zone Recycling Pvt Ltd maintained Machinery and generators properly. ✓ Monitoring has been conducted as per EPA NEQS Rules 2001 ✓ No trash burning allowed in or outside the pump site ✓ Air quality monitoring has been conducted will be conducted according to the Smart Rules by EPA.	
4	Noise	• Noise Pollution can harm hearing sense of workers, drivers and traders can cause disturbance to local population	✓ Ear plugs/muffs has been provided to workers in case of high noise during working hours. Health safety Engineer is a responsible for the HSE Compliance in the unit. ✓ Noise level monitoring conducted at the different points along the boundary wall of the unit. All the results are within NEQS/PEQs Limits. Laboratory reports are annexed in Annexure-D ✓ Monitoring should be conducted on monthly basis as per EPA NEQS Rules 2001. ✓ In order to avoid noise in the project area, vehicles carry raw materials, operated during night time as far as possible. ✓ Sound proof room should be built for generator to control	HSE department of Proponent

			the noise. ✓ A speed restriction of 40 km/h will be imposed on all project vehicles. Signs are properly depicted in the industrial unit.	
5	Soil contamination	• Contamination of soil due to oil and other chemicals storage, transportation • Soil contamination due to waste water generated from the project activities	✓ Soil contamination must be controlled by adopting mitigation measures such as storage of oil, fuels etc. under paved area, by maintaining leakage record of construction vehicles, and by regular inspection (admitted by proponent). The proponent is being insured these measures. ✓ Water from the treatment plant must not be injected into the sub soil. ✓ Tarpaulin sheets should be placed under generators and other leaching substances.	HSE Department of proponent
6	Health and safety	• Health & safety issues of workers and nearby community	✓ Trainings of the workers is recommended for health & safety, first aid and firefighting. ✓ Proponent must provide First aid facilities to workers in case of any injury or accident. ✓ Safe drinking water must be provided to workers, staff, and poor people of the area. ✓ Water consumption records should be maintained.	HSE Department of Proponent

			✓ Provision of Proper PPEs must be ensured at workplace. ✓ Assembly point and exit points must be available at workplace ✓ Electric wires, D.Bs must be kept covered & closed to avoid any electric hazards. ✓ Smoking or any drugs should be prohibited during working hours or performing work. ✓ Safety signs & boards will be placed at the time of operation activity. ✓ Security guards will be appointed at the project site. ✓ During the survey of environmental consultant, it is observed that the proponent is ensuring the health and safety measures during operation of the project.	
7	Solid Waste Generation	• Land & soil contamination, aesthetic degradation, foul smell etc. • Solid waste generation from the operation activity, domestic and project process sources	✓ A solid waste management division should be formulated to deal with the proper disposal of solid waste, supervised by HSE Manager, SW Manager, and other related personnel. ✓ Recycling of material should also be implemented up to possible extent. ✓ Existing Project related solid waste should be handed over to contractors. ✓ Sludge from the septic tank must be replaced on regular	HSE Department of proponent

			basis. ✓ It is recommended to ensure Proper housekeeping. ✓ It is recommended to adopt proper waste management system. ✓ The project proponent has been developed solid waste management and following all above mention migratory measures. ✓ Living garbage: Artificial regularly collecting, via a waste transfer station into the Waste disposal area	
8	Odor	Odor may generate from batch spoilage.	✓ Proper SOP should be developed for handling of spoilage. ✓ The proponent has developed proper SOP for batch spoilage. ✓ Proper measurements will be taken by the proponent during the washing procedure.	HSE Department of proponent
9	Energy requirement	Resource depletion	✓ Do not waste the energy/electricity when there is no need of it. ✓ Use energy efficient machinery and equipment. ✓ Use energy saving products. ✓ Conduct and maintain records for energy audits ✓ Do not leave the machinery in running form when there is no working being done. ✓ Machinery must never be left unattended	HSE Department of proponent

