EXECUTIVE SUMMARY

Introduction

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) report for the "**Proposed Project for the Installation of WWTP by M/S Century Paper & Board Mills Limited**" **Coordinates of the site are 31.159312° latitude. 73.923543° Longitude** of the project has been conducted in accordance with the Punjab Environmental Protection (Amendment) Act, 2012 and IEE/EIA Regulations, 2022. The process for conducting environmental assessment and the results of EIA are described in this document.

About Company

Century Paper & Board Mills Limited (CPBM), established in 1984, is Flagship Company of the Lakson Group of Companies – Pakistan. The Company started commercial production in 1990 and established its name as major producer of quality Packaging boards in the country. It has attained a position of Market Leader in Packaging Boards in particular and is considered as most Preferred Supplier to Printing and Packaging Industry. The Company serves many of the prestigious clientele and maintaining Strategic Business Relationships with leading Packaging and Converting units as well as end users, which include national and multinational companies. The Company is also in export business and its Packaging Boards are successfully competing in the international market.

The company entered into Corrugated Cartons Manufacturing Business in 2003 by installing "Agnati" Italian corrugators, renowned name in the industry. The plant is capable to cater large continuous orders for different types of boxes to serve multifarious sectors including Soaps & Detergents, Home Appliances, Dairy Products, Ice Cream, Food and Beverages, Cigarettes and Tobacco and Lubricants etc. Being vertically integrated corrugation unit with companies own Liner and Fluting supplies the plant has an edge to ensure consistency in supplies and quality.

The company is managed by a competent team of professionals in all the relevant fields like Process, Paper Technology, Engineering, Finance, Business Management and Human Resource. The Company assigns great importance to its Human Capital Development and has been managing Trainings of its professionals by sending them to Foreign and Local Training Programs / Exhibitions / Courses.

The plant comprising of Seven Paper Machines (PMs), a Complete Corrugated Cartons Manufacturing Plant, Integrated Pulp Mills (Major Inputs Wheat Straw), in house Engineering Workshop, Captive Power Generation Plant, and Chemical House etc. is situated on 162 Acres close to major business city (Lahore) of the country. Century is a leading manufacturer of

quality Paper and Paperboard with a total installed capacity of 230,000 M. Tons per annum. The plant comprises of some seven Paper & Paperboard Making Machines with integrated Pulp Mills and a Captive Power Generation plant produces a vast range of products to meet the market requirements for various Paper & Paperboard types.

The product mix includes a wide range of multi ply One Side Clay Coated Packaging Boards and un-coated boards to meet Folding Cartons needs of various consumer and industrial products. Machine Finished (MF) Writing & Printing Papers' range cover the needs of Publishing, Exercise Books, Computer Stationery, Photo Copying, Ink Jet / Laser Printing and general printing market segments. Machine Glazed Papers range meets the needs of foil / poly lamination as well as wrapping etc.

The latest addition at Century Paper & Board Mills Limited being the state of the art, environment friendly machine (PM-7) is a multilayer board machine with multilayer on-line coating facility. The Machine is capable of producing 130,000 M. Tons / annum of premium quality Coated Duplex Board in substance range 200 – 400 g /m 2. The product of this machine is being used very successfully by leading off-set printing houses on Hi-Tech and Hi-Speed multicolor Off Set Printing and Hi-speed Die-Cutting Machines.

The company also includes a Box Plant having a corrugation facility capable of an output in excess of 30 million M^2 sheets and 60 Million of corrugated containers of various sizes and weights, with up to 3-colour printing. The Plant is capable to meet the special and large size cartons for Home Appliances (Refrigerators, Air conditioners etc.) Moreover, this is the only plant in the country which is producing and selling Tobacco Storage Cartons (C-48).

In 2008 the Mills embarked on an ambitious program of adopting the Oracle based Enterprise Resource Planning (ERP) system for its operations such as Production, Supply Chain, Finance and Engineering. This is now in operation and started yielding results.

Paper & paperboard manufacturing, being a continuous process, essentially requires an uninterrupted supply of Electric Power and steam. This is being met by two Captive Power Plants, CoGen-1 (12.3 MW) and CoGen-2 (22 MW), with a 5MW LESCO connection as stand-by.

Objective

According to the apex environmental statute of Punjab, PEPA 1997 (amended 2022), under section 12 of the Act, it is mandatory for the proponents of the projects to execute the IEE or EIA (where warranted), at the planning stage of the project and get approval from provincial environmental agency. This study report is to explicate the existing environmental conditions in the vicinity of project site, state aspects of the project on the environment and propose necessary measures to mitigate possible negative impacts arising from these aspects. The aim

of this study is to assist the decision-making process and to ensure that the project is environmentally sound and legally compliant.

Methodology of EIA

The various steps undertaken in the EIA preparation included understanding of the proposed project operations; review of policy, legislation and guidelines; collection and review of secondary data including the physical, biological and socio-economy of the project area; field data collection; impact identification; recommendations for mitigation and monitoring measures; development of a project specific Environmental Management Plan (EMP) and reporting of all findings in an EIA Report.

Location and Site Layout of the Project:

Proposed project location is in the premises of the Century Paper & Board Mills Ltd. 62 Km, Lahore Multan Highway N-5 District Kasur.

Proposed Site for Installation of WWTP

Project Brief

M/S Century Paper & Board Mills Limited is planning to install its Second Waste Water Treatment Plant with Capacity of 600 m3/hr over an area of 500m2 inn the premises of CPBM.

Brief Outline of the Proposal

PROPONENT NAME:	**Aftab Ahmad**
PROJECT TITLE: **"Proposed Project for the Installation of WWTP by M/S Century Paper & Board Mills Limited"**	
PROJECT LOCATION: **62-Km Multan Road, Jamber Pattoki, Tehsil Pattoki, District Kasur**	
TOTAL AREA:	**5000 m^2**
SOURCE OF POWER**:**	**WAPDA**
TOTAL COST OF PROJECT:	**500 Million**

Screening

As per directions of Review of IEE/EIA Regulations 2022, the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulations, 2022, Proposed Project for the Installation of WWTP by M/S Century Paper & Board Mills Limited falls in F-3 category of combined waste water treatment plants with treatment capacity greater than 100m^3/hr) mentioned in Schedule II.

Name of the Organization Preparing the Report

An Environmental Impact Assessment (EIA) study report has been prepared to identify and predict the significant environmental impacts likely to arise from the commencement of the project along with environmental impact statement followed by delineation of appropriate Environmental Management Plan and Environmental Monitoring Plan to check the implementation of the EMP. Proponents of CPBM have decided to conduct EIA report through Environmental Consultants, namely A.S. Enterprises located at office # 7, Shami Road, Lahore Cantt.

Environmental Approval

According to the Punjab Environmental Protection Act (PEPA) 2012, Section 12 - I "No proponent of a project shall commence construction or operation unless he has filed with the Government Agency or, where the project is likely to cause an adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof." It is this legal requirement from the Government of Punjab that this Environment Impact Assessment (EIA) report has been prepared to get Environmental Approval (EA) from the Environmental Protection Agency (EPA), Government of Punjab, Lahore. This document also comply with the IFC's Performance Standards for Social and Environmental Sustainability. This report provides detailed basic site specific information and facts; including especially among others environmental, economic, social, etc., enabling its

assessment and justification that the project will meet the requirements of environmentally sustainable practices; both during construction and regular production stages; as desired under the Punjab Environmental Protection Act, 1997 (amended 2012), the Punjab Environment Quality Standards and the rules and the regulations thereof.

Project Impacts and Recommendations for Their Mitigation

In order to identify all the impacts associated with the installation of WWTP and operational activities with potential to cause adverse environmental impacts, a thorough review has been conducted. Although, there is no chances of any adverse impact's occurrence on the surrounding environment. However, in case of impact arises from the project activity possible necessary measures will be adopted to control the same. Overall the proposed project has positive environmental & social impacts. The said project may have some adverse environmental impacts during installation phase of minor magnitude which will be controlled through mitigation measures proposed in Environmental Management and Monitoring Plan (EMMP). Moreover, no removal of the vegetation will be carried out on-site. Moreover it is envisaged that, there will be no adverse environmental impacts is being anticipated during the operation of said project.

TABLE: Project Impacts and Mitigation Measures

Environmental Aspects	Impacts and Mitigation Measures	
	Impacts	**Mitigation Measures**
Economy Improvement	During construction Phase, through the use of locally available materials including cement, building blocks, metals, concrete, electrical cables, etc. The project continues towards the growth of economy by contributing to the gross domestic product.	• No mitigation measures required
Employment Opportunities	• With the implementation of the project, there are employment opportunities for casual workers from the local community. The exact number of workers to be hired will depend on the magnitude of construction activities. • Unskilled workers also gain some skills that will help them in the future.	• No mitigation measures required
Relocation of utilities	The construction of the project will not relocate the existing public utilities Hence, no rehabilitation or site restoration will be required.	• No mitigation measures required
Noise pollution	The construction works, delivering building materials by heavy trucks and	• Regular maintenance of the

Environmental Aspects	Impacts and Mitigation Measures	
	Impacts	**Mitigation Measures**
	the use of machines and equipment such as concrete mixers will contribute to high level of noise within the construction site and the surrounding area.	electric parts will be carried out. • Unnecessary blowing of horns will be strictly prohibited. • Workers will be provided with personal protective equipment in areas of high noise levels.
Sludge Management	From the ETP, sludge will be generated which will be dried before its final disposal. The foul smell will be generated during the drying process which may cause nuisance from surrounding community	• Proper sludge disposal measures such as from Existing established methods and standards should be adopted • Aerobic decomposition will be carried out which will prevent production of H2S gas. • To control foul smell, thin layering (2-3 cm) for sludge will be dried this will promote aerobic condition. • During drying sludge aeration can be done regularly to control foul smell. • Trees will be planted along the project area boundary to mitigate odor. • After secondary treatment sulfur compounds will be reduced significantly. This will reduce the smell. • Establishing and enforcing environmental, safety and health procedures for the construction and operation of the sludge facilities. • Regularly updating of the plan to reflect upon the current situation at the

Environmental Aspects	Impacts and Mitigation Measures	
	Impacts	Mitigation Measures
		treatment plant, its characteristics and revised disposal strategies. • Ensuring that the disposal of sludge is in accordance with the local standards prescribed by the Environment Protection Act.
Odor	The treatment technology adopted has been designed to prevent the production of any foul gases (i.e. hydrogen sulfide) due to the chemical and biological reactions taking place. Thus, there will be no significant generation of odor. Odor problems will mainly arise from the sludge hauling process, blocking of pipes, malfunctioning of the pumping stations and leakage of pipes	• An appropriate action plan should be devised to deal with blockages or leaks as quickly as possible. • It must be ensured that appropriate spares, in terms of fittings and other mechanical components are available at all times. • Regular maintenance should be carried out. • Tankers should be well equipped with efficient extraction capacity such that the sludge hauling process should be done as quickly as possible. • Dewatering of sludge should be done • The sludge hauling process should not be carried out during peak hours, week days and on windy days. • Different types of trees should be planted in the vicinity of the treatment plant. They will act as buffer zones.

Proposed Monitoring

For the effective implementation and management of mitigation measures, an Environmental Monitoring & Management Plan (EMMP) has been prepared which meets the requirements of the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

It is aimed at achieving the following objectives:

- A mitigation and monitoring plan;
- Definition of roles and responsibilities of the proponent, implementing and monitoring teams;
- Requirements for communication, documentation and training during the project; and
- Change Management Plan to cover unforeseen events/environmental conditions during the project.

TABLE: Environmental Monitoring Plan

Environmental segment/element	Monitoring parameters	Reference location / monitoring Point	Monitoring frequency
CONSTRUCTION PHASE			
Water Quality	As prescribed by the Punjab environmental Drinking Water Quality Standards	Main Drinking Water Source	Monthly
Ambient air Emissions	Dust, smoke, PM, SOx, NOx, CO,	Use of generators, movement of materials, digging or excavation.	Monthly
Waste water	Ensure that all wastewater is treated to the level set by the PEQS-Pakistan.	The sewage or sanitary wastewater by the campsite and use for other construction activities.	Monthly
Noise	The Levels prescribed as in Punjab environmental quality standards	The noise produced by the machinery during construction work.	Monthly
Solid Waste Disposal	Ensure that all wastes are disposed of according to legal requirements of the country.	The waste material, rubble and solid waste produced by the camp Site	Monthly

Environmental segment/element	Monitoring parameters	Reference location / monitoring Point	Monitoring frequency
OPERATIONAL PHASE			
Waste water	Ensure that all wastewater is treated to the level set by the PEQS.	Main Disposal Site	Monthly
Noise	Noise levels	Operation area	Monthly monitoring
Solid Waste Disposal	Ensure that all wastes are disposed of according to legal requirements of the country.	solid waste	Regularly in connection with environmental and safety rounds.

TABLE: Environmental Management Cost

Environmental Component	Quantity	Approximate Cost (PKR)
(i) Tree Plantation	10000	200,000.0
(ii) Health and Safety Measures and Provision of PPEs	L.S.	200,000.0
(iii) Environmental Monitoring	4	400,000.0
Total Environmental Management and Monitoring Cost		**800,000.0**

Stakeholder Consultations

Public discussions were held with the inhabitant of the surrounding area. They are quite positive about the project and accomplishing towards the positive development in the area at local and in the country as a whole. The people observe strong positive impacts regarding existing project of M/S Century paper & Board mills ltd. EIA findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project is highly optimistic. Majority of the people are convinced for industrial development in the area and they correlate this progress with the pace of their social mobility.

Conclusion

This EIA study has identified and assessed potential environmental impacts of the project, as per the guidelines issued by the Environmental Protection Agency (EPA) under the Punjab Environmental Protection Act 1997 (Amended 2012). Overall, the EIA study has concluded

that the project is environmentally acceptable and in compliance with the environmental legislation and standards; with the implementation of environmental control measures there would be minimal or no adverse residual impacts from the project. This will be checked by the Environmental Mitigation & Monitoring Plan (EMMP).

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CHAPTER 1: INTRODUCTION

PURPOSE OF REPORT

As per Punjab Environmental Protection Act, 1997 (Amended 2012) and the IEE/EIA Regulations, 2000 it is mandatory for the proponent of any development project to obtain Environmental Approval before commencing construction from EPA Punjab by filing an IEE or EIA as the case may be, before the Agency. This EIA Study presents the Environmental Impact Assessment (EIA) for this proposed wastewater treatment plant. For this purpose, the proponent has engaged environmental consultants, **M/S AS ENTERPRISES**. The purpose of this study is to identify the environmental baseline i.e. physical, biological and socioeconomic/ cultural conditions and assess all possible impacts arising during the construction and operation phase of the project with the aim to find out appropriate measures for their mitigation, to either eliminate those impacts or to bring them to acceptable level and formulate Environmental Management and Monitoring Plan (EMMP) for implementation of the project in environment-friendly manner. This EIA Report provides relevant information, as required under the officially approved format, to facilitate the decision makers i.e. EPA Punjab for the issuance of Environmental

The main objectives of this EIA Study are:

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

IDENTIFICATION OF THE PROJECT AND PROPONENT

M/S Century Paper & Board Mills Limited is planning to install its Second Waste Water Treatment Plant with Capacity of 600 m3/hr over an area of 5500m^2 inn the premises of CPBM.