			✓ It is recommended to save and conserve the energy and adopt energy efficient technologies during the operation phase ✓ The project proponent using energy efficient machineries and following all the measures to conserve energy.	
11	Resettlement	Resettlement issues	✓ The project area under the investigation is devoid-off any human settlement	NA
12	Language	Change in cultural language	✓ Maximum employment of Local people is recommended to preserve the local cultural language. ✓ It will help in communication with the local people to resolve any emerging issue near the project area.	Proponent
13	Education	Change in social behavior and economic gains	✓ School and colleges exist in the area. The project proponent will initiate an educational awareness program with the coordinator of the local people.	Proponent
14	Health	Social performance of the individuals in the area	✓ The project proponent will assist the local impacted community for the improvement of health services ✓ Health clinic must be established for the project workers.	Proponent
14	Culture and norms of the area	Change in culture by the influx of nomadic people	✓ Maximum local employment should be ensured to preserve the culture of the area.	Proponent
15	Women empowerment	Gender inequality	✓ Women involvement in decision making process should be ensured. ✓ Equal employment opportunity in suitable department of	Proponent

			the project unit should be ensured.	
16	Sewage and waste disposal	Diseases caused by improper sanitation	✓ Subject project will uplift the economic status of the nearest human settlements. ✓ Awareness program will be initiated regarding the disposal of Sewage waste.	Proponent/ local NGO
17	Sound environment	Vehicle noise effects	✓ Enhancing the management in and out of the vehicle parked in and out, try to shorten the idle time of the car, speed limit the factory, a ban on vehicle horns, shorten the car entrance residence time as much as possible to reduce automobile noise and car exhaust and its impact on the surrounding environment. ✓ To do a good job of green, the green belts around the factory, peripheral and internal reasonable virescence design. was formed by stratified greening, grow tall tree species, Joe, irrigation, grass cladding green barrier, can have good noise reduction effect. Can have the effect of natural sound barriers, can have the effect of landscape greening.	HSE Department of proponent
		Equipment noise effects	✓ To choose low noise equipment: Equipped with sound insulation, shock absorption measures to minimize the production noise	

			✓ The reasonable decorate the location of the noise equipment, keep it away from sensitive.	
18	The surface water environment	Production wastewater	✓ Project production and washing wastewater after separation tank treatment first, then after multiple effect compound septic tank treatment and sewage into the urban sewage pipe network, Water is properly treated before disposing it off in the Local Drain.	HSE Department of proponent
19	The atmospheric environment	All kinds of fuel loading and unloading machinery and the waste gases coming from work, vehicle traffic into, the outbound vehicle exhaust.	✓ Strictly implement the national emissions standards for cars, and strengthen law enforcement vehicles management, excess emissions of exhaust pollutants motor vehicles is forbidden, in order to reduce exhaust emissions. ✓ To strengthen the greening, the use of plants to absorb contaminants, reduce the pollution. in the form of unstructured automobile exhaust emissions, in order to ensure the worker work under a good production environment. exhaust fan, furnace smoke or other ventilation device should be installed, and reduce the concentration in the workshop. ✓ Set up around the factory bound anti-pollution ability, ability to absorb the harmful gas barrier composed of tall trees, in order to screen and absorption effect.	HSE Department of proponent

		Waste oil and oil cotton yarn	✓ Set meets the requirements of special waste storage space and storage containers. It is forbidden to mix with other solid waste storage. Clear identification for different hazardous waste storage device. For hazardous waste relevant qualification unit on a regular basis for recycling. At the same time should be in strict accordance with the build system of hazardous waste transfer, the requirements of the relevant guarantee reasonable safe disposal of waste.	
	The social environment	Social benefits	✓ the construction of the project implementation has a positive impact on the development of Gujranwala city; ✓ project to solve the problem of population all over the country. ✓ projects to improve the regional infrastructure and speed up the urbanization process has a promoting effect; ✓ The project is helpful to promote the development of regional real estate market.	HSE Department of proponent
		Whether the public participation in environmental monitoring	✓ Official people have assigned with the monitoring project environmental conditions in the operating period.	
	The cumulative environmental	Project development on the surface water environment, air	✓ Has set up a base in planning environmental assessment report lists the cumulative impact of solution;	HSE Department of proponent

	impact	environment, acoustic environment and the ecological environment influence;	✓ The Metal Zone Recycling Pvt ltd. adopted the best management practices.	

Need for Disaster Management and Emergency Response System

In order to cope up with the possible hazards it is imperative to prepare the Disaster Management Plan and rehearse it frequently. To evaluate effectiveness of the system preparedness exercises and drills will be undertaken frequently. Small courses will be run to train the relevant persons about their actions during emergency. The administration staff need be familiar with the firefighting procedures and equipment.