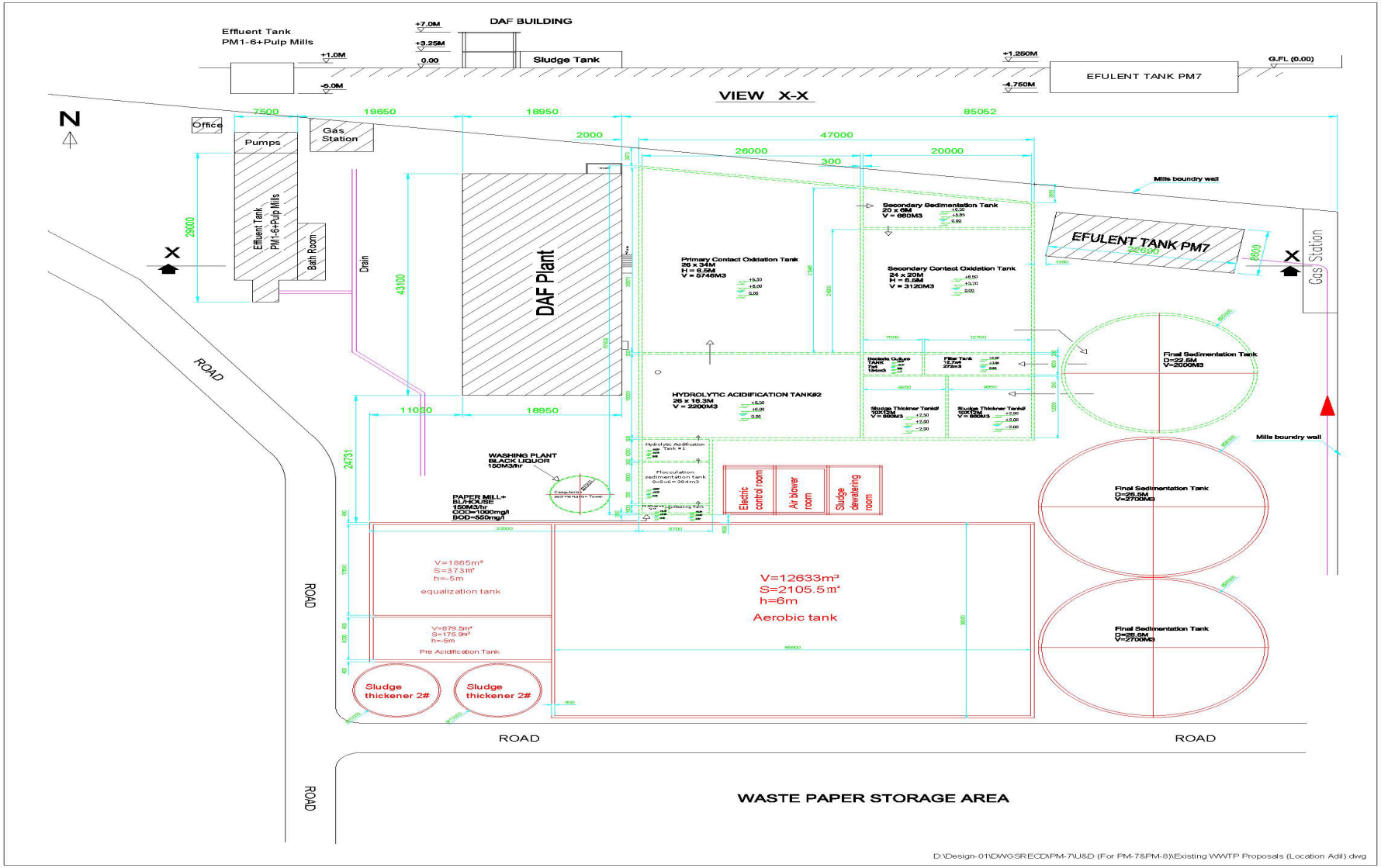
Mr. Aftab Ahmad CNIC & other related documents are attached with the application file for the Environmental Approval.

DETAILS OF CONSULTANT

For the preparation of the EIA Report of this Project, the proponent has hired the services of the environmental consultants; M/S A.S. Enterprises Team comprising of environmental engineers, environmental experts has worked on this report. The lists the names of those experts are attached with this report.

PROJECT NATURE, SIZE AND LOCATION

The proposed project is the "Installation of Wastewater Treatment Plant" having treatment capacity of 600 m3/hr. The proposed project site is open land in the premises of M/S Century Paper & Board Mills Limited located at 62-Km Multan Road, Jamber Pattoki, Tehsil Pattoki, District Kasur. Wastewater generated from the operation of Paper mill will be treated in proposed treatment plant. The estimated cost of the proposed project is PKR 500 Million. The geographical location of the project is Latitude 31.159312° North and Longitude 73.923543° east. Google Earth Map showing the project location is attached below as Figure.


Effluent Tank
PM1-6+Pulp Mills
DAF BUILDING
Sludge Tank
EFULENT TANK PM7
VIEW X-X
N
Office
Pumps
Gas Station
Effluent Tank, PM1-6+Pulp Mills
Bath Room
Drain
DAF Plant
Primary Contact Oxidation Tank
26 x 34M
H = 6.5M
V = 5746M3
Secondary Sedimentation Tank
20 x 6M
V = 660M3
Secondary Contact Oxidation Tank
24 x 20M
H = 6.5M
V = 3120M3
Mills boundry wall
EFULENT TANK PM7
Gas Station
HYDROLYTIC ACIDIFICATION TANK#2
26 x 18.3M
V = 2200M3
Final Sedimentation Tank
D=22.5M
V=2000M3
WASHING PLANT
BLACK LIQUOR
150M3/hr
PAPER MILL+
BLKHOUSE
150M3/hr
COD=1000mg/l
BOD=550mg/l
Electric control room
Air blower room
Sludge dewatering room
Final Sedimentation Tank
D=25.5M
V=2700M3
V=1865m³
S=373m²
h=-5m
equalization tank
V=12633m³
S=2105.5m²
h=6m
Aerobic tank
V=879.5m³
S=175.9m²
h=-5m
Pre Acidification Tank
Sludge thickener 2#
Sludge thickener 2#
ROAD
ROAD
ROAD
ROAD
WASTE PAPER STORAGE AREA
D:\Design-01\DWGSRECD\PM-7\U&D (For PM-7&PM-8)\Existing WWTP Proposals (Location Adil).dwg


Proposed Site for Installation of WWTP
M/S Century Paper & Board Mills Limited
Legend
Bismillah Hotel
Feature 1
Feature 2
Feature 3
31.159237, 73.923497
Proposed site
Rohi Nala
Sayban Group Facto
Century Paper and Board Mills
GT Road
Google Earth
600 ft
N

CHAPTER 2: SCREENING AND SCOPING

SCREENING

Section 12 of Punjab Environmental Protection Act (PEPA), 1997 (Amended 2012) states:

> *"No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency or Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause an adverse environmental effect an Environmental Impact Assessment (EIA), and has obtained from the Government Agency approval in respect thereof."*

As per directions of Review of IEE/EIA Regulations 2022, the Initial Environmental Examination (IEE) / Environmental Impact Assessment (EIA) Regulations, 2022, Proposed Project for the Installation of WWTP by M/S Century Paper & Board Mills Limited falls in F-3 category of combined waste water treatment plants with treatment capacity greater than 100m3/hr) mentioned in Schedule II.

SCOPING

Spatial and Temporal Boundaries of Environmental Assessment

The Project site is open land by M/S Century Paper & Board Mills Limited located at 62-Km Multan Road, Jamber Pattoki, Tehsil Pattoki, and District Kasur. and under the ownership of company. That open land will be utilized for construction of Wastewater Treatment Plant to treat wastewater generated from Mill. Within 5-km aerial distance of project site various residential and industrial facilities are existing but due to installation of current project sanitary condition of area will be improved, pollution load will be decreased, water quality will be improved, pollutants & toxicants will be eliminated that enable wastewater to reuse for horticultural and sprinkling on unpaved roads after treatment. A little bit odor issue could rose that will be controlled by adopting proper mitigation measures. Moreover, residential areas are present at safe distance from project site so they would not impact due to odor problem.

Important issues and concern raised during consultation:

During consultation it was observed that maximum of people was in favor of project and following issues and concerns were raised which have also been discussed in length in Stakeholder Consultation:

- Nuisance must be controlled.

- Locals should be preferred for the job opportunities.
- Monitoring should be done regularly to check efficiency of treatment plant and to
- comply with PEQS.
- Solid waste should be managed effectively by adopting the standard practices of the area.
- An effective EMMP should be designed and enforced with true spirit.
- Health of the workers should be ensured.
- Plantation of indigenous species must be carried out at extensive scale.
- Proper disposal of sludge should be practiced.
- Removal of shrubs and bushes should be avoided to the extent possible.

Significant impacts and factors to be determined:

- Main impacts and factors to be determined are;
- Occupational Health and safety
- Site Security
- Traffic Management
- Hygiene management
- Community impacts
- Control Air emissions
- Job opportunities for locals
- Confined noisy activities
- Resource conservation
- Avoid excessive water consumption
- Energy efficient techniques must be adopted
- Proper site restoration after construction
- Emergency preparedness

CHAPTER 3: CONSIDERATION OF ALTERNATIVES

SITE ALTERNATIVES, THEIR SELECTION AND REJECTION CRITERIA

For installation of wastewater treatment plant it is important that industry or source of wastewater generation, and the drain must be as close as possible for safe discharge. The site selected for current project is located in the premises of the M/s Century Paper & Board Mills. Moreover, the basic infrastructure facilities, i.e. metaled road network, proximity to electric transmission system, manpower, project economic viability with reference to specific site, land use policies, further expansion possibilities, and etc. are favorable on proposed site. From the standpoint of environmental sustainability, the site selection is based on numerous factors including proximity from source of wastewater, at a safe distance from residential & protected areas. Two sites were considered, but one is closer to the designated colony for people, because it was not possible to maintain the safe distance there, therefore this site was cancelled later on. The other site have almost no residential houses in its premises and is also in close proximity of existing unit, no land use change is being foreseen due to implementation of said project & site is already under the ownership of the Proponent. The site is suitable for implementation of said project owning to the following characteristics:

- Selected site is located in premises of existing industry
- Transportation infrastructure (road network) is available
- Safe distance from sensitive receptors (residential area & protected area)
- The selected site is under the ownership of the proponent.
- Closer to the drainfor safe discharge after treatment
- No land use change is being foreseen due to implementation of said project.

DESIGN/TECHNOLOGY ALTERNATIVES, THEIR SELECTION AND REJECTION CRITERIA

The wastewater is characterized as highly polluted in terms of COD, BOD, TSS, oil and grease. The primary treatment of the wastewater reduces these parameters but it cannot be discharged directly. For the treatment of the wastewater generated, number of the biological treatment processes are available in the market for the treatment of paper industry wastewater. After acquiring different proposals from renowned national and international vendors, different technologies came into consideration that includes activated sludge process (ASP), rotating biological contactor (RBC), Aerated Lagoons (AL), up-flow anaerobic sludge bed reactor

(UASB), Membrane Biological Bio Reactor (MBBR). ASP and MBBR are the most widely recommended technologies for the treatment of wastewater having similar characteristics to paper industry. After careful engineering sense of expertise and considering different factors like removal efficiency, capital cost, operational and maintenance cost, area footprint, sustainability and international practices and vast research and reference on the subject, ASP is recommended as the most efficient and economical solution for the treatment of paper industry waste water. Detailed comparison of the above mentioned two competitor technologies is given in Table below.

Comparison of MBBR & ASP		
MBBR	**ASP**	**Remarks**
Flexibility in Operation		
MBBR is not flexible enough to handle shock loads thus making it less efficient.	ASP can handle shock loads more efficiently, thus providing a clear effluent on a consistent basis	Due to the huge variations in flow and characteristics, flexibility of operation is of paramount importance.
Removal Efficiency		
MBBR efficiency is good but it requires uniform characteristics of influent	ASP is equally efficient in terms of removal efficiency	Both technologies are good, in terms of efficiency.
Area Footprint		
MBBR requires less area in terms of tank volume as compared to ASP	ASP requires larger area as compared to MBBR but have very small footprint as compared to other technologies	Ample and is available for installation of WWTP, therefore land requirement is least significant constraint.
Chemical Requirement		
It requires additional chemicals for its operation	ASP recycled the portion of the activated sludge to maintain the Food to Microorganism ratio (0.25-0.5/day) to ensure the faster degradation.	-

Membrane Fouling		
Their compact designs can increase membrane fouling rates	There are no membranes involved	As MBBRs are sensitive to low Hydraulic Retention Time.
Fine Screening		
It requires very finer screening to work.	ASP can work efficiently with fine to medium screening chambers.	Fine Screening requires more cost and screenings needs to be replaced more frequently.
Peak Flows		
MBBR technology can collapse during peak flows.	Peak flows are well addressed in ASP	ASP can sustain peak flows for longer period of time as well.
Insects & Mosquitos		
Working with bio-film attracts sewage flies, mosquitoes and red worms creating nuisance.	There are very few odors or pests involved, which makes hygienic, safe, and convenient operation easy.	-
Cost Analysis		
Capital cost as well as operation and maintenance cost of MBBR is high.	They are equally costly in terms of cost as compared to MBBR.	-

Both technologies are equally efficient and have their own advantages, disadvantages and are being used worldwide. ASP is a promising technology for achieving the PEQS of industrial effluents, relatively easy to operate & maintain, durable & renowned technology worldwide and also can handle shock loads efficiently. Trained personnel / operators in operational phase are required to measure the Sludge Volume Index (SVI) for maintaining the sludge recirculation, keeping the process sustainable and to comply with PEQS. Proper supervision must be ensured for keeping the food to microorganism ratio maintained, recycling of activated sludge and aeration requirement to make it successful.

ENVIRONMENTAL ALTERNATIVES, THEIR SELECTION AND REJECTION CRITERIA

The said project is being proposed to treat generated wastewater before its final disposal in drain to comply with PEQS hence, no environmental alternatives are being considered. After proposed treatment of wastewater, the quantity of wastewater generated from said facility will be reduced significantly thus improving environment's health. By doing so, the health risks associated with environmental pollution will be reduced. Moreover, the collected sludge can be used as fertilizer in nearby agricultural fields after dewatering from sludge drying beds. Furthermore, the water conservation measures will be adopted i.e. the treated water will be used on-site for horticultural activities, it can be recycle and rain water harvesting pond may be constructed to harvest rainwater. Moreover, indigenous & fast growing trees will be planted along the boundary wall of ETP and paper mill. A lot of technologies aerobic as well as anaerobic were considered and studied in detail while selecting the final technology. It is found that the technologies like Aerated lagoons can take up much larger area thus making the capital cost very high and greater nuisance for nearby areas, as there may be odor and insects which cause nuisance in the area, if aeration requirement is not maintained properly. Similarly, anaerobic technologies like up-flow anaerobic sludge blanket reactor (UASB) also came into consideration. But after the comparison, in the aerobic technologies, ASP is recommended and proposed for approval being the most efficient, flexible and cost effective alternative. The selection criteria are discussed below in Table- Proposed Environmental Alternatives

Environmental Alternatives Parameters		
Anaerobic	**Aerobic-ASP**	**Remarks**
Formation of gases		
During anaerobic process, the bulk of organic matter is converted to CO_2, H_2O, CH_4, H_2S. The end-products are odorous due to the formation of H_2S.	ASP is an aerobic process that produce CO_2 and H_2O but does not create any harmful gases like CH_4 & H_2S.	The end-products of anaerobic process are odorous due to the formation of H_2S.
Land Requirement		
These technologies require very large area to operate	The area footprint of ASP is very small.	More the area, more nuisance for people.
Startup period		

It has larger startup period ranging from weeks to months	Aerobic technologies require less start-up period to operate efficiently.	More startup period, the longer the run, again a nuisance for the people.
Reaction speed		
The reaction speed of the Anaerobic process is too low.	Aerobic technologies work faster to convert organic matter into cell mass.	The reaction rate is generally higher for aerobic technologies
Biomass production		
The biomass solids produced are low.	More sludge is produced in aerobic technologies.	Proper sludge handling facility is proposed on site to dry the sludge generated to convert it to sludge cakes, so that it can be used as a bio-fertilizer in the cropped area of the mill.
Removal Efficiency		
The removal efficiency of anaerobic technologies is less, thus inhibiting their use.	Due to the higher removal efficiencies, aerobic processes are in use more frequently.	More efficiency can make the impacts low on the environment

If the sludge produced is managed properly, and the aeration requirements are met, the ASP has far more than environmental benefits as compared to other technologies

ECONOMIC ALTERNATIVES, THEIR SELECTION AND REJECTION CRITERIA

The technology selected for installation of above stated project is costly than a few available alternatives but less costly as compared to majority of the other available treatment technologies but it is most efficient and convenient to use.

CHAPTER 4: POLICY, LEGISLATION, LEGAL & ADMINISTRATIVE FRAMEWORK

LEGAL FRAMEWORK

The capability of regulatory institutions for environmental management largely, ensures the success of environmental assessment for ensuring that development projects are environmentally sound and sustainable. For decision-making and policy formulation in the environmental and conservation issues, the institutional framework, as it exists in Pakistan, is described below:

NATIONAL ENVIRONMENTAL REGULATORY/LEGAL REQUIREMENTS

After the 18th Amendment to the Constitution of The Islamic Republic of Pakistan- 1973, the regulation & management of environment has been delegated to the Provinces. The Federal Ministry of Environment has been abolished and instead the Ministry of Climate Change was created which controls: Pakistan Environmental Protection Council; Pakistan Environmental Protection Agency. Since the amendment in the Constitution of Pakistan, all provincial Environmental Protection Agencies are working in their respective jurisdictions independently. The Pakistan Environmental Protection Agency, sometimes known as Pak-EPA, is an executive Government agency of Pakistan managed by the Ministry of Climate Change (formerly Ministry of Environment).

The agency is charged with protecting human health and the environment by writing and enforcing regulation based on laws passed by Parliament. The Pakistan Environmental Protection Act was passed in 1997 by the Parliament repealing the Pakistan Environmental Protection Ordinance 1983. The agency was established under the 1983 Ordinance and saved in the 1997 Act. The agency is led by an appointed director-general, who is appointed by the Prime Minister on the advice of the Minister for Environment.

NATIONAL CONSERVATION STRATEGY (NCS) – PAKISTAN

The National Conservation Strategy (NCS) – Pakistan, as approved by the Federal Cabinet in March 1992 is the guiding document on the environmental issues in the country (Ref. EUAD/IUCN, 1992). The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources.

The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core areas that

are relevant in the context of the envisaged project are pollution prevention and abatement, restoration of supporting forestry and plantations, and preservation of cultural heritage. A mid-term review of the achievements, impacts and prospects of Pakistan's NCS was undertaken between years 1999 - 2000.

The Government of Pakistan promulgated ―Pakistan Environmental Protection Act in 1977. Two organizations, the Pakistan Environmental Protection Council (Pak-EPC) and the Pakistan Environmental Protection Agency (Pak-EPA), are primarily responsible for administering the provisions of the Act. The Pak-EPC oversees the functioning of the Pak-EPA. Among its major members include representatives of the Federal and Provincial Governments especially the Provincial Environmental Protection Agencies, industry, non- governmental organizations, academia, environment experts, Federation of Chamber of Commerce and Industry and the private sector.