Communication System for Declaring Disaster and Emergency Situation

On immediately on occurrence of emergency situation all employees will be informed through disaster Alarm System. The emergency siren means that all employees will assemble at the previously designated assembly areas. At this place the Project Manager will instruct the workers regarding their respective duties.

Identification of Risks/Possible Threats

The project building and other occupants may come across untoward incidents on account of human interventions and natural catastrophes. Human induced risks may include the placing of an explosive device for causing damage to building and burning of essential office/documentary records. Improper use of electrical, heating and cooking gadgets may lead to outbreak of fires. Similarly, the smokers may create large-scale burnings. The natural hazards consist of the possible damage to of the building due to an earthquake or windstorm. Thus there is need of carrying out risk assessment for such eventualities.

Risk Management

Definition of Risk

Risk may be minor, serious or fatal. It may be rare, often or frequent.

Risk = Damage X Rate of Occurrence.

Risks are broadly acceptable, tolerable, unacceptable and residual.

Elements of Occupational Health and Safety Management System (OHMS)

For an effective OHMS, the management of the project will implement the following elements:

- Formulation of OHS Policy

- Identification of risks, hazards and counter measures
- Adoption of OHS targets based on OHS policy
- Formulation of OHS plans.
- Incorporation of opinions of stakeholders in OHS measures
- Implementation and operation of OHS plans
- Establishing an organization
- Documentation
- Emergency situation
- Routine inspections and improvements
- System audits
- Revision of OSHMS
- OHS education

Post Disaster Rehabilitation

On close of the disaster the management will immediately undertake activities for restoring the normalcy at the site. Efforts will be made to carry on with the operations.

Components of Fire Management Plan

Background Information

The likely causes of the breakout of fire are short-circuiting of electricity, throwing of cigarette bits, combustible materials catching fire and damaged gas pipes.

Immediate / First Line Actions

The occupants must evacuate the building using the stairs, ramps & lobby and emergency exits. Evacuation plan will be hoisted at many places. Evacuation of building will be completed within 2/3 minutes' time. The occupants will assemble at the pre-designated assembly points.

Fire Alarm and Detection System

The employee detecting the fire first must inform the others in the shortest possible time. They may operate fire alarms, shout and use telephone (line and cellular).

The system comprises the following:

- Smoke detector
- Testing the system every week
- Call point
- Control panel
- Fire signs

Calling the Fire Brigades

The contacts (telephones, call and fax numbers) of local fire brigades will be boldly written at each floor on the notice boards so that any person may call them for immediate assistance. Information about the firefighting facilities in the nearby urban centers will also be handy all the time.

Medical Aid

Information be immediately passed to the nearby medical hospitals and centers for recovery of the wounded persons. First aid boxes will be kept at suitable places. Some of the employees will obtain formal training about medical first aid.

Fire Fighting Procedures

- To ensure availability of adequate water for firefighting purpose dedicated water tank will be earmarked.
- It will be ensured that during firefighting operation enough space is available for movement of vehicles and personnel.

In addition to the above the firefighting personnel from Fire Brigade Department will be in possession of the required pieces of equipment like fire man suit, fire blankets, Fire torch special for looking in smoke, gloves (rubber & canvas), goggles, helmets plastic, gum boots, gasmasks, Oxygen cylinder/breathing apparatus, fireman axe, shovel, first aid box (complete), ladder, metal detector.

CHAPTER #7
PUBLIC CONSULTATION AND STAKEHOLDER PARTICIPATION

This section deals with the social acceptability of the project and the area. Consultation with the stakeholders is a tool for managing two-way communication between the project proponent and the affected public. Its goal is to improve decision making and build understanding by actively involving individuals, groups and organizations, which have stake in the project. This involvement increases project's long term viability and enhances its benefits to locally affected people and other stakeholders. It gives the feeling of an ownership to the local population and public indolent is also helpful in smooth implementation and success of the project.

In order to evaluate the socioeconomic and environmental impacts, filed surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identity the different types of stakeholders and ascertain their perceptions about the project (Environmental Impact Assessment (EIA)) social survey was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

The Environmental team visited the project site and consulted with the local people to evaluate the project socio-economic impacts. People provided massive information about the project and have positive remarks regarding the project development.

Objectives of Consultation

Public consultation plays a vital role in studying the effects of the project on the stakeholders and in the successful implementation and execution of the subject project. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the unit.

The important general objectives of the consultation process are:

- Information dissemination, education and liaison
- Informing the stakeholders about the subject project
- Providing an opportunity to local public to raise their views and helping in more sensitive considerations for the formation of mitigation measures for the subject project
- Providing those involved in the planning stage with an opportunity to ensure that the benefits of the proposal are maximized and that no major impacts have been overlooked
- It provides an opportunity to local public to influence the design of project in a positive manner
- Increasing public confidence in front of proponent, reviewers and decision makers
- Identification of problems and needs of the stakeholders and public
- Providing better transparency and accountability in decision making stage;
- Reducing conflicts through early identification of contentious issues and working on them to find acceptable solutions
- Reaction, comment and feedback of stakeholders on project
- Developing proposal which are truly sustainable

Methodology of Consultation:

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

1) Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring factory workers, residents, shopkeepers, drivers etc.
2) Environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

Stakeholders Identification

Stakeholders considered at all levels according to the importance of the project. They are at provincial, district and village level. The process of consultation is an ongoing process which continues during the project life cycle and even after the submission of this environmental

assessment report and so on. Therefore, three-tier approach was adopted. Stakeholders were identified, categorized and consulted at provincial (EPD Punjab, Irrigation department, Agriculture department, Wildlife department etc.), district level (EPD, Irrigation department, Agriculture department, Wildlife department etc.) & village level (Direct & indirect affecters and Locals)

Consultations with government, provincial and district level departments were carried out through meetings and visits while consultations with locals, villagers, neighbors and directly affected peoples were under taken during baseline study of the area.

Consultations were held with the followings;

Provincial Level:

1. Environmental protection department, Punjab
2. Agriculture department, Punjab
3. Forest Department, Punjab
4. Wildlife department, Punjab
5. Irrigation Department, Punjab

Village Level:

1. Project Affected Peoples (PAPs) & local community
2. Nearby Industries/station etc.
3. villages/human settlements
4. Nearby educational institutes
5. Nearby health institutes
6. Shopkeepers
7. Drivers
8. Passerby

Consultations

A series of public consultations were required to get the feedback/ concerns of the different departments, Industries, local public, PAPs, and general public residing near the subject area.

Proponent

Possible impacts and mitigation measures related to the project were discussed with the project proponent and management. They assured to take all suggested mitigation measures to control any discrepancy arose by the project and to make the project environmental friendly.

Responsible Authority

Management of NBC is the responsible authority to take all measures throughout the life cycle of the project.

Other Departments and Agencies

For the impact analysis detailed meetings were held with the management of NBC, local community, education institutes, health institutes, hospital and NGOs. Issues were discussed that may affect the environment and also the implementation of project. All possible mitigation measures were considered and incorporated in the Environmental Management Plan.

Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area. The purpose of such consultations is to obtain the feedback from the relevant persons.

Environmental Practitioners and Experts

Team of M/s METAL ZONE RECYCLING visited the project site, had discussions with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own businesses, doctors, some in abroad, in Army, teaching, in agriculture, etc. Women were also consulted for their point of view regarding the betterment of the area by this project, some of them communicated but according to social value of the area they mostly hesitate to communicate comfortably and get pictured. People provide the massive information about the project and have positive remarks regarding the project development.

Affected & Wider Community

There is no affected community present in the radius of our study area. PGEE team has consulted with the inhabitants. They provided positive remarks regarding the project. Stakeholders participation Performa's and socioeconomic questionnaire were get filled by the inhabitants to

evaluate the project socio-economic impacts. List of the respondents/participants can be seen in bellow table

Ways of Public Consultation:

Public Consultation was done by Scoping sessions, focused group discussion, small group meetings and way side consultations with the relevant stakeholders. Moreover, field trips and site visits were conducted to consult with the stakeholders. These included local government departments, public representatives and local residents etc. During these discussions the participants gave their candid views about the environmental issues and their potential impacts. There were unanimous positive views about the construction of the said project. However, they opinioned that mitigating measures should be taken to minimize the environmental degradation and care should be taken to avoid any discrepancy. Also socioeconomic Survey Form has been used to get the information and views of the stakeholders. Forms are attached as **Annexure-H**.

People of the area belong to different professions like mostly belong to industries, own businesses, workers, shopkeepers, drivers, teachers etc. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information. People provide the massive information about the project and have positive remarks regarding the project development.