PAKISTAN PENAL CODE (1860)

The Pakistan Penal Code usually called PPC is a penal code for all offences charged in Pakistan. Pakistan Penal Code is a general criminal law, applies all over the country, and contains specific provisions on the subject. Thus, it prohibits mischief by killing or maiming animals, or damaging works of irrigation or a river or a road or a bridge or drain or firing explosive substances with intent to cause damage. The Code also prohibits public nuisance by acting negligently to spread the infection of disease or disobeying quarantine rule or causing adulteration of food or drink or drug, or fouling water or making the atmosphere noxious to health etc.

PAKISTAN ENVIRONMENTAL PROTECTION ACT, 1997

The promulgation of the Environmental Protection Ordinance, 1983 was the first codifying legislation to the issue of environmental protection. Later, the Government passed the Pakistan Environmental Protection Act (PEPA), 1997, which is the basis of IEE/EIA studies carried out for the projects in Pakistan.

PEPA, 1997 is a comprehensive legislation and provides protection, conservation, rehabilitation and improvement of the environment. It contains concrete action plans and programs for the prevention of pollution and promotes sustainable development. The salient features of the law are:

- It covers the air, water, soil, marine and noise pollution including pollution caused by motor vehicles.
- The Act provides Punjab Environmental Quality Standards (PEQS) for wastewater, air

emissions and noise.

- Law provides clear cut guidelines for EIA/IEE for various projects as per their magnitude and anticipated impacts.
- Law also empowers Federal Government to issue notices and to enforce them for the protection of the environment.

For the effective implementation of the provisions of PEPA, 1997, Pakistan Environmental Protection Agency, headed by a Director General was constituted. On the same pattern, Provincial Environmental Protection Agencies (EPA's) were created in all the provinces. Environmental Tribunals were also constituted according to PEPA, 1997.

The Punjab Environmental Protection (Amendment) Act 2012 covers aspects related to the protection, conservation, rehabilitation and improvement of the environment and the prevention, control of pollution and promotion of sustainable development.

The Punjab Environmental Protection (Amendment) Act [PEPA] 2012 establishes complete regulatory and monitoring bodies, policies, rules, regulations and national environmental quality standards. To ensure enforcement, the act establishes regulating bodies i.e. Punjab Environmental Protection Council (PEPC) and responsible bodies i.e. Punjab Environmental Protection Agency (Punjab EPA) at Provincial level. The act extends to the whole of Punjab Province.

Punjab -EPA has the power to arrest without warrant any person against whom reasonable suspicion exists of his having been involved in an offence under the [PEP(A)A] 2012, and enter, inspect and search without warrant any premises, vehicle or vessel. It also provides for seizing any plant, machinery, equipment, vehicle or substance, record or document. [PEP(A)A] 2012 also provides the power to summon and enforce the attendance of any person and issuance of Environmental Protection Order, PO 16, an Environmental Protection Order (EPO), in relation to a person who is contravening a provision of the [PEP(A)A] 2012.

POLICY AND PROCEDURES FOR THE FILING, REVIEW AND APPROVAL OF ENVIRONMENTAL ASSESSMENTS

This document sets out the key policies and procedural requirements. It contains a brief policy statement on the purpose of environmental assessment and the goal of sustainable development and requires that environmental assessment be integrated with feasibility studies. It also defines the jurisdiction of the Federal and Provincial EPA's. It lists down the responsibilities of the proponent and states the duties of responsible authorities. It provides schedules of reports that require either an EIA.

GUIDELINES FOR THE PREPARATION AND REVIEW OF ENVIRONMENTAL REPORTS (NOVEMBER 1997/2000)

These guidelines are descriptive documents regarding the format and content of IEE/EIA reports to be submitted to EPA for — No Objection Certificate (NOC)/Environmental Approval (EA). Following are the major areas, which are covered by these guidelines:

- The EIA report (scope, alternatives, site selection, format of EIA report).
- Assessing impacts (identification, analysis and production, baseline data, significance).
- Mitigation and impact management (and preparing an environmental management plan)
- Reporting (drafting style, main features, shortcomings, other forms of presentation).
- Review and decision making (role, steps, remedial options, checks and balances).
- Monitoring and auditing (systematic follow up, purpose effective data management).
- Project Management (inter-disciplinary teams, programming and budgeting)

PUNJAB ENVIRONMENTAL QUALITY STANDARDS (PEQS)

The Punjab Environmental Quality Standards (PEQS) were first promulgated in 1993 and have been amended in 1998 and 2000. The following standards are specified therein:

a) Maximum allowable concentrations of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers).

b) Maximum allowable concentrations of pollutants (32 parameters) in Drinking water (including physical, chemical, biological, organic and radioactive parameters).

c) Maximum allowable concentrations of pollutants (112 parameters) in gaseous and particulate matter emissions from industrial sources.

d) Maximum allowable concentrations of pollutants in gaseous and particulate matter emissions from ambient air.

e) Maximum allowable concentrations of noise in ambient air.

REGULATIONS FOR ENVIRONMENTAL ASSESSMENT

Under Section 12 (and subsequent amendment) of the PEPA-1997, a project failing under any category specified in Schedule I (SRO 339 (I)/2000), requires the proponent to file an IEE with the concerned PEPA. Projects falling under any category specified in Schedule II require the proponent to file an EIA with the federal agency. Within ten working days of the IEE or EIA having been deposited, the federal/provincial agency will confirm that the document submitted is complete for review. During this time, should the federal/provincial agency require the proponent to submit any additional information, it will return the IEE or EIA to the proponent for revision, clearly listing those aspects that need further discussion. Subsequently, the federal agency shall make every effort to complete an IEE review within 42 days and an EIA review within 90 days of filing. At the time of application, the project proponent is also required to pay a specified official fee to the PEPA to process the case.

SECTORAL GUIDELINES FOR ENVIRONMENTAL REPORTS

These guidelines identify the key environmental issues that need to be assessed as well as mitigation measures and project alternatives to be considered in the actual EIA. These guidelines include:

- Sector overview of the industry and the processes
- Potential impacts on the environment
- Mitigation measures
- Monitoring and reporting
- Management and training
- Checklist of likely environmental impacts and mitigation measures

GUIDELINES FOR SENSITIVE AND CRITICAL AREAS

These guidelines identify sensitive and critical areas in Pakistan, in relation both to the natural environment and the cultural aspects.

NATIONAL RESETTLEMENT POLICY AND ORDINANCE

At this point, the only legislation relating to land acquisition and compensation is the Land Acquisition Act (LAA) of 1894. Following a national consultative process, a national resettlement policy and a related ordinance were drafted. The draft policy and the ordinance are presently being reviewed by the provinces, and have yet to be approved and notified by the government. The salient applicable features of the Draft Resettlement Policy are given below:

- The Pak-EPA will be responsible for both environment-related as well as resettlement-related matters.
- The responsibilities for implementation at a provincial level are to be delegated to the concerned provincial EPAs with overall control of the provincial Planning and Development (P&D) Departments.
- All categories of loss 'arising from development projects that entail resettlement, need to be addressed: these include not only loss of land, built-up property, other infrastructure, and crops and trees, but also loss of income, job opportunities, and access to natural resources, etc.
- Vulnerable groups whose issues need to be addressed include: women, children, destitute persons, tribal communities, squatters, those with usurper rights, and landless groups.

The provisions of the Draft Resettlement Policy are consistent with the requirements of the World Bank OD 4.30 on involuntary resettlement.

FOREST ACT 1927

All India Forest Act, 1927 was adopted by the Government of Pakistan, which was subsequently implemented by the respective provinces. Basically, the law was enacted to conserve and protect the forest resources of the country for sustainable development. It lays down Rules and Regulations for exploitation of various categories of forests such as reserved, protected or unclassified. Further, the Act spells out the licensing method for timber cutting, grazing, hunting etc. It also gives the details of magisterial powers of Forest Department officers and penalties for offences committed about forest resources Other Relevant Documents/Regulations

The list of other relevant documents/regulations are as follows:

- Canal and Drainage Act, 1873
- The Explosives Act, 1884
- The use of explosive is a compelling need at the quarries. The environmental safeguards would require the calculated charge to minimize vibration and dust creation.
- Motor Vehicles Ordinance, 1965
- The West Pakistan Regulation and Control of Loudspeaker and Sound Amplifier

Ordinance, 1965.

- Agriculture Pesticides Ordinance, 1971
- The Antiquities Act, 1975
- Mines Act 1923 Duly Adopted and Up Dated

PROVINCIAL LOCAL GOVERNMENT ORDINANCES, 2001

These ordinances, issued following the devolution process, establish regulations for land use, the conservation of natural vegetation, air, water, and land pollution, the disposal of solid waste and wastewater effluents, as well as matters related to public health and safety.

CHAPTER 5: PROJECT DESCRIPTION

GENERAL

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

PROJECT OBJECTIVES

The overall aim of proposed project is to reduce the pollution load and protect the environment by adopting water conservation measures. After treatment water can be reused in process, horticultural activities and water sprinkling at un-paved roads. Moreover, Project objectives are as follows;

- To treat wastewater and comply with PEQS
- To make water able to reuse after treatment
- To adopt water conservation measures
- To improve and protect the surrounding environment

LOCATION OF THE PROJECT

Proposed project location is in the premises of the Century Paper & Board Mills Ltd. 62 Km,

Lahore Multan Highway N-5 District Kasur.

AREA OF THE PROJECT

The total area required for the installation of WWTP is 5000 m^2

LAND USE ON SITE

The proposed site is open land and in the premises of M/S Century Paper & Board Mills

ROAD ACCESS

The site is easily accessible at 62 Km, Lahore Multan Highway N-5 District Kasur.

VEGETATION FEATURES ON SITE

On the proposed WWTP area, the land has no vegetation cover. The area is devoid of any vast tree cover.

COST AND MAGNITUDE OF OPERATION

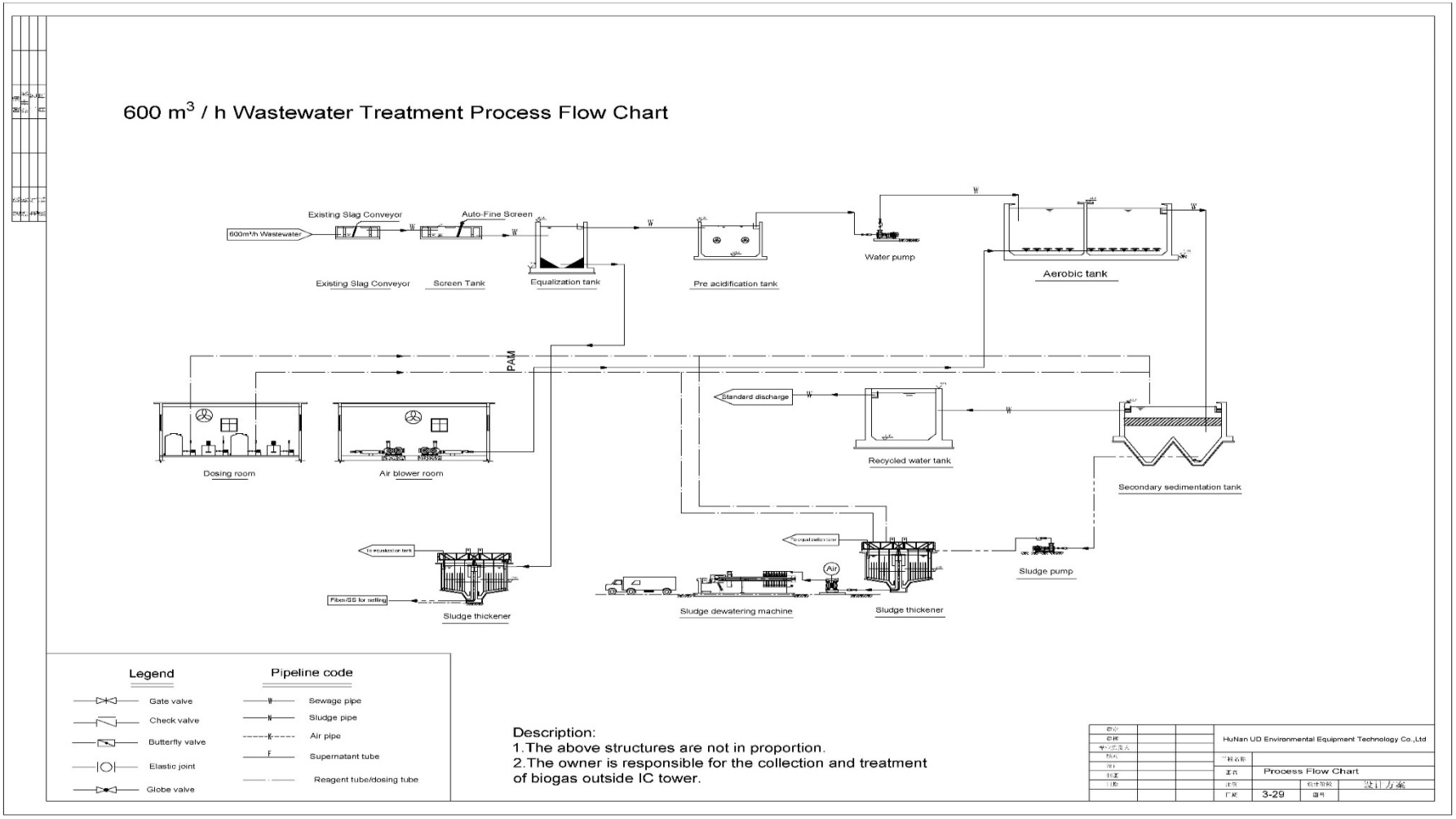
The capital cost of the project is Rs. 500 million. The project will spread over an area of 5000 m^2. The capacity of the Effluent/Sewerage Treatment plant is 600 m^3/hr.

The magnitude of operation includes:

- Detailed site survey, planning and demarcation of the various regions in the project area.
- Site suitability assessment.
- Process, electrical and civil designing.
- Purchase and delivery of equipment.
- Civil construction.
- Mechanical and electrical erection.
- Testing and commissioning.
- Plantation of various ecologically important species on the designated green space.

DESCRIPTION OF PROJECT

The said project is the installation of wastewater treatment plant for treating the wastewater generated from production of paper at M/S Century Paper & Board Mills. The technology proposed for the treatment is Activated Sludge Process (ASP) because it is most recommended, efficient and economical technology. The treatment capacity of said plant will be 600 m3/hr. Its description is given below. The process flow chart and the detailed design of WWTP is shown below;


600 m3 / h Wastewater Treatment Process Flow Chart
Existing Slag Conveyor
Auto-Fine Screen
600m³/h Wastewater
Existing Slag Conveyor
Screen Tank
Equalization tank
Pre acidification tank
Water pump
Aerobic tank
PAM
Standard discharge
Recycled water tank
Secondary sedimentation tank
Dosing room
Air blower room
Sludge pump
Sludge thickener
Sludge dewatering machine
Sludge thickener
Air
Fibre/GS for selling
Legend
Gate valve
Check valve
Butterfly valve
Elastic joint
Globe valve
Pipeline code
Sewage pipe
Sludge pipe
Air pipe
Supernatant tube
Reagent tube/dosing tube
Description:
1.The above structures are not in proportion.
2.The owner is responsible for the collection and treatment of biogas outside IC tower.
HuNan UD Environmental Equipment Technology Co.,Ltd
Process Flow Chart
3-29

COMPONENTS OF WASTEWATER TREATMENT PLANT

i. Screening

Screening is the first process at wastewater treatment plants (WWTPs). Screening removes objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances. Some modern wastewater treatment plants use both coarse screens and fine screens.

ii. Equalization Tank / Equalization Basin

Providing consistent flow and loading to a biological process is important to maintain optimal treatment. Equalization (EQ) Basins are designed to provide consistent influent flow to downstream processes by removing high flow fluctuations. Due to the additional retention time, aeration and mixing is required in equalization basins to prevent the raw wastewater from becoming septic and to maintain solids in suspension. The uniform concentration of treated effluents can be achieved to meet the enforced effluents standards. Moreover, it provides a point of recycling concentrated streams from sludge drying beds, etc.

iii. Neutralization Tank

Neutralization of wastewater is a critical step in most industrial wastewater treatment processes. There are a multitude of regulatory requirements both Federal and Provincial regarding wastewater discharge requirements. Users should consult their local agencies for specific requirements as they can vary by region. Any company that discharges effluent into sewer systems, lakes, streams are required to neutralize this effluent before allowing it to be discharged. Non-compliance could result in fines and other consequences. In many instances, recording the pH of the discharge is also required.

iv. Components of a pH Adjustment/Neutralization System

A basic pH adjustment / neutralization system consists of six basic components:

- Instrumentation for monitoring, controlling, and recording
- pH electrodes and/or ORP sensors and associated mounting hardware
- Effluent holding tank
- Level control
- Chemical pumps and reagent storage tanks
- Mixers/agitators