After the consultation with the above mentioned stakeholders, majority of the people about 85 % were in the favor of the said project, while only 5% had some reservations regarding implementation of mitigation measures, job security & health impacts, to that project proponent addressed and committed to provide health, safety measures during working and remaining 10 % had no remarks regarding the said project. Majority of the people had no objection with the functioning of the said project.

Sample Size:

Sample size of 40 respondents, as list mentioned above, was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information

Statistical Analysis

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

Graphical representation of analysis is given below:

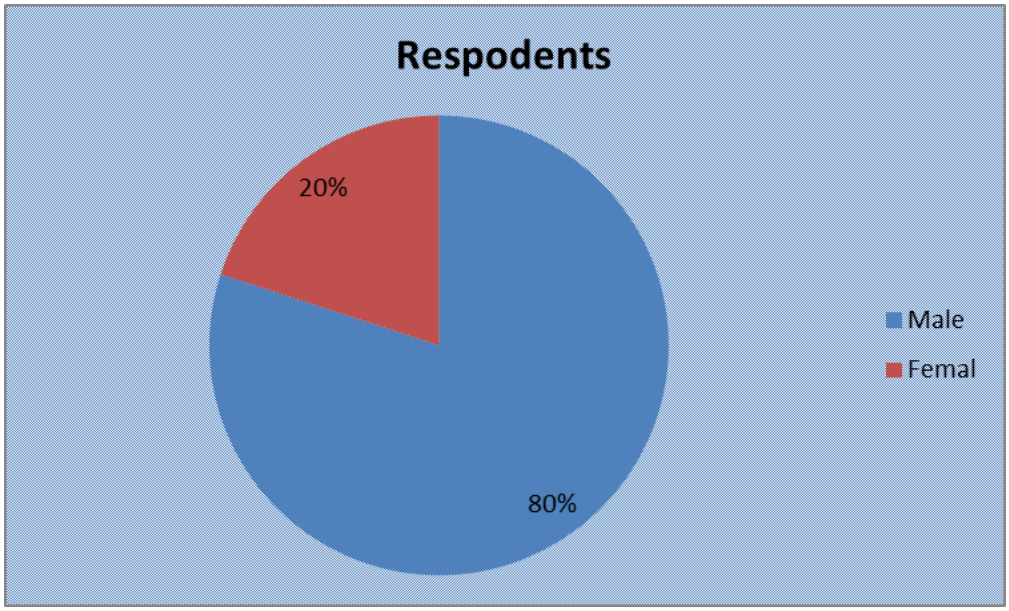


Figure 7: Ratio of male and female respondent

Discussion:

According to graphical representation, 80% respondents were male while 20 % respondents were female. The number of female respondents is less as compared to male respondents because 8 female hesitates to respond or communicate comfortably

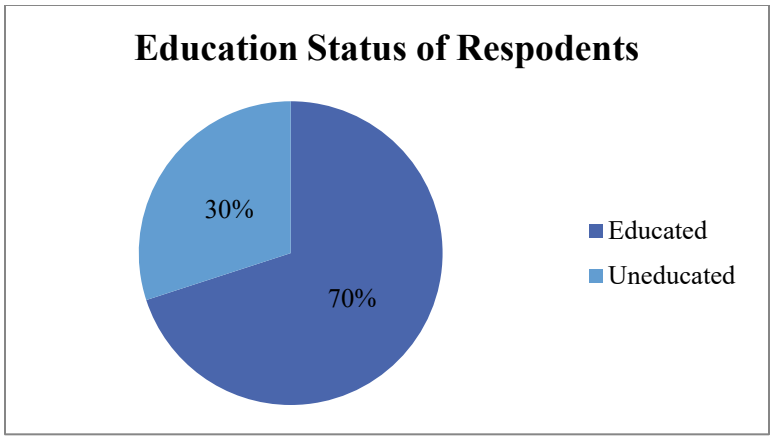


Figure 8: Education status of respondents

Discussion:

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

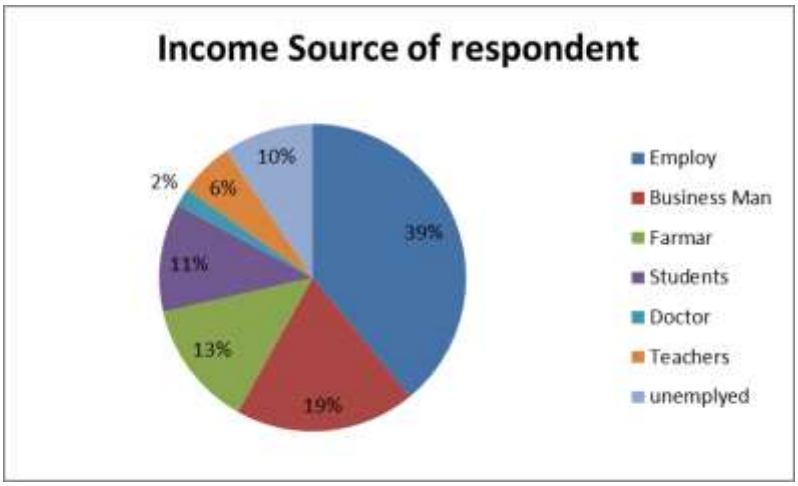


Figure 9: Income source of the respondents

Discussion:

As per survey, 39% people were employee, 10% were unemployed while others were belong to different professions as business man, teaching, medicine, and students. So survey indicates that source of income of majority of the people of the study area is based on employment so industries would be good addition for the local community.

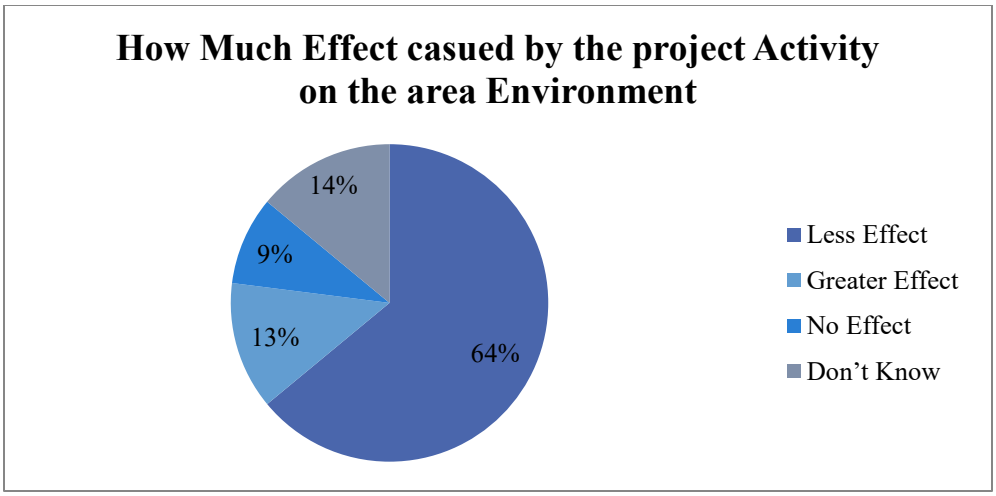


Figure 10: Views about effect of project on the environment

Discussion

9% repodents told that NBC is not Causing any pollution on the local Environmnet. 64% said that subejct unit is causing less effect and 14% said that they don't Know about That, while the 13% said , the subject project would have high effect. This survey and analysis indicated that if, NBC will maintain all the HSE Conditions and Suggested Measures then project operation will be environmnetal Friendly.