In this system, effluent flows into the holding tank where a pH sensor (also known as pH electrode or pH probe) senses the pH of the solution. The sensor provides input to the pH controller device which operates chemical pump(s) to inject acid or caustic as required to

neutralize the effluent. The mixer serves to evenly distribute the neutralizing chemicals throughout the holding tank to ensure complete neutralization.

v. Primary Clarification

Primary clarification is the physical treatment process of removing solids before biological treatment. It is the most cost effective way to remove these solids after basic screening. Process water enters the clarifier tank and floatable solids (scum) are removed from the surface by skimmers while settle able solids (sludge) are collected on the bottom by a rake and removed via a sludge removal system. Effluent destined for biological treatment leaves the clarifier over a weir. The expected range for percent removal in a primary clarifier is 90%-95% settle able solids, 40%-60% suspended solids, and 25%-50% total BOD5.

vi. Oxidation pond

Oxidation ponds, also called lagoons or stabilization ponds are large, shallow ponds designed to treat wastewater through the interaction of sunlight, bacteria, and algae. Algae grow using energy from the sun and carbon dioxide and inorganic compounds released by bacteria in water. During the process of photosynthesis, the algae release oxygen needed by aerobic bacteria. Mechanical aerators are sometimes installed to supply yet more oxygen, thereby reducing the required size of the pond. Sludge deposits in the pond must eventually be removed by dredging. Algae remaining in the pond effluent can be removed by filtration or by a combination of chemical treatment and settling.

vii. Final Clarifiers

Final clarifiers providing enough detention time at average daily flow, settle out the Activated

Sludge and other heavy solids by gravity, while floatable are removed by skimming. A major portion of the activated sludge is returned to the plant flow upstream of the aeration basins. The activated sludge is returned to the plant flow in order to maintain a high concentration of bacteria and microorganisms within the process. The excess portion of activated sludge, known as waste activated sludge, is pumped to a point upstream of the primary clarifiers where it is comingled with the raw wastewater and settles with the primary clarifier sludge.

viii. Sludge Holding Tank

A sludge holding tank has been offered where primary sludge and Waste activated sludge will be held and transfer in sludge dewatering system after dewatering sludge shift for disposal and water again transfer into equalization tank, it also reduce the odor problem before transferring the raw sludge to a sludge dewatering system.

ix. Supplies

Following supplies will be utilized for the installation and operation of instant project:

a) Manpower (Direct & Indirect)

During construction phase 50-60 workers will be involved. During the operation phase of the project, the total manpower requirement is estimated to be 10 people comprising administrative, technical, and non-technical persons. These include engineers, chemists, computer operators and environmentalist etc. All recruited staff will be given appropriate training in order to educate them on the specific job tasks to be performed; safety procedures and monitoring parameters.

b) Emergency Response System

The system covers the emergency response system in case of inefficient working of treatment plant and any mechanical fault. Emergency response team will be designated the relevant tasks and trained them how to respond in this situation.

c) Electricity

The main source of electricity will be WAPDA.

d) Wastewater Management

The proposed project is the treatment of the wastewater generated from paper industry. The treatment capacity of proposed WWTP is 600 m3/hr.

e) Noise

Wastewater Treatment plant may generate significant noise but to control that noise proper mitigation measures will be adopted. Proper lubrication of machinery will be done and PPE's will be provided to workers. Residential areas are at safe distance from project site. Moreover, regular monitoring will be conducted to comply with PEQS.

SOLID WASTE MANAGEMENT SYSTEM/PRACTICES

The Solid waste will be managed in proper way by following operations:

- Placement of separate waste bins for domestic and project related waste in all designated points.
- Collection of waste from all the offices at one designated point by the sanitary workers on daily basis.
- Careful collection of sludge on regular basis and temporary storage at designated point.

- Collection of waste from designated area and handling to the solid waste contractors for its final disposal.

PLANTATION

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

PERSONAL PROTECTIVE EQUIPMENT

Following PPEs will be available for the workers in the installation of existing grid station

- Dust Mask
- Ear Plugs
- Ear muffs
- Safety Boots
- Safety Gloves
- Safety Belt
- Helmet
- Goggles

Table: Types of PPEs used during Installation activities

Protection	Occupational Hazards	PPEs
Head Protection	Falling objects, inadequate height clearance, and overhead power cords	Helmets with or without electrical protection
Hand protection	Hazardous material, cuts or lacerations, vibrations, extreme temperatures	Synthetic or Rubber gloves, leather, insulating material etc.
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors,	Glasses, shield protective, etc.
Hearing protection	Noise, ultra sound	Hearing protectors like ear plugs, ear muffs
Respiratory protection	Dust, fogs, fumes, gases, smokes, vapors, oxygen deficiency	Facemasks or air supply
Body protection	Extreme temperatures, hazardous materials, biological agents, cutting and	Aprons, insulating clothing etc. of appropriate materials

Restoration and Rehabilitation Plan

After completion of construction site will be restored and leveling. Leftover construction material will be removed from site and it will be reused in other construction activities. Renovation/repairing of parts will be done whenever required however, at the expiration of the useful life of the project; adequate arrangements will be made to remove all movable assets. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling all Government rules and regulations as applicable to such activities will be strictly adhered to. Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Generated dust will be minimized by sprinkling water on regular basis. After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spillover of these materials will be cleared adequately.

CHAPTER 6: DESCRIPTION OF ENVIRONMENT

GENERAL

An environmental baseline study is intended to establish a data base against which potential impacts can be predicted and managed subsequently. The EIA of the existing project covers a comprehensive description of the project area, including regional resources which are expected to be affected by the project, as well as, those which are not expected to be directly affected by the operation of the project.

A site visit was conducted to survey the field area for collection of relevant data. Interviews were conducted with the general public and stakeholders of the project area in order to seek the public opinion on the implementation of the existing project. The environmental impacts of any activity or process will be assessed on the basis of deviation from the baseline or normal situation. The following components form part of the baseline study:

- Physical Environment
- Ecological Environment
- Socioeconomic Environment

PHYSICAL ENVIRONMENT

Kasur District is one of the districts in the province of Punjab, Pakistan. It came into existence on 1 July 1976.Earlier it was part of Lahore District. The district capital is Kasur city, the birth city of the Sufi poet Bulleh Shah, well known in that region as well as in the whole of Pakistan.

The district is bounded by the Ravi River in the north-west and river Sutlej in the south-east. Whereas the old course of Beas River bifurcates the district into two equal parts locally known as Hither and Uthar or Mithan Majh. Both of the areas have a height differential of approximately 5.5 meters. The natural surface elevation of the district is 198 meters above the sea level, having a general slope from north-east to south- west. Whereas the east and west ends of the district comprise the flood plains of the rivers Sutlej and Ravi, characterized by breaching of looping river Channels braided around meander bars. Based on geography, topography and geology, the project area is briefly described below:

Geography

The district is located between 31°7′0″N and 74°27′0″E. The demographical profile of district shows that the total area of the district is 3,995 square kilometres. The total population of Kasur district is 488,741 persons[1]. Literacy rate is about 48.6%, average household size is 6.4 people and average annual growth rate is 2.03% from 1998 to 2017[2].

Seismic zone

According to seismic zoning of Pakistan the project area lies in seismic zone 2A[3] and represents minor damage. Earthquake with high intensity for a fundamental period of more than 1 second may cause damage to infrastructure. Seismic zoning map of Pakistan is given in figure 4-1 below.

1 Source: https://en.wikipedia.org/wiki/Kasur#Geography

2 Source: http://www.pakinformation.com/population/kasur.html

3 Source: Building Code of Pakistan (Seismic Provisions 2007)

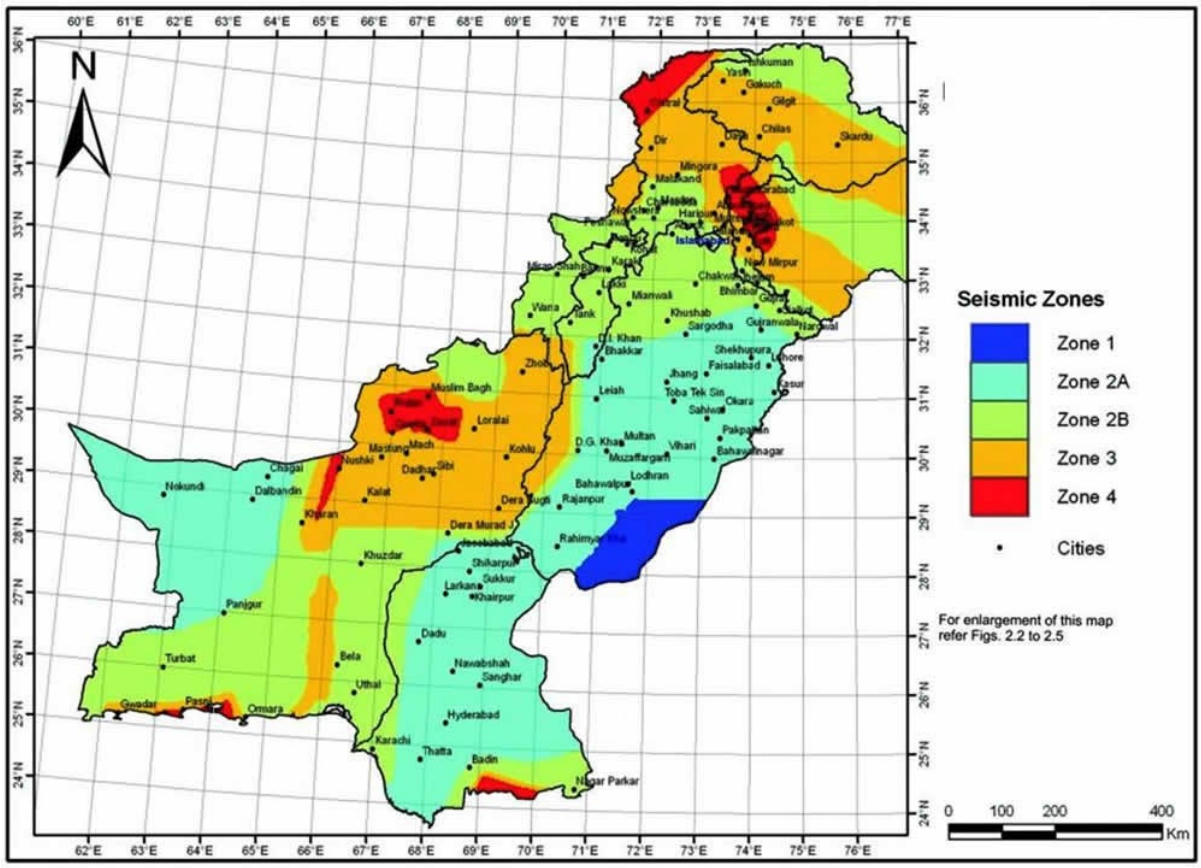


Figure: Seismic Zoning Map of Pakistan

Climate

Kasur's climate is a local steppe climate. There is little rainfall throughout the year. According to Köppen and Geiger, this climate is classified as BSh. The temperature here averages 23.9 °C. About 424 mm of precipitation falls annually. Precipitation is the lowest in November, with an average of 3 mm. The greatest amount of precipitation occurs in July, with an average of 125 mm.

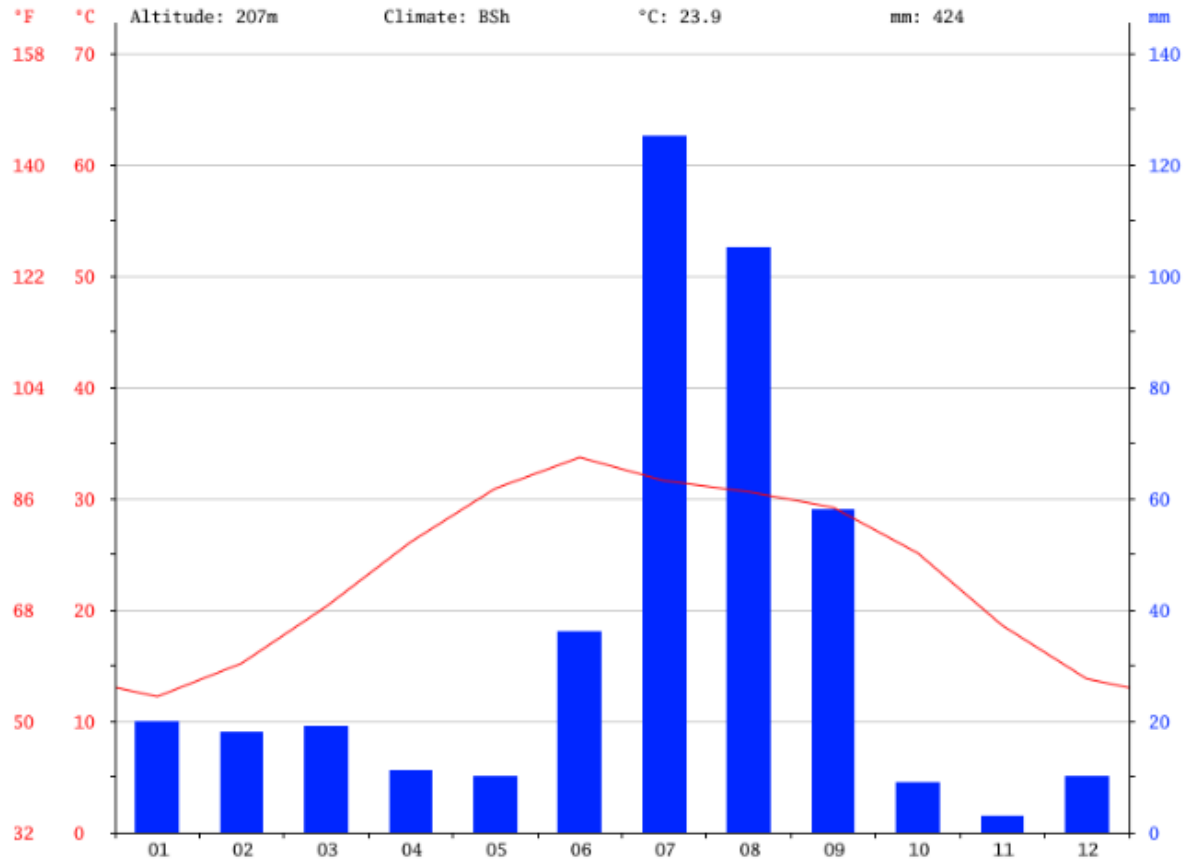


Figure: Graphical Representation of Climate in Kasur

Temperature

At an average temperature of 33.7 °C, June is the hottest month of the year. The lowest average temperatures in the year occur in January, when it is around 12.2 °C. Between the driest and wettest months, the difference in precipitation is 122 mm. The variation in temperatures throughout the year is 21.5 °C.

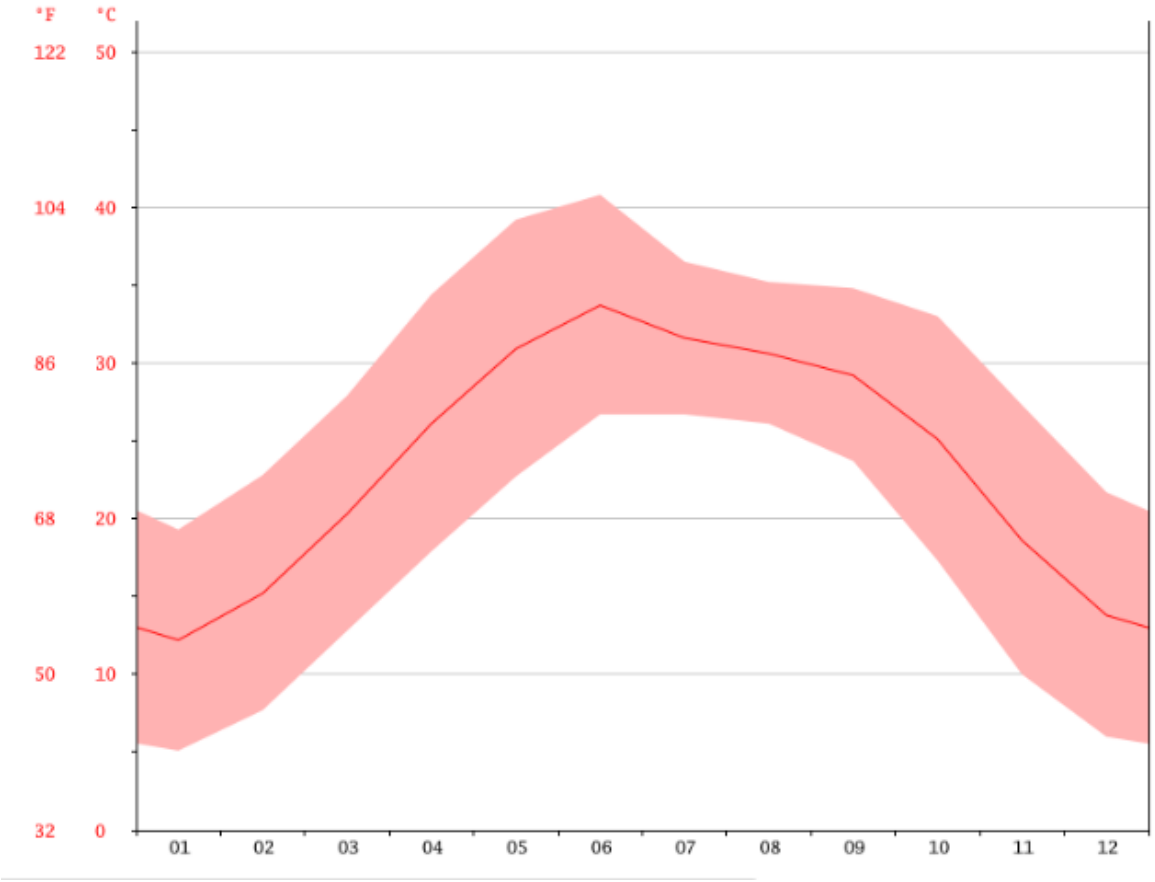


Figure: Average Temperature in Kasur

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	12.2	15.2	20.3	26.1	30.9	33.7	31.6	30.6	29.2	25.1	18.6	13.8
Min. Temperature (°C)	5.1	7.7	12.8	17.9	22.7	26.7	26.7	26.1	23.7	17.3	10	6
Max. Temperature (°C)	19.3	22.8	27.9	34.4	39.2	40.8	36.5	35.2	34.8	33	27.3	21.7
Avg. Temperature (°F)	54.0	59.4	68.5	79.0	87.6	92.7	88.9	87.1	84.6	77.2	65.5	56.8
Min. Temperature (°F)	41.2	45.9	55.0	64.2	72.9	80.1	80.1	79.0	74.7	63.1	50.0	42.8
Max. Temperature (°F)	66.7	73.0	82.2	93.9	102.6	105.4	97.7	95.4	94.6	91.4	81.1	71.1
Precipitation / Rainfall (mm)	20	18	19	11	10	36	125	105	58	9	3	10

Figure: Temperature of Kasur during Different Months

Rainfall

About 424 mm of precipitation falls annually. Precipitation is the lowest in November, with an average of 3 mm. The greatest amount of precipitation occurs in July, with an average of 125 mm. Between the driest and wettest months, the difference in precipitation is 122 mm.

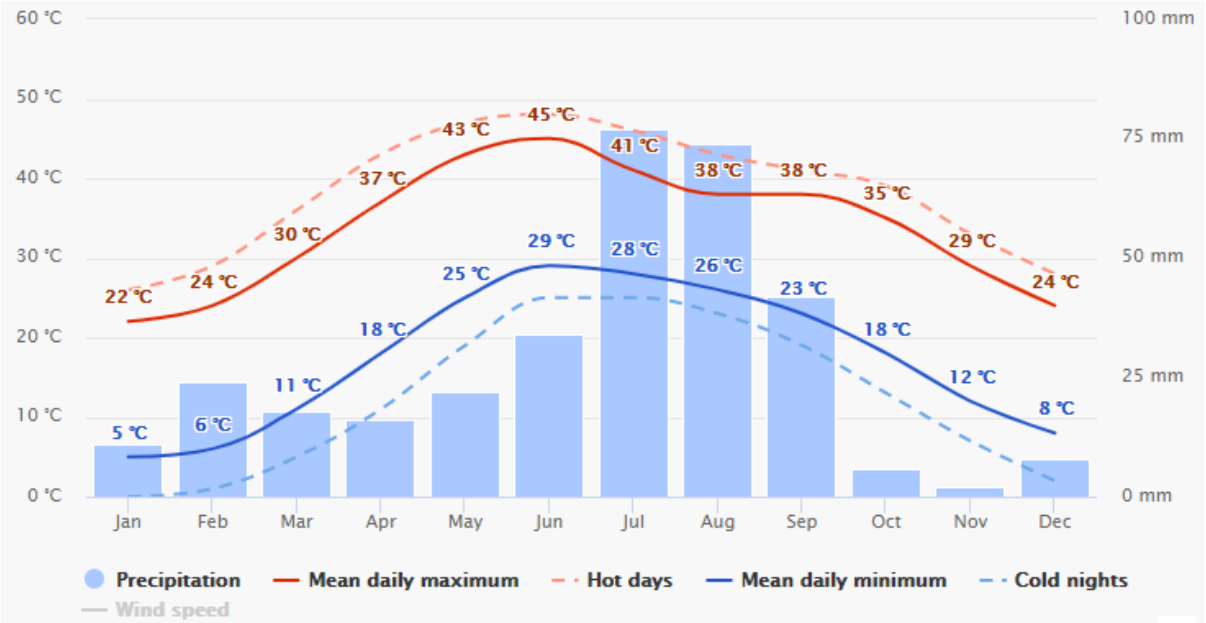


Figure: Average Precipitation in Kasur

The "mean daily maximum" (solid red line) shows the maximum temperature of an average day for every month for Kasur. Likewise, "mean daily minimum" (solid blue line) shows the average minimum temperature. Hot days and cold nights (dashed red and blue lines) show the average of the hottest day and coldest night of each month of the last 30 years. Monthly precipitations above 150 mm are mostly wet, below 30 mm mostly dry.

Water Resources

Water constitutes an important section of the physical environment of an EIA Study to define its magnitude, quality and occurrence throughout the entire project corridor.

Water resources of the area are discussed under two broad headings, surface water resources and groundwater resources.

Surface Water

Surface waters resources are usually exposed to the surface of earth in the form of mobile and immobile situation which includes snow-clad mountains, rivers, non-river streams, rain, sleet, wetlands and oceans. Surface resourced waters are highly susceptible to natural and anthropogenic derived contamination in terms of Chemical and Biological contamination and

thus are not used for sensitive applications such as drinking directly, unless it is pre-treated. There is no surface water body found near the vacinity of the project area.

Ground Water

Ground water resources are found hidden and camouflaged into the surface of earth in the form of mobile and immobile state and exist as shallow and deep wells, confined and un-confined aquifers, springs and watersheds. Ground resourced waters are not easily susceptible to natural and anthropogenic derived contamination caused by Chemical/Biological pollution and thus is directly used for sensitive applications such as drinking even it is un-treated. The project area lies in the district of Kasur; the groundwater table normally exists approximately 5 feet to more than 20 feet below the ground surface level[4].

ECOLOGICAL ENVIRONMENT[5]

Ecological Environment includes:

- Flora
- Fauna
- Endangered species

Flora

Flora of the district has been greatly modified by human agency of the old open forests of small trees and shrubs. There remains only a few Rakhs or portions of forest which are kept as gazing ground for cattle etc. Amongst trees the most important are Kikar (Acacia arbica), Shisham or Tahli (Dalbergia sissoo), Beri (*Zizyphus jajaba*), Toot (*Morus marlaccae*), Sharin (*Albizzia lebbek*), Dharek (*Malia azerdaracb*), Phulahi (*Acacia modesta*), and Nim (*Melia indica*), Piple (*Ficus indica*) are planted for shade.The growth in Rakhs is composed mainly of three kinds of trees Jand (Prosopis spicigera), Karril (*Capparis aphylla*), and van or Jal (Salvadora obeoides). Occasionally, Pelu (*Acacia loucophhloea*) and Farash (*Tamarix articulate*) are also found. Pilchi (*Tamarix gallio*) is found on moist sandy soil along the rivers and is used for wicker-work, basket making etc.

4Source:https://www.waterinfo.net.pk/sites/default/files/knowledge/Time-Rate%20changes%20in%20Groundwater%20Levels%20and%20Quality%2C%20Punjab%2C%202009.pdf

5 Source: http://www.findpk.com/cities/Explorer-pakistan-Kasur.html

Fauna

Wolf and jackal are the only wild animals of any importance. The former being met with occasionally in the low land wastes of Chunian Tehsil but jackal are found everywhere. Changa Manga reserve a thick forest is the only area in which a few Nelgai, pig, and peafowl and here are found.

Endangered Species

There are no floral or faunal species inhibiting in the project area that are included in RED Data Book of IUCN, birds population is reported to be reduced during last decades because of pesticide sprays on crops.

SOCIOECONOMIC ENVIRONMENT

Socio-economic and other relevant information revealed from Multiple Indicator Cluster Survey (MICS) 2007-08. One of the main objectives of Multiple Indicator Cluster Survey (MICS) was to establish credible baseline for socio-economic status at each district level and Tehsil Level.

Table: Summary of Socio-Economic Indicators

Socio-economic indicators	District Vehari
Number of households	3,651
Number of under-5 children	3,027
Solid fuel used	88.1%
Improved source of drinking water	97.0%
Water treatment used in the household	2.1%
Percentage of population using sanitary means of excreta disposal.	59.8%
Proper disposal of solid waste	57.3%
Literacy rate	48.6%
Percentage of children for primary school entry	14.2%
Total child labor	13.5%
Had cough for more than last three weeks	1.8%
Diagnosed with Tuberculosis during last one year	0.3%
Diagnosed with Hepatitis during last one year	0.4%
Employed	97.3%
Unemployed and seeking job	2.7%
Household Utilities	
Electricity	86.7%
Gas	7.4%
Radio	34.7%
TV	47.8%
Cable TV	11.5%
Telephone	6.5%
Mobile	60.2%
Socio-economic Development	

Livestock	62.0%
Mean household size	6.4
Govt. hospitals	7.5%

Quality of Life Values

Different type of houses were observed in Kasur during survey i.e., katcha, pakka, semi pakka etc having poor drainage system. Majority of people live within the village, a few in their farmhouses (Deras) while some make their homes on their agricultural land. So there is no formal pattern of settlements. Family composition of both the villages is dominantly joint family system but a few nuclear families also exist in the area.

Indigenous People

People inhibiting the project area are of different castes and races. Most of the families have been living here from 20 to 25 years which has led to homogeneity of culture and the development of a closed economy. There is no danger of damage or elimination of indigenous community as the locals are steeped in their customs and have no intention of relocating.

Religious & Ethnic Groups and Caste Patterns

According to the 1998 census, Punjabi is the most widely spoken firs language (88%), whereas Urdu was the first language of 6.2% of the population. The district is unusual in that Urdu accounts for a greater proportion of speakers in rural (7.3%) than in urban areas (2.6%). Religion plays an important role in the social structure of the society. Out of total population of Kasur, 95.4% are Muslims, 4.4% are Christians while the rest are Ahmadis, Hindus and scheduled castes. 22.78% of them lived in the urban areas.

Social Infrastructure and Facilities

Overall the social and physical infrastructure is not up to the mark in the project area. However, the project area is better as compared to the other rural areas of the province. A brief account of the education, health, infrastructure and markets of the area is as follows:

Health facilities

Though earlier very few specialist doctors were available and most of the people resorted to the adjacent city of Lahore for their health care needs. But now BIT (Bhatti International Trsut) Teaching Hospital is catering needs of many people by offering free check up facilities. Whereas many small hospitals and clinics are providing basic health services as well.

Economy of the area

Kasur is famous for raw leather produce which is sent within country and exported for further

cutting, polishing etc. Hand looms, which are now replaced by machine looms, have been another big industry of kasur. Shoe making industry for sale within and outside the country has also flourished in last two decades and is a major cause of economic well being of lower class of area.

Chemical production is also a good business in the city. Whereas many textile, food, iron, light machinery industries are located within the district. Kites and strings manufacturing has been a business of the poor prior the ban on kite flying and use of chemical/steel string some years ago. A very famous paper mill, Packages Ltd. has also erected its new mill in vicinity of the main city. Some sugar mills are also located in Chunian and pattoki tehsils. Kasur is also well-knowned as the city of foods, there are so many foods industries are working with the best quality like: Kasuri Methi, Rice, Corn, Potatoes and many other vegetable & fruits products.

Agriculture

Kasur is famous for Huldi (kitchen & medical use vegetable). While wheat, potato, corn, sugar cane, seasonal vegetables are famous field products. Cotton is also produced in very low quantity now. Kasur is considered as main supplier for seasonal vegetables and milk to Lahore. Dairy farming is also being practiced by farmers. Bamboo is very famous field produce of the area, which is used for many purposes after value adding works on it. Kasur is also famous for the Rahu fish caught from the Sutlej River, whereas many fish farms are there to produce and sell fish at local level.

Livestock

Livestock ownership has also developed in the project area; especially among poor families who sell animals during emergency days as mostly unemployed people depend on livestock and sometimes agriculture. The people have livestock which include cows, goats, sheep and donkeys. All the animals are of native breed. Milk and butter from the livestock are consumed by the household and are sometimes sold in the market.Good breeds of buffaloes and cows are found in the project area. Goats, horses, asses and mules are also part of the livestock.

Archeological and cultural sites

There were no archaeological sites near the project area although nearest chaks do have mosques, graveyards and darbars.

Environmental Baseline Monitoring

To assess the baseline conditions of the project area, following environmental components were monitored:

- Ambient air quality
- Noise levels

SUITABILITY OF SITE

The site does not fall in any sensitive area. The extension of project will be done within the existing site.

CHAPTER 7: MPACT ASSESSMENT

This section discusses the potential environmental impact for waste water traetment, methodologies for impact identifications and characteristics of impacts including nature, magnitude, extent and location, timing, duration, reversibility, risk. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

METHODOLOGY FOR IMPACT IDENTIFICATION

The potential impacts due to waste water mining can be negative (adverse) depending on the resources and receptors involved along with other parameters such as geographical scope (magnitude and extent), temporal scope (duration) and reversibility.

It is anticipated that this project will have positive impacts on sectors such as the economy, employment and foreign exchange earnings among others. Moreover, the project is expected to result in negative impacts of short-term duration and transient in nature.

Environmental sensitivity of the project area is described through a thorough review of the project activities and the evaluation of significance of impacts is carried out through Environmental Checklists and GIS and computer expert system. In checklists, the impacts have been given magnitude based on their severity. A detailed map of the project area is developed on GIS to study the impacts on nearby environmental settings. This chapter then suggests effective mitigation strategies to help combat the adverse nature of these impacts and delivers a monitoring scheme to manage them.

IMPACTS ANALYSIS AND PREDICTION

The impacts on different environmental settings were analyzed by conducting different consultation sessions with environmental experts and individuals. Their views were recorded and incorporated in the report. The list of stakeholders and individuals consulted will be provided in the chapter of Stakeholder's Consultation.

CHARACTERIZATION OF IMPACTS

Impacts were characterized on the basis of following parameters:

- Nature
- Duration
- Magnitude
- Spatial Boundaries
- Extent

- Reversibility

Categories	Characteristics
Nature	Direct: The environmental parameter isdirectly changed by the project. Indirect: The environmental parameterchanges as a result of a change in another parameter.
Duration of impact	Short-term: Lasting only for the duration of the project such as noise from the construction activities. Medium-term: Lasting for a period of few months to a year the project before naturally reverting to the original condition such as loss of vegetation due to the clearing of the construction site, contamination of soil or water by fuels or oil.Long-term: Lasting for a period much greater than medium-term impact before naturally reverting to the original condition such as loss of soil due to soil erosion and air emissions.
Geographical extent	Local, regional (spatial dimension)
Reversibility of impact	Reversible: When a receptor resumes its pre-project condition. Irreversible: When a receptor does not or cannot resume its pre- project condition.
Likelihood of the impact	High: Impact expected to occur under most circumstances Moderate: Impact will probably occur under most circumstances.Low: Impact could rarely occur at some time.
Significance of impact	Categorized as Positive or Negative. Based on the consequence, likelihood, reversibility,geographical extent, and duration; the level of public concern; and conformance with legislative of statutory requirements.

The impacts characterization for the project has been given in Table:

Table: Characterization of Impacts

Environmental Component	Impacts		Natur eof Impact		Duration			Spatial Boundaries			Likelihood			Reversibility	
	Positive	Negative	Direct	Indirect	Short Term	Intermediate	Long term	Local	National	Global	Low	Moderate	High	Reversible	Irreversible
Water Resources	Nil														
Land Resources	■		■				■	■				■			■
Air Quality		■	■		■			■			■			■	
Climate Change	Nil														
Noise		■	■		■			■			■			■	
Solid waste		■	■		■			■			■			■	
Wastewater		■	■		■			■			■			■	
Local Economy, Community Development and Employment	■		■			■		■				■		■	
Resettlement															
Health & Safety		■	■			■		■				■		■	■

Impact Significance

After the evaluation of all the potential impacts, the impacts significance is being given using Impact matrix. The impacts significance of Physical importance, Ecological importance, Social importance is given using the matrix approach. The impacts significance is given based on the characterization of impacts. From the Table which is showing the characterization of each impact the following significance is given to each physical, biological and socio-economic impact.

Table: Significance of Environmental Impacts

Environmental Parameters	Significance
Water Resources	None
Land Resources	None
Air Quality	Require mitigation
Climate Change	None

Acid Mine Drainage	None
Noise	Require mitigation
Solid waste	Require mitigation
Wastewater	Require mitigation
Flora & Fauna	Acceptable
Community Amenity	Acceptable
Afforestation	Acceptable
Local Economy, Community Development and Employment	Acceptable
Health & Safety	Require mitigation

CHAPTER 8: SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

GENERAL

This Chapter identifies the potential impacts (positive and adverse) on the physical, biological and socio-economic environment of project area due to proposed project. It also identifies measures that will help to mitigate the adverse environmental and social impacts (if any) and it will enhance positive impacts of the project. Impacts are assessed by analyzing their magnitude and sensitivity, which is a legal requirement.