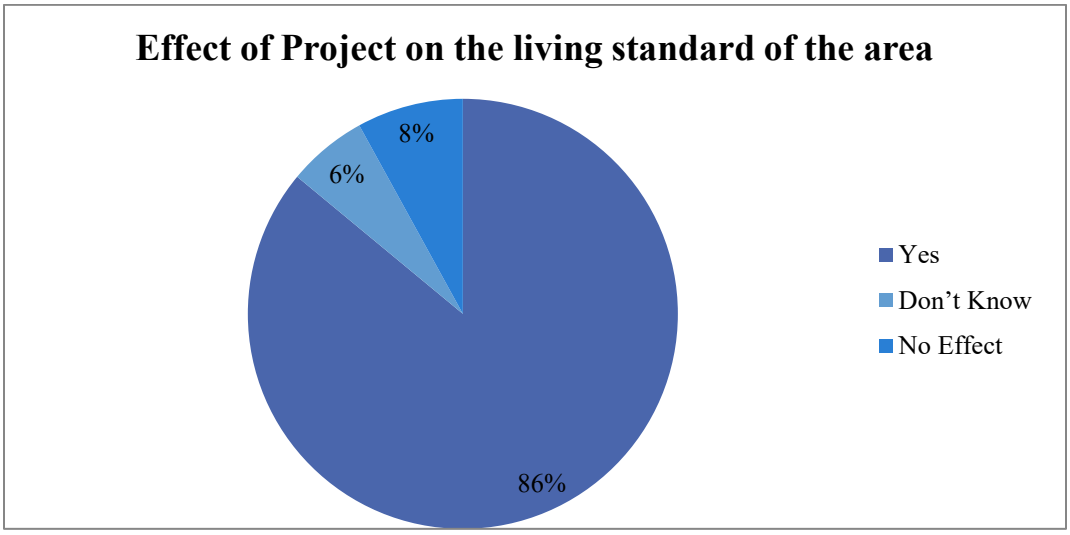


Figure 11: Effect of project on Living standard of the people

Discussion

86% Respodents were told that industry is a good source of income for the local and other community, 6% people have no idea about that while only 8 % people remarked that industry will play no role in the sources of income of the local people/community. These people have reservations that local people are not preffered for the employment in industries. This survey indicates that NBC and many other indusrty is the Main source of income of the local community.

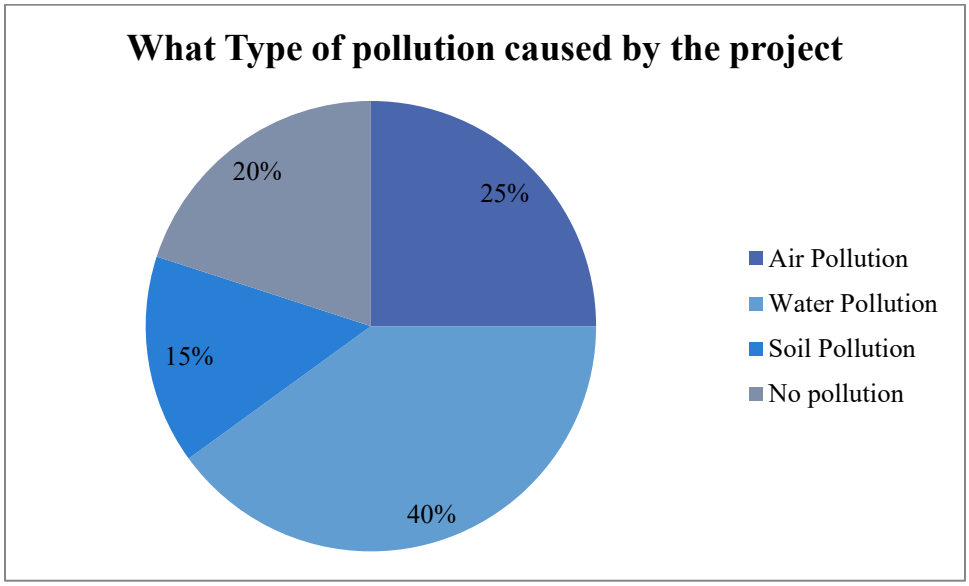


Figure 12: Types of Pollution caused by the project

Discussion:

As per survey of the area and graph indicates, some people gave remarks that there will be higher water pollution (i.e. 40%) by the subject project, some people said that there will be air pollution (i.e. 25%) by the subject project, some people said that there will be no pollution caused by the subject project (i.e. 20%), some people said that there will be soil pollution (i.e. 15%) caused by the subject project. So survey indicates that there is mix point of view or remarks of respondents regarding the pollution caused by the subject project of M/S METAL ZONE RECYCLING (Pvt) Ltd.

Issues Discussed:

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project;
- Possible impacts on natural vegetation, air, land and properties;
- Possible mitigation measures;
- Benefits of the project specifically for the local people.

Findings of Overall Discussion

- The project the site will be used for the production Copper/Aluminum ingot
- The subject project is environmental friendly and pollution free.
- Waste water treatment system has been installed to treat the waste water
- Safe drinking water are being provided to workers and management staff
- Raw material from operational process will be recycled where possible
- It will enhance the socio-economic conditions/values of the area.
- Project will increase revenue generation for the Government.
- It will create employment opportunities.
- Local people will be given preference for employment in the subject project.
- There will be no significant additional load on the existing infrastructure i.e. utilities of water, telephone, electricity etc. due to the operation of the project.

Majority of people favored the subject project in a sense that the operation of the said project will overcome the increasing need of beverage industry to generate employment opportunities for local people and revenue for the government and enhance the socioeconomic conditions of the area.

CHAPTER #8
CONCLUSION & RECOMMENDATION

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

Conclusions

Operational phase of the subject project, the beverage manufacturing unit under the name of M/S METAL ZONE RECYCLING (Pvt.) Ltd enhanced the economic value of the area and provided job opportunities to locals. It enhances the infrastructure of the area and beneficial for the economy of country as well.

This report has been prepared within the framework of the Punjab Environmental Protection Act 1997 (Amended 2012) and Guidelines for the preparation of Environmental Impact Assessment reports".

1. The EIA study reveals that the project is economically viable, socially acceptable and environment friendly.
2. It generates additional jobs during operation phases.
3. Project is environmental friendly and pollution free
4. The proponent has implemented the project in the environment friendly manner.
5. Project proponent has installed the septic tank for the proper treatment of the domestic waste water and use for sprinkling and irrigation purposes.
6. Project proponent adopted the proper solid waste management system.
7. Proponent adopted all the necessary measures to control any impact if resulting from the project.
8. Project proponent provided the safe drinking water to all workers and staff.
9. Proponent of NBC already registered the project with local Government.
10. Project Proponent implements very comprehensive Emergency Preparedness and Response Standard Operating Procedures.
11. Project Proponent prepares and implements a comprehensive Security and Fire Fighting Standards Operating Procedures.

RECOMMENDATIONS:

The project has been studied meticulously and all the possible environmental and social impacts are addressed in the report. The likely environmental impacts related to project activities are multitude. There are a few recommendations to implement the environmental management plan adroitly. Some of them are given bellow,

- The first and foremost hazard to be considered and should be taken care of is fire. The firefighting equipment should be monitored periodically.
- Fire mock drills should be performed quarterly basis. And assembly area should be maintained with all tags.
- Use of Personal Protective Equipment (PPEs) is tremendously recommended for the workers while working.
- The monitoring schedule for different parameters with their due time must be followed and record should be maintained.
- The project proponent should ensure the provision of safe and healthy working environment.
- CTPAT Training, first aid Training and fire drills should be performed periodically, and presence of workers is kept mandatory.
- Record should be maintained about all the trainings, monitoring practices and refilling of firefighting equipment and first aid boxes.
- The work record should also be maintained for office and compliance purposes.
- Immediately upon the identification of an emergency situation, the area Supervisor shall be notified and he will go to the site of the incident.
- The material safety data sheets for chemicals and Safe operating practices foe machinery should be prepared and pursued.

Health and Safety

- The Contractor shall ensure that the project complies with all national and local safety regulations and other measures to avoid damage.
- Contractor management personnel without the approval of unauthorized persons cannot enter the Operation Area.
- Safety procedures, emergency plans and emergency contact information, etc. should express at the construction site bulletin board.
- Safety distance shall be determined in accordance with the relevant provisions.
- No need of fire Engineering, the environment can only be approved by the supervising engineer to by its oversight be required. Meanwhile, the corresponding fire-fighting equipment should be arranged in place.
- The Contractor shall also provide training in basic personal hygiene and epidemic prevention including respiratory and infectious diseases.
- The Contractor shall provide basic first aid services and emergency measures for the construction workers.
- The Contractor shall road near the construction of local communities (if any) to establish the necessary warnings and road deceleration device , to ensure the traffic safety of nearby residents.

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Glossary

Words	Dictionary
Discrepancies	A difference between conflicting facts, claims or opinions
Mitigation	The action of lessening in severity or intensity
Evaluated	Estimate or determine the nature, value, quality, ability, extent, or significance of
Legislation	law enacted by a legislative body
Aspects	A distinct feature or element in a problem
Compliance	Acting according to certain accepted standards
Flora	All the plant life in a particular region or period
Fauna	All the animal life in a particular region or period
Screening	The display of a motion picture
Substitutions	An event in which one thing is substituted for another
Regulations	An authoritative rule
Stakeholders	A person or organization with an interest or concern in something
Vulnerable	Susceptible to attack
annunciation	A formal public statement
rehabilitation	The conversion of wasteland into land suitable for use of habitation or cultivation