PROJECT LOCATION

The proposed project is the installation of effluent treatment plant having capacity 3600m3/day located at 62-km Multan road N-5, district kasur. There is no human settlement, heritage building, social structure, grassland or preserved area in the project vicinity that could be damaged, dislocated or dismantled due to the project activity in the proposed area. The proposed project site is undisputed open land adjacent to M/s CPBM. So, no other site alternative has been considered in this regard. Wastewater generated from the operation of sugar mill will be treated in proposed treatment plant.

Nature of Impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

No mitigation measure will be adopted as the selected site is in close proximity of existing unit and is already under the ownership of the Proponent.

DESIGN

The said treatment plant is designed according to flow rate of wastewater generated from sugar manufacturing. However in pre-construction phase a management system should be provided so anticipated impacts can be reduced. Design of the proposed plant will adhere to all standard technical requirements in order to avoid adverse impacts on socio-environmental aspect.

Nature of Impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigation Measures

No mitigation measure will be required as state of the art technology is being adopted for the installation of WWTP.

IMPACTS AND MITIGATION MEASURES DURING CONSTRUCTION PHASE

The main contractor for the construction of aforementioned project will be expert in similar construction developments. It is expected that a maximum of 50-60 workers will be hired and it is planned that they will use existing building for domestic activities. The construction activities will include:

- Site leveling
- Utilities and services connections to site
- Foundation excavations and installation of concrete footings
- Erection of treatment plant
- Installation of equipment and machinery
- Commissioning

Impacts of Dust and Exhaust Emissions

Air quality is expected to deteriorate locally mainly due to fugitive dust emission and exhaust gaseous emission from vehicular movement. This will cause short-term but moderate impacts on local environment. Soil erosion may occur in small area and they will be prone to wind erosion. Air pollutants such as; NOx, SOx and CO emissions maybe generated from the working of the construction machinery on-site which includes; hauling vehicles, loaders, trucks, mixers, etc. This machinery will generate, smoke and other potential pollutants in the air. This impact is considered to be negative of minor magnitude. The effect due to construction is however, of temporary nature and will have no permanent impact on environment.

Nature of Impact

The nature of the proposed impact will be direct, medium, short-term and hence significant.

Mitigation Measures

Dust control measures are need to be taken to control the same; as the area is located in semiarid zone having dry soil conditions and it is vulnerable to spread during high winds. Following mitigation measures will be adopted to mitigate the anticipated impact:

- Ensure that the trucks carrying the raw-material should be covered with sheets to reduce fugitive dust emissions.
- Water spraying/sprinkling should be done on the regular basis

- Ensure that all equipment and vehicles, used during the construction phase, are properly tuned and maintained in good working condition, in order to minimize the exhaust emissions and it will be regulated by the concerned authority.
- Ensure that high quality fuel having low sulfur contents will be used in the vehicles engaged in the construction activity.
- Ensure that dust emission generated due to vehicular movement is minimized by restricted speed limit and vehicular movement impacts which will be minimized through good traffic management at site.
- Ensure that dust emission during the construction phase will be minimized by implementing best management practices.

Soil Erosion and Contamination

On-site disposal of solid waste and leakage from construction machinery/vehicles can cause soil contamination. Improper disposal of domestic wastewater may contaminate the soil which would result in groundwater contamination.

Nature of Impact

The nature of the impact will be short-term and insignificant.

Mitigation Measures

The following practices will be adopted to minimize the risk of soil contamination:

- Removal of the tree will be avoided up to the extent possible. In case of un-avoidable circumstances, the exposed soil will be re-vegetated quickly and compensatory plantation (five trees for each one removed) will be carried out as soon as possible.
- Maintenance and washing of vehicles and equipment should be carried out at designated areas.
- Regular inspections should be carried out to detect leakages in construction vehicles and equipment. It is mandatory to instruct and train workforce in the storage and handling of materials that can potentially cause soil contamination.
- Solid waste bins should be installed at strategic positions.
- Proper segregation of solid waste should be done. Solid waste generated during construction will be properly and safely disposed of as per practices of area.
- Segregated organic waste may be converted into compost which will be utilized for onsite horticultural activities.

Noise Pollution

The use of heavy equipment during site clearance and construction works will inevitably generate noise, which may create a nuisance in the vicinity. The aforesaid impact is considered to be negative as it will not last for an extended time period and thus this aspect can be

considered to have a very low significance.

Nature of Impact

Nature of impact will be low, short-term, temporary and significant

Mitigation

Following mitigation measures should be adopted:

- Warning signs should be posted within the vicinity of the impact and all personnel shall be provided with personal protective equipment. For example, workers operating equipment that generates noise should be equipped with the appropriate noise protection gear.
- Construction activities that will generate disturbing sounds should be restricted to day time.
- Proper tuning of the vehicles should be done on the regular basis, so that the noise level will be reduced up to the acceptable limits.
- Noise related activities should be done speedily and completed as soon as practically possible.
- Construction activity should be confined to the small reserved area.
- 20 km/hr speed limit should be maintained.

Impacts on Ground Water Quality

The construction activities will be associated with mechanical fabrication, assembly and erection of the wastewater treatment plant. If it is deemed necessary for the proposed treatment plant to have deep foundations due to poor soil strata qualities, deep excavations might be required. The main negative impact associated with deep excavations will be the pollution of ground water.

Nature of Impact

The nature of the impact will be high, short-term, temporary and significant.

Mitigation

Following mitigation measures will be adopted:

- Adopt proper excavation measures.
- Monitoring should be carried out throughout the constructional activity to check the ground water quality.

Occupational Safety

During the construction phase, heavy machinery will be deployed on-site. Heavy machines

make a lot of noise, may generate carbon dioxide emissions, generate dust and may cause accidents among operators, if not handled properly. This is likely to have negative impact on health of the workers. To limit the risk of accidents, safety procedures will be put in place and enforced by the foreman to ensure that vehicles and machinery only drive in designated places by authorized personnel.

Nature of Impact

The nature of the impact will be high, short-term, temporary and in-significant.

Mitigation

- To reduce the hazard, the following mitigation measures will be implemented:
- Make sure all the workers wear Personal Protective Equipment (PPEs) while working.
- The PPEs will include; helmets, safety shoes, mask, ear-plugs/ear muffs, etc.
- Wearing of the PPEs should be enforced strictly by the contractor.
- Regular checking and maintenance of the machines should be done in order to maintain working machinery and to avoid accidents
- Noise related activities should be done during the day hours and make sure the workers wear the ear-plugs/muffs.
- Generated dust can be controlled effectively by water sprinkling.
- No machinery will be left unattended, particularly in the running condition.
- Nighttime driving of project vehicles will be limited.
- The Contractor will ensure that construction labor is trained in safety procedures for all relevant aspects of construction.
- Management will make regular checks that the contractor is following safe practices
- The safety of the public at all stages of the construction will be ensured by provision of safety measures such as use of sign boards, barriers and flags.

Socioeconomic Impacts

In project area, no significant changes are envisaged in the traditional life style and occupation of the local people in residing in the nearby communities. The local people are rather benefited due to the provision of job opportunities. No impact is envisaged due to the influx of the workers as the local will be preferred and hired for working.

Nature of impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigation

Following mitigation measures will be adopted to reduce the socio-economic impact on the community:

- Good relations with the local communities will be promoted by encouraging Contractor
- to provide opportunities for skilled and un-skilled employment to the locals as well as on-job training.
- Contractor will restrict his permanent staff to mix with the locals to avoid any social problems.
- The contractor should prefer hiring local labor from adjacent community.
- The contractor will keep the copy of National Identity Card (CNIC) of his employees and will warn the workers not to involve in any anti-social activities otherwise they may face dire consequences.
- At the time of hiring the Contractor has to ensure that the workers should be of good repute.
- First aid kits having all the necessary first aid stuff will be available at the site.
- Routine medical check-ups of all the field staff including unskilled labor needs to be conducted by qualified physician and surgeon.
- Training of workers should be carried out for operating various constructional machinery, safety procedures should be adopted, environmental awareness should be carried out, equip all workers with safety boots, helmets, gloves, protective masks and monitoring of their proper and sustained usage will be carried out. In case of accidents, contractor will provide free medical treatment to the community.

IMPACTS AND MITIGATION MEASURES DURING OPERATIONAL PHASE

The following section describes the potential impacts which are associated with the proposed treatment plant during the operational phase.

Noise

Noise pollution is not expected to occur at all during the operational phase. The mechanical and electrical components of the proposed technology work within the permissible noise limit levels. Moreover, even if the noise level exceeds the allowable levels during unexpected conditions, this will have no significant impact since the nearby residential areas are found at the safe distance from the treatment plant.

Nature of impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

In general the following methods will be adopted to control the noise pollution from the proposed unit:

- Personal protective equipment's like ear plugs and ear muffs should be provided to employees working in the noise prone areas.

- Time to time oiling and servicing of machineries should be done.
- The plant will ensure the ambient noise levels standards set by PEQS.
- A thick greenbelt will be developed all around the plant which will be act as noise barrier.

Ambient Air Quality

No air pollution problems are expected to be associated with the operation of the said wastewater treatment plant.

Nature of impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

No mitigation measure will be required as the project is designed to keep the ambient air quality of the area intact because aerobic process is employed.

Odor

The treatment technology adopted has been designed to prevent the production of any foul gases (i.e. hydrogen sulfide) due to the chemical and biological reactions taking place. Thus, there will be no significant generation of odor. Odor problems will mainly arise from the sludge hauling process, blocking of pipes, malfunctioning of the pumping stations and leakage of pipes.

Nature of impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

In general the following methods will be adopted to control the odor from the proposed units:

- An appropriate action plan should be devised to deal with blockages or leaks as quickly as possible.
- It must be ensured that appropriate spares, in terms of fittings and other mechanical components are available at all times.
- Regular maintenance should be carried out.
- Tankers should be well equipped with efficient extraction capacity such that the sludge hauling process should be done as quickly as possible.
- Dewatering of sludge should be done
- The sludge hauling process should not be carried out during peak hours, week days and on windy days.

- Different types of trees should be planted in the vicinity of the treatment plant. They will act as buffer zones.

Sludge Disposal

The sludge produced by the wastewater treatment plant will be air dried on-site in sludge drying beds before being moved to a sludge stockpile area using tractor trolley. The foul smell generated from drying bed may cause nuisances for general public. Sludge generated by the sewage treatment processes may have beneficial effects for the crop plantations around the site. Hence, no significant adverse impacts are expected.

Nature of impact

The nature of the proposed impact will be direct, low, short-term and hence in-significant.

Mitigations

Following mitigation measures will be adopted

- Proper sludge disposal measures such as from existing established methods and standards should be adopted.
- Aerobic decomposition will be carried out which will prevent production of H2S gas.
- To control foul smell, thin layering (2-3cm) for sludge will be dried this will promote aerobic condition.
- During drying sludge aeration can be done regularly to control foul smell.
- Trees will be planted along the project area boundary to mitigate odor.
- After secondary treatment sulfur compounds will be reduced significantly. This will reduce the smell.
- Establishing and enforcing environmental, safety and health procedures for the construction and operation of the sludge facilities.
- Regularly updating of the plan to reflect upon the current situation at the treatment plant, its characteristics and revised disposal strategies.
- Ensuring that the disposal of sludge is in accordance with the local standards prescribed by the Environment Protection Act.

Mosquitoes and other Nuisances

Flies and mosquitoes can breed in the tanks and sludge lagoons during the operation of plant.

Nature of impact

The nature of the proposed impact will be direct, medium, long-term and hence significant.

Mitigations

Following mitigation measures will be adopted:

- All water accumulation within the treatment units should be fully drained as quickly as possible to put an end to the production of the vector itself.
- Under drains and other water pipes should be regularly inspected and cleaned.
- Maintenance activities should be regularly conducted.
- The sludge must be covered with thin-pored veils. The latter will allow the transmission of sunlight and at the same time prevent the entry of mosquitoes.
- Fumigation should regularly be carried out within the vicinity of the treatment plant.

Possible Emergencies and Plant Failure

Operational difficulties may be experienced at plant start-up or during periods when equipment malfunctions. For this purpose, vendor will train the team.

Nature of impact

The nature of the proposed impact will be direct, medium, long-term and hence significant.

Mitigations

- Equipment should be kept in good operating conditions to prevent equipment failure.
- Training programme for plant operation and maintenance activities should be included as part of the project's technical assistance programme.

Emergency Response

Emergency response preparedness committee will be formulated consisted of heads of all the departments. Project Manager will be the head of the team who will chair incident control headquarters. In the case of emergency, the first aid box will be provided. Incidents and accidents may take place unexpectedly during project operations no matter how effective, strong and efficient the mitigation measures for all adverse impacts; especially the safety issues may be adopted. These may include; accident and natural disasters.

Nature of Impact

The nature of the proposed impact will be direct, low, long-term and hence significant.

Mitigation

- Workers should be given adequate training of handling machinery.
- Emergency call service must be made available.
- The drills to check the response of the workers against any emergency situation will be carried out Safety and hazards signs will be displayed with the facility to avoid any unfortunate incident.
- Only authorized persons will be allowed for the handling of the chemicals.

POTENTIAL ENVIRONMENTAL ENHANCEMENT MEASURES

i. Enhancement in opportunities for employment

During proposed construction, the employment opportunity will be enhanced. Workers will be hired from local community, include; skilled and un-skilled workers. During construction phase 50-60 workers will be hired and in operational phase only 10 workers will be employed as the process employed will be fully automated. It will include technical staff only. Locals will also have the opportunity to diversify their income by being employed during various project phases. Hence, there will be an increased employment opportunity for the local people which will have a positive impact on the socio-economic status of the area.

ii. Water Quality Enhancement

With the avenue of this wastewater treatment plant, the effluent will be safe prior to being released in the water bodies, hence contributing to the protection of the environment.

iii. Environment Friendly Project

Wastewater Treatment Plant will have positive environmental impacts and is expected to significantly reduce a source of chronic water pollution. The ASP technology which has been proposed to be used for aforesaid project is one of the most sustainable and environmental friendly system with an efficient operational efficiency and less prone to malfunctioning.

iv. Recycling/Reuse of Treated Wastewater

Wastewater treatment plant will contribute in saving water resources as effluent water from the treatment plant will be used for various purposes i.e. agricultural use, fire services use, washing of vehicles and many others.

v. Tree Plantation

At the end of the installation phase, landscape of the area will be enhanced by planting native and ornamental plants at the designated green areas. This will enhance the aesthetic beauty of the area.

CHAPTER 9: PROPOSED ENVIRONMENTAL PREVENTION & MITIGATION MEASURES

MITIGATION MEASURES DURING CONSTRUCTION PHASE

When all impacts are considered, the impacts of highest significance are those that will affect the natural environment. Although there will be a number of social impacts of high significance, the majority of the impacts on social conditions are of moderate significance. Furthermore, it is clear from the description of the existing environment in the CPBM Plant Area that the disruption to social conditions and the existing social impacts are already of very moderate, and the project will not add any substantially new negative impacts to those that are already present.

The positive economic impact of the project is highly significant, and the revenue from taxation that will accrue to government provides resources that can be used to significantly improve the conditions in the region in particular and Pakistan in general. The economic benefit to the local economy is also significant, since the project will not only support several hundred employees directly, but it will also support significantly more of their dependents. It is estimated that, on average, each employee will support five to six dependents or family members. This should result in a general improvement in standards of living in the study area and provides an alternative livelihood.

All mitigation measures presented are to be carried out by the project contractors as per procedures & policies specified by CPBM and supervised by the HSE Manager.

Mitigation Measures during Construction Phase

AIR QUALITY			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Air quality: - dust emissions during construction and ground works.	Development of procedures for: -water spraying roads and dusty materials stockpiles - covering vehicles	Dust propagation will be limited to construction area and will not influence local community. However workers will be supplied with dust	Minor adverse

	carrying dusty materials on leaving the site to prevent materials being blown from the vehicles -speed limits on unpaved surfaces on site to limit dust.	masks especially on dry days.	
GROUND WATER			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Importation of pollutants already present within the materials to be used for filling and site leveling operations	Ensure that pollutants are not present in materials imported onto the site by appropriate selection of source material by the Contractors and chemical analysis by CPBM if required.	Potential for importation of pollutants in the material will be minimized through CPBM's specifications to Contractors and monitoring by CPBM project team.	Minor adverse
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground, especially in the construction lay-down area, *during storage*.	All storage areas will have appropriate environmental security measures to prevent accidental release to ground.	Potential for accidental release of materials during storage on the site will be minimized.	Minor adverse

GROUND WATER	[continued]		
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground, especially in the construction lay-down area, *during transport to the area of use.*	Appropriate procedures and protocols to be established and monitored for materials transport and handling whilst on the site.	Potential for accidental release of materials during transport within and handling on the site will be minimized.	Minor adverse
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground, *during use*, for example, re-fuelling, maintenance, etc.	Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, re-fuelling and maintenance areas will include some form of secondary containment.	Potential for accidental release of materials during use will be minimized.	Minor adverse
Accidental release of liquid wastes *during removal* from site.	Appropriate procedures and protocols to be established and monitored for waste materials removal.	Potential for accidental release of waste during removal from the site will be minimized.	Minor adverse
Accidental discharge of sanitary wastewater to ground	Sanitary waste will not be discharged to the	None	Negligible/Nil

and groundwater from the workers camp.	ground. Contractors will provide modern Sewage Treatment Facilities.		
Contamination of local water ways from proposed effluent plant discharge.	Ensure that the plant complies with IFC standards and other international guidelines. Final effluent should have no significant negative impact on the receiving water. The plant will be designed for the full load during construction.	Potential for release of harmful of effluent if the facility is underspecified or not managed correctly.	Minor adverse
Discharge of pollutants in water used for plant, equipment and vehicle washing to ground.	Washing activities will take place on areas with appropriate containment and procedures and protocols will be established and monitored to ensure that the preventative measures are sufficient to meet the effluent standards.	Potential for accidental release of pollutants to the ground during washing activities will be minimized.	Minor adverse

GROUND & WATER	**[continued]**		

Environmental Impact	Proposed Mitigation	Residual Impact	Residual Impact Rating
Increase of sediment load in natural aquatic receptors resulting from direct run-off disposal.	Minimization of excavations face during Construction. Temporary drainage grooves and sedimentation ponds for surface run-off collection. The topography is nearly flat.	None	Negligible
Natural aquatic receptors degradation due to direct disposal of domestic type wastewater.	Construction of appropriate sewage system and wastewater treatment facility by Contractor. Effluent if any will meet the standards.	None	Negligible
Groundwater contamination from leakage of polluting substances.	Usage of non-hazardous construction materials for human health and environmental protection. Storage of potential polluting materials in appropriate areas, including secondary containment. Any contaminated	None	Negligible

	land occurred during construction will be directly removed and disposed of in accordance with local regulations for waste disposal.		
MATERIAL USE & WASTE MANAGEMENT			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Waste generation.	Introduction of waste storage and control procedures Segregation and recycling of waste by EPC Contractor into metal components, plastics, glass separately.	Waste for disposal will be disposed of at an approved waste disposal site.	

SOCIAL			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Worker - industrial emergency	Prearranged quality curative treatment in Local Hospital for all emergencies.	Depends on nature of emergency	Minor adverse
Non-local worker living conditions and quality of life.	Contractors will provide detailed	Depends on individual worker susceptibility.	Minor / Moderate

Utility and service provision impacts on local villages.	specification of camp layout, facilities, and utility provision (and disposal) in accordance with identified international standards. CPBM to monitor health and safety and terms and conditions of employment.	If conditions are poor multitude of issues could arise in camp and spill into local communities.	adverse
Disturbance and conflict in camp	In-camp codes of conduct and enforcement of key behaviors and non-use of alcohol shall be required.	None identified	Minor adverse

SOCIAL	[continued]		
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Disturbance and /or conflict with local population.	Camp code of conduct upheld by workers and enforced by camp. Provision of employment and opportunities to local population to minimize hostility.	Some residual impact expected but scale limited by worker free time, and local interaction with camp, especially if "Liaison Committee" is formed early.	Minor / Moderate adverse
Potential for increased	Preventative health	Difficult to identify	Moderate

incidence of sexually transferable disease (STD) in local populations and amongst workers.	awareness campaigns for STDs provided to foreign workers and targeted at key local locations / groups. Contractors will provide health checks and immunizations before expatriation.	cause or source of such disease as this is commonly hidden and poorly reported. However some disease may be spread and curative treatment may be required for the different diseases, in case of HIV this would be of a long term nature.	adverse

Mitigation Measures during Operation Phase

These are presented **below.**

Mitigation Measures during Operation Phase

AIR QUALITY			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Uncontrolled release of gas emissions from the plant building	Equipment design and primary operational management control techniques	Local air emissions will be based on IFC, WHO & ILO Guidelines for the protection of human health at all emission point sources. On that basis, it is concluded that there will be no adverse health effects in the local population due to the operation of	Not significant

		the cement plant.	
Uncontrolled release of particulate emissions from the plant operation	Adequate control measures to be adopted.	Local air quality will be virtually unaffected in Project area & surroundings, and will be based IFC Guidelines for the protection of human health.	Negligible
Release of combustion emissions from transport associated with transport of materials to and from the site.	Use of new, efficient vehicles, driver training to minimize emissions (e.g. prevention of over revving, shut off engines when vehicles not in use), proper maintenance, rationalization of traffic management system to optimize transport efficiency.	Localized minor effects on air quality at any properties very close to certain roads, but increments a very small fraction of air quality criteria. Given the volume of trucks, however, impact is Moderately adverse.	Moderate.

Ground Water		
Environmental Impact	**Proposed Mitigation**	**Residual Impact**
Ground and Groundwater contamination.	Secondary containment for potential polluting materials. Any contaminated land removal and disposal in accordance with local and general	Potential contamination will be limited on-site.

	international requirements.		
LAND QUALITY			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground during delivery to the site.	Appropriate procedures and protocols to be established and monitored for materials delivery and handling. CPBM will have, at all times, clean up kits available.	Potential for accidental release during delivery of materials to the site will be minimized.	Minor adverse.
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during storage.	All storage areas will have appropriate environmental security measures to prevent accidental release to ground. EP Contractor to design the plant for berms /detrimental retainer walls that are designed for 1.5 times the capacity of any such storage tank.	Potential for accidental release of materials during storage on the site will be minimized.	Minor adverse.
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during transport to the area of use.	Appropriate procedures and protocols to be established and monitored for materials transport and	Potential for accidental release of materials during transport within and handling on the site	Minor adverse.

	handling whilst on the site.	will be minimized.	
Accidental release of fuels, oils, chemicals, liquid waste, hazardous materials, etc., to the ground during use, for example, re-fueling, maintenance, etc.	Appropriate procedures and protocols to be established and monitored for materials handling and use. Where possible, re-fuelling and maintenance areas will include some form of secondary containment.	Potential for accidental release of materials during use will be minimized.	Minor adverse.
Accidental release of liquid wastes during removal from site.	Appropriate procedures and protocols to be established and monitored for liquid waste materials removal.	Potential for accidental release of waste during removal from the site will be minimized.	Minor adverse.
Accidental discharge of sanitary wastewater and wastewater to ground.	Sanitary wastewater will not be discharged to the ground. Wastewater sumps and pits will be properly designed. Pipe-work will be inspected periodically by CPBM and recycle water wherever possible.	None	Negligible/Nil.

Discharge of pollutants in water used for plant, equipment and vehicle washing to ground.	Washing activities will take place on areas with proper drainage systems with containment and treatment. Effluent, if any, will meet the standards.	Potential for accident release of pollutants to the ground during washing activities will be minimized by proper design and use by CPBM.	Minor adverse.

MATERIAL USE AND WASTEWATER MANAGEMENT		
Environmental Impact	**Proposed Mitigation**	**Residual Impact**
Storage of solid and liquid wastes.	Inspection of all waste storage areas to ensure appropriate identification, segregation and containment.	Potential release into the environment.
Waste management	Arrangement of all solid waste management licenses and permits. Establishment of waste management disposal/recycling techniques and appropriate choice/negotiation of contractor by CPBM. Review of waste minimization and recycling options for all waste will be exhaustive	Waste management will be covered by internal procedures and will be regulated through local regulations. Increased quantity of waste will be disposed of off-site. CPBM will monitor its procedures to increase or maximize recycling/reuse of any waste generated.

TRAFFIC AND TRANSPORT			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**

Increased heavy vehicles traffic both locally and nationally.	Restricting delivery hours to reduce noise nuisance; avoid heavy truck movements in the night hours will be considered whether deliveries should be scheduled to avoid peak times to reduce congestion; heavy traffic will be subject to a traffic management plan, as necessary.	The traffic has the potential to contribute to congestion and lead to complaints due to noise/vibration nuisance on a local basis. However, the study indicates that there will not be a significant impact.	Minor Adverse.
NOISE AND VIBRATION			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Noise from plant	None recommended unless the plant and various installation differ significantly from similar established plants used as a reference.	None expected	Nil. Less than 60 dBA.

SOCIAL			
Environmental Impact	**Proposed Mitigation**	**Residual Impact**	**Residual Impact Rating**
Increased Employment. (Positive Change)	Measures to maximize local employment.	This depends on skills of the people. Enhanced apprenticeship/training	Major beneficial.

	Recommended: • Local recruitment and training. • Identification of targets of local people to be employed by skill levels.	for some local people whose skills could be improved including Recruitment Policy to extend in future to limited sponsorship for workers / local people children.	
Increased National tax and budget (Positive Change).	Assistance to villagers to formulate projects and strengthen advocacy. Money from improved budget can be used to realize these objectives. CPBM may offer skills training for improved planning & project formulation.	Increased Regional & National Budget and secondary impact on local Communities. Residual impact will depend on effectiveness of allocation process in favor of affected villages. An ineffective process would cause conflict / discontent.	Major beneficial.
Extended and improved road and implications for local economy (minor/moderate beneficial).	Regulations relating to roadside and commercial activities to be adhered to by business persons and enforced by Community. Monitoring of health, road safety issue. Curative and preventive action to be taken if issues identified by monitoring.	Improved opportunities should be seen in increased opportunities and wealth of nearby villages.	Minor beneficial.

OTHER MITIGATION MEASURES

Mitigation of Human Impacts

Economic Environment

The Project could have both positive and negative impacts on the economic environment.

Whilst there is significant potential for positive economic benefits of the Project, the extent to which it is likely to lead to economic development and or inflation depends on the Project approach to providing services to its workers (e.g. transport, canteen services, and in-house medical care).

Mitigation

The Company needs to consider the Socio-economic baseline context and consult community leaders and civil society when making economic development agreements.

Employment, Livelihoods and Income Generating Activities

Access to Project Employment is a key priority for local stakeholders. In both construction and operational phases there is an opportunity for maximizing positive impacts of the Company on local employment through involving unskilled (and where possible skilled) labour from all Project communities. However, although the generation of employment opportunities resulting from Project activities is expected as a positive impact, there is a risk that conflicts could arise between local inhabitants and new comers or outsiders over such employment opportunities. Furthermore there is high risk that, unless Project employment by the Company and contractors is managed appropriately, nepotism would influence the recruitment procedure, meaning that people without connections would not get access to Project opportunities – namely employment and other livelihood benefits. This could lead to a moderate risk of social conflict.

Mitigation Measures:

- The Company should work actively to promote local access to Project employment in both the construction and the operations phases.
- The Company needs to identify the skills that it needs for its construction and operations phases that could be provided as part of a community skills development program providing basic vocational training in the communities.

Occupational Safety & Health Measures

Some the measures have already been discussed in Section-7, addition measures in this respect are discussed below: Construction and operational activities could expose workers to health and safety risks. In particular, the following activities could have negative health impacts: noise and dust; working with heavy equipment (strains and accidents); working in confined spaces (fumes could mean respiratory impacts), heavy lifting, storage, handling and use of dangerous substances and waste (strains and accident risks), and working under noisy conditions (hearing and stress/psychological impacts). Excavations and transportation of materials may cause further health and safety negative impacts. Occupational health and emergency health services

for both the construction labour force and operations employees will be at risk of negative health impacts which cannot be quantified, until clear plans emerge.

Mitigation Measures:

The Company needs to demonstrate a best practice occupational health scheme, and share plans for the health maintenance and emergency services for their employees so that local health infrastructure capacity is not put under greater strain. An important mitigation is the forming of partnerships of understanding and relationship building with local health care providers; Company's contractors should adopt strict construction and operation practices with best technology and health and safety training to ensure the safety of its workers.

CHAPTER 10: ENVIRONMENTAL MANAGEMENT & MONITORING PLAN

GENERAL

The Environmental Management Plan (EMP) aims to provide:

- An integrated plan for the comprehensive monitoring and control of impacts
- Auditable commitments displaying practical achievable strategies for management to ensure that environmental requirements are specified and complied with.

For this purpose, an outline of EMP has been developed which includes:

- What has to be managed and monitored, how and why?
- When and where?
- By whom?
- Who to report and who to follow up if there is any problem?

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The EMP will facilitate proponents to address the adverse environmental impacts of the project, enhance project benefits and introduce standards of good environmental practices.

OBJECTIVES OF EMP

The EMP aims to ensure that:

- Site activities are well managed
- All environmental safeguards are carried out correctly
- Coordination is made with other trades
- Adverse impacts on environment are minimized
- All relevant legislation is complied with prescribed procedures/standards
- The project is monitored for environmental impacts
- Identify the resources required to implement the EMP and outline relevant expenses arrangements

INSTITUTIONAL REQUIREMENTS

The following organizations would be involved in the implementation of the proposed EMP;

- M/S CPBN as the proponents of the project and owners of the EMP during construction and operation of the project.
- Project Contractor, as the executor of the EMP during construction stage of the project.
- Supervisory Consultant, as monitor of the execution of the EMP during construction stage.
- Environmental Protection Agency (EPA), Punjab as Government Department to review and monitor the implementation of remedial and mitigation measures

Regulatory Requirements

The EIA report has been prepared in the light of guidelines provided by the MIGA and the Project Proponents are required to implement the EMP strictly in line with this regulatory framework to get the environmental benefits of the project:

Environmental Management Plan (For Construction & Operation Phase)

The given Environmental Management Plan (EMP) will be implemented for the better management of environmental issues which can be arises by the project activity

ENVIRONMENTAL MANAGEMENT PLAN

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
CONSTRUCTION PHASE						
1.	**Air Quality** • Dust resulting from construction work • Use of heavy machinery can generate exhaust and dust emissions – Smoke from burning of waste materials or burning of firewood in the labor camp	– Compliance with prescribed PEQS to control air pollution	– Necessary measures like sprinkling of water on regular basis especially during dry climatic conditions should be taken to limit pollution from dust and other windblown materials. – Periodic maintenance and management of all the construction machinery and vehicles – Cutting and burning shrubs for fuel will be prohibited. Instead gas cylinders should be used in the labor camp for cooking purposes. Similarly waste burning will not be allowed.	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultants	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
2.	**Water Quality** • Run-off water from construction area – Drainage of wastewater on ground can contaminate the soil and groundwater – Inappropriate disposal of waste. – Open sewerage water disposal on land can contaminate ground water and cause generation of mosquitoes / dengue and various other insects in the area. • Leakage of oil and chemical materials from construction activity	– Control of groundwater water pollution from construction activities	– Use of spill prevention trays and impermeable sheets to avoid contamination of the groundwater water – Furthermore, septic tanks will need to be constructed which will be cemented to prevent the groundwater contamination – Proper disposal of waste material on dumping sites to avoid leachate generation and contamination of groundwater/surface water – Prohibit illegal dumping of waste – The contractor will repair / replace / compensate for any damages caused by the Construction activities to the drinking water source/s.	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultants	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
3.	**Waste** • Construction waste from construction activities • Domestic waste from workers camp • Hazardous waste such as dry batteries, chemicals,	– Proper & safe handling and disposal of construction related waste – Compliance with applicable waste management rules for hazardous and non-hazardous waste disposal – Implementation of waste management plan	– Ensure prevention of inappropriate disposal of waste material – Conduct separate collection of construction and domestic waste to promote recycling and re-use – Dispose non-recyclable and hazardous waste material properly according to waste management rules – Proper disposal of waste on agreed site as per agreed method. The area to be leveled and contoured after disposing excess material. No waste or debris will be thrown in the nearest canal water or other water bodies. – Contractor will prepare waste management plan related to	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			construction activities; get its approval from site engineer and ensure its full implementation			
	• Soil and water pollution	Prevention of accidental oil or chemical spillage, solid matters, contaminants, debris and other pollutants and wastes from entering into surface and ground water. Awareness on environmental protection. Avoid deposition of stockpiling materials near or on stream banks or other watercourse perimeter. 8. No grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) without treatment shall be permitted.	– Water pollution will not be created by this proposed unit. – Spills during construction or operations shall be absorbed with absorbent blankets, socks, or absorbent material and disposed of in accordance with applicable laws and regulations.	During Construction Phase by Contractor with coordination of Proponent staff	Engineers & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
		Water containing pollutants such as cement, concrete, lime, chemicals and fuels shall be discharged into a conservancy tanks for removal from site. Contractor must dispose solid wastes away from the site to an approved disposal site. Potential pollutants (If any) of any kind and in any form shall be kept Stored and used in such a manner that any escape can be contained and the water table not endangered. Equipment Storage or wash areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas (including				

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
		groundwater) are not polluted. During construction, standard engineering practices such as silt fencing, erosion control material, and construction tracking pads should be implemented to control runoff, erosion, and sedimentation that could affect watersheds. Proper handling and storage procedures for hazardous wastes e.g. fuel oil should be stored in areas with hard standing and containment to handle spills. Minimize waste production by utilizing best available techniques for site preparation.				

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
4.	**Noise** • Noise caused by construction machinery and vehicles used for mobilization of construction equipment and workers	– Compliance with prescribed PEQS to control Noise pollution	– The contractor will strictly follow the PEQS for ambient noise – Control noise through control of working hours and selection of less noisy equipment. – Prohibit use of pressure horns – Provision of acoustic enclosures (hood and shrouds) on generator – Proper maintenance of vehicles and construction equipment. – Minimize/avoid unnecessary use of pneumatic drills and other noisy machinery – The personal protective equipment (PPE) will be provided to the construction	During Construction Phase by Contractor with coordination of Proponent staff	Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			workers and its usage will be made mandatory			
5.	Materials Management	– Safe and secure environment for construction workers	– Stockpiles shall not be situated such that they obstruct natural water pathways – Stockpiles shall not exceed 2m in height unless permitted by Concerned Engineer on site – If stockpiles are exposed to windy conditions or heavy rain, they shall be covered either depending on the duration of the project. Stockpiles may further be protected by the construction of low brick walls around their bases – All substances required for vehicle/ machinery	Contractor with coordination of proponent and Engineer	Engineer & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			maintenance and repair must be stored in sealed containers until they can be disposed of / removed from the site – Hazardous substances / materials are to be transported in sealed containers or bags – Spraying of insecticide shall not take place under windy conditions.			
6.	Staff Conduct	– Timely completion of project activities	– The Contractor must monitor the performance of construction workers to ensure that point relayed during their induction have been properly understood and being followed	Contractor	Design Engineer & Supervision Consultant	Project Manager / EPA
7.	Workers Health & Safety	– Prevention of any possibility of work site accident /impact on worker's health	– Provision of Personal Protective Equipment to the workers	Contractor	Engineer & Supervision Consultant	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			– Provision of first aid box at work site to cope with emergency situation – Safety training to the workers – Safe driving training to the drivers – Adequate safety signs on site – Provide training regarding proper handling and use of chemicals – Install fire extinguishers at fire handling places – Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads – Any loss of public/ private property will be compensated by the contractor – Regular checks should be carried out to ensure a			

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			contractor's is following safe working procedures and practices.			
8.	Clearance of site from extra / surplus material and construction equipment	– Restoration of site to a similar condition prior to the commencement of the work or to a condition agreed with the project management and landscaping of the site	– Timely removal of waste from the site to avoid congestion at work place. – Construction waste should be collected and disposed separately from other waste. – Care will be taken during handling and disposal of waste. – Contaminated soil (if generated) due to accidental spills will be removed and transported to designated site for disposal. – Avoid mixing of hazardous waste with non-hazardous waste.	Contractor	Supervision Engineers	Project Manager / EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			– Safe transportation of construction equipment from the site. – The contractor must ensures that all structure, equipment, materials and facilities used or created on site for/or during construction activities are removed. – Empty/available space will be covered with grassy lawns. – Use of native vegetation as a part of landscape. Ornamental plant species like roses, jasmine, and seasonal flowers can be used in proposed landscaping, which is a common practice in this part.			
OPERATIONAL PHASE						
1.	**Air Quality**	– Compliance With Emission gas standards,	**General Automotive Plant**	EHS officer of Project	Environment Consultant hired	EPA

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
	– Release of volatile gaseous emissions from the welding facility. – Release of particulate emissions from the welding facility and stand by genets. – Release of combustion emissions from transport associated with transport of materials to and from the site. – General Indoor Air quality.	Ambient air quality (PEQs) standards, Prevention of air pollution in surrounding area;	**Ventilation** General ventilation system (system and exhaust) can be mechanical or mixed (natural supply, mechanical exhaust). Natural air supply through the windows, doors, or fixed air vents is not recommended when the width of the building exceed 24 m (79ft). Also uncontrolled air supply may disturb the various processes in automotive facility. **General supply System** – General supply systems are used for: • Heating or cooling working environment; • Removing contaminants not captured by local ventilation systems; • Replacement of air exhausted by local ventilation systems and process equipment;	Proponent	by Project Proponent	

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			• Controlling building pressure and airflow from space to space.			
	Noise Quality	–				
5.	**Land Quality** • Accidental release of fuels, oils, chemicals, hazardous materials, etc., to the ground during delivery to the site. • Discharge of pollutants in water used for equipment and vehicle washing to ground.	–	• Appropriate procedures and protocols to be established and monitored for materials delivery and handling. Proponent will have, at all times, clean up kits available. • All storage areas will have appropriate environmental security measures to prevent accidental release to ground. • Washing activities will take place on areas with proper drainage systems with containment and treatment. Effluent, if any, will meet the standards.	EHS officer of Project Management Unit	Environment Consultant hired by Project Proponent	EPA

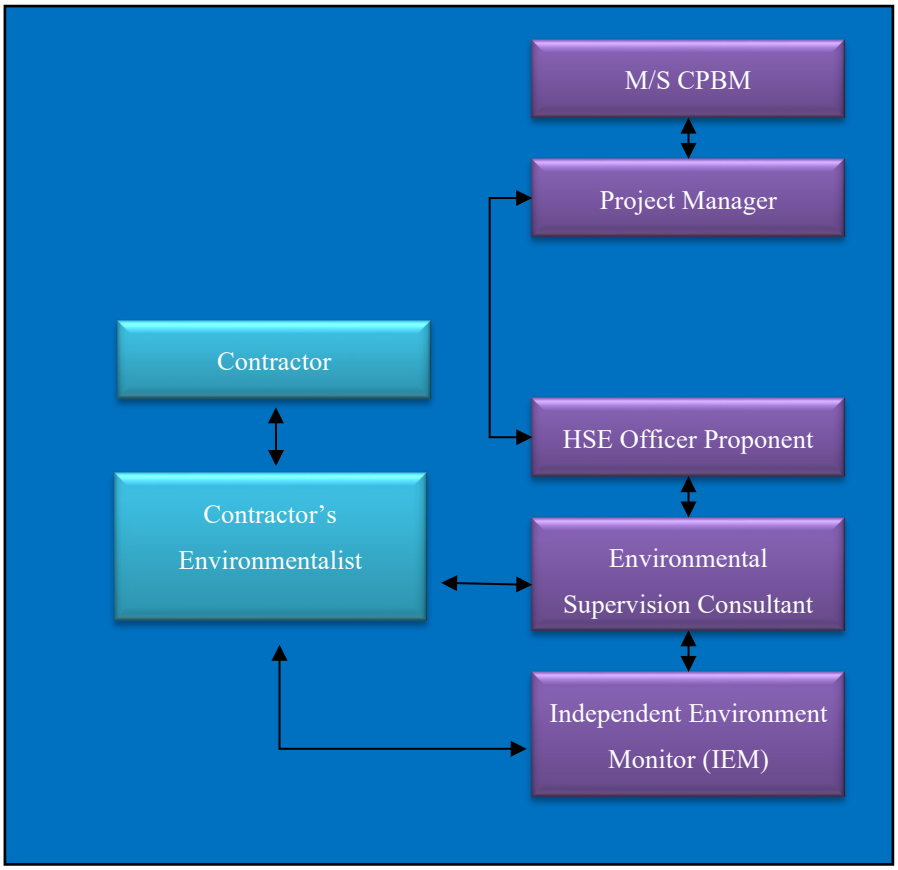
Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
6.	**Material Use And Wastewater Management** – Storage of solid and liquid wastes. – Waste management	– Management and Compliance with waste management rules – Prevention of inappropriate waste disposal	• Inspection of all waste storage areas to ensure appropriate identification, segregation and containment. • Establishment of waste management disposal/recycling techniques by proponent Establishment of filter dust handling procedures and choice of the contractors. Hazardous waste disposal techniques to be established. Review of waste minimization and recycling options for all waste will be exhaustive	HSE manager of Project Management Unit	Environment Consultant hired by Project Proponent / ETP operation manager	ETP operation manager
	Processing of WWTP	– Compliance with prescribed PEQs to control waste water	– Proper operation of 3 months and training to ETP operation team will be ensured by vendor.	HSE manager of Project Management Unit	Environment Consultant hired by Project Proponent / ETP	ETP operation manager

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
		pollution into the environment	– Complete manual of operation with complete details to run ETP will be provided by vendor to the ETP operation team. – Proper treatment of wastewater must be ensure before disposal in nearby drain – Regular monitoring must be conducted to check compliance of PEQS – Environmental Manager must be designated to monitor the efficiency and working of treatment plant – Health and safety of workers must be considered while testing. – PPE's must be provided to workers and proper signs		operation manager	

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			must be displayed in local language for guidance of workers and visitors – Assembly point must be made and training of workers must be done on regular interval – Technical person must be available at the site in case of any mechanical fault.			
	Sludge handling	– Compliance with prescribed PEQs to control solid waste. Land pollution and contamination.	– Sludge drying beds will ensure digestion of bio solids to minimize the moisture content and volume. – Sludge cakes will be sold used in agricultural fields and the excessive will be dispose-off properly by contractor. – Along boundary and at designated green areas tree plantation must be done	HSE manager of Project Management Unit	Environment Consultant hired by Project Proponent / ETP operation manager	ETP operation manager

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
7	**Noise & Vibration** – Noise from machinery	– Compliance with prescribed PEQs to control Noise pollution	– Good site management; appropriate choice of machinery; methods of working; hours of working; efficient material handling.	HSE manager of Project Management Unit	Environment Consultant hired by Project Proponent / ETP operation manager	ETP operation manager
8.	**Work environment (including work safety)** – Labor accidents due to handling heavy loads; working at heights; electric shocks – Diseases caused by air pollutants, water pollutants, and noise from the operation – Fire Hazards	– Prevention measures against labor accidents and health problems	❖ **Labor accidents** • Prepare a manual for labor accident prevention including safety education and training • Provide workers with appropriate protective equipment • Inspect and ensure that any lifting devices, such as cranes, are appropriate for expected loads • Keep lifting devices well maintained and perform	HSE manager of Project Management Unit	Environment Consultant hired by Project Proponent / ETP operation manager	ETP operation manager

Sr. No.	Environmental Component / Impact	Targets to be Achieved	Mitigation/ Preventive Action	Responsibility		
				Implementation	Supervision	Monitoring
			maintenance checks as appropriate • Use equipment that protects against electric shock ❖ **Fire Hazards** • Installing fire extinguishers in fire handling places • Installing firefighting system • Developing firefighting organization and implementing fire drills.			



Hierarchy of EMP implementation

PROPOSED MONITORING PROGRAM TO ASSESS PERFORMANCE OR OUTPUT OF EMP

Environmental monitoring is a vital component of the Environmental Management Plan. It is the mechanism through which the effectiveness of the EMP in protecting the environment is measured. The feedback provided by the environmental monitoring is instrumental in identifying any problem or lapse in the system under implementation and planning corrective actions. For domestic activities already constructed facilities will be used. Solid waste disposal will be according to standard practices of area. It should be noted that it is difficult to outline a formal monitoring protocol for specific environmental parameters and key impacts until detailed project design have been completed. A formal monitoring protocol will be included within the revised EMP once the detailed project design has been completed.

Components	Parameter to be Monitored	Frequency	Location	Responsibility
Noise Levels	Noise level on the site and adjacent	Quarterly	8 locations	HSE Officer
Ground Water testing	As per PEQS	Pre-construction and post construction		HSE Officer/environmental manager
Air Quality	As per PEQS	Quarterly	8 locations	HSE Officer/environmental
Workers safety	Injuries and accidents	Daily	Onsite	HSE Officer/environmental

REPORTING STRUCTURE AND OUTCOMES

Monitoring reports will contain the results of different physical, chemical and ecological parameters along with photographic record made in the period preceding the report as well as recommendations for action, if required, for improving the construction process from an environmental perspective. Data will be presented both in tabular and spatial form.

PROPOSED EMP REPORTING AND REVIEWING PROCEDURES

The EMP is intended to be a 'living' document that will be responsive to changes in construction plans, stakeholder priorities and research results. Notwithstanding the evolution of the document in response to an expanding knowledge base, the logic behind the EMP should remain. Amendments to the EMP may require engagement with relevant stakeholder groups. As a minimum, the EMP will need to be reviewed and, if necessary, revised in conjunction with changes to the construction and operation phase. Changes to the construction and/or operation schedule or methods, and recommendations based on the performance monitoring of the control measures, will necessitate changes to the EMP. The performance of the EMP should be audited periodically (annually).

ENVIRONMENTAL MONITORING

A schedule of statutory and internal monitoring requirements for the site is to be included. Monitoring is to be carried out in accordance with the Monitoring and Reporting schedule.

REPORTING

Various statutory and internal reports will need to be prepared and submitted to assist in monitoring and advising on environmental performance. Examples that are applicable to the operation phase include: Monthly internal monitoring report a quarterly report is required. This is to be included with contract administration documentation. This report will include a

summary and an analysis of monitoring results collected following the previous month's report along with the third-party monitoring reports. Areas of concern are to be reported together with corrective actions (if required). The report will include provision for the following.

- Environmental Incidents and Corrective Actions
- Environmental Monitoring
- Audits and Regulatory Non-conformances

ANY TRAINING NEEDS REQUIRED TO ENSURE IMPLEMENTATION OF EMP AND MONITORING PLANS

Contractor will ensure in-house training for the project staff, labor and the supervisory staff through the provision of one day basic training and one day advanced training, covering environmental and social aspects of the projects in general and implementation requirements will emphasis on the development project in general, on the roles & responsibilities of the staff and the labor while executing the environmental monitoring plan in particular. 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 construction site and affective implementation of the EMP. The training modules will include air, noise and water pollution monitoring, social awareness, Environmental Laws, Punjab Environmental Quality Standards (PEQS), Usage of personal protection equipment's, 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 will arrange Training on monthly or quarterly basis regarding health & safety, hygiene, firefighting and first aid. The training protocols will include the following aspects:

- Procedures for monitoring the air quality parameters and measures to be adopted for
- Avoiding/minimizing air pollution, particularly from the transportation of raw material and final goods.
- Staff training on environmental monitoring and reporting.
- Safety measures against hazards for workforce and the local communities arising from the construction and installation activities.
- Use of safety gadgets by the workforce.

ENVIRONMENTAL MANAGEMENT TEAM

The primary responsibility for implementing different aspects of the EMP within the company lies with the concerned departments of M/S CPBM. Following are the designated roles and

responsibilities of the employees involved in the monitoring and management of the adverse impacts.

Sr. No.	Designation	Roles and Responsibilities
1.	DGM (Admin)	HSE Supervision
2.	Sr. Manager QC	Ensure EMP implementation
3.	HSE Manager	Operational management and control
4.	Asst. Manager (Admin)	Supervision and monitoring
5.	Sr. Chief Chemist	Supervision and monitoring
6.	Sr. Technical Manager	Supervision and monitoring

SCHEDULE FOR IMPLEMENTATION AND ENVIRONMENTAL BUDGET

This project will be completed in tentative 12 months after getting Environmental Approval. The total cost of the project is 500 Million approx. which includes; the cost of civil work, purchase of machinery and its installation, implementation of mitigation measures, site rehabilitation, etc.

Environmental Component		Quantity	Approximate Cost (PKR)
(i)	Tree Plantation	10000	200,000.0
(ii)	Health and Safety Measures and Provision of PPEs	L.S.	200,000.0
(iii)	Environmental Monitoring	4	400,000.0
Total Environmental Management and Monitoring Cost			**800,000.0**

CHAPTER 11: STAKEHOLDERS CONSULTATION

GENERAL

General Public consultation refers to the process by which the concerns of local affected persons and others who have plausible stake in impacts assessment of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. According to the IEE and EIA Review Regulations, 2000 public consultation is mandatory for any socio-environmental study. For this purpose, assessment survey and public consultation sessions held with different stakeholder groups that may be impacted. The consultation process was carried out in accordance with the guidelines laid by EPA, Punjab.

The objectives of this process were to

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

This report includes all the comments, which were taken into account in preparing the definitive development concept for the installation of the existing waste water treatment plant. Public consultation Performa's are attached in appendices.

CONSULTATION MECHANISM

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

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

among stakeholders on specific environmental and social issues.

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

This section involves communication of possible impacts and concerns with

- Proponents Environmental Management Team
- The responsible authority
- Other departments and agencies
- Environmental practitioners and experts
- Affected and wider community

PROPONENTS ENVIRONMENTAL MANAGEMENT TEAM

Consultation regarding "Extension facility by M/S Century Paper &Boards Mills Ltd was done with Proponent's Environmental management Team and anticipated impacts were discussed. Concerns of locals, Environmental Practitioners & experts and Government departments were discussed and asked to consider them while construction of above - said project. Locals will be preferred for employment after providing proper training. Mitigations measures mentioned in EMP will be truly implemented.

THE RESPONSIBLE AUTHORITY

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

OTHER DEPARTMENTS AND AGENCIES

Different Government departments were consulted regarding M/S Century Paper & Boards Mills Ltd of the existing extension project.

CONSULTATION WITH GOVERNMENT DEPARTMENTS

Following officers of government departments were consulted by the socio-environmental team of the consultants and concerned details about the project were noted down through personal interviews, group meetings, etc. in their offices. Their comments are given below in Table and pictorial evidences are also attached.

Table: Consultation with Government Departments

Sr. No.	Participant	CNIC/Designation	Concerns/Remarks
Environmental Protection Department			
1.	Muhammad Nazim Ayaz Alam	Assistant Director (Field), EPA	Following comments are summarized about existing project: Latest technology must be selected for efficient operation of treatment plant Wastewater should be treated effectively & approval should be acquired from concerned agency before disposing off in nearby drain. HSE at the site should be managed effectively. Positive impact is being foreseen due to the selected location and project. Locals should be given job opportunity. Regular monitoring must be conducted to check efficiency of treatment plant and compliance.
Social Welfare Department			
3.		Deputy Director Officer	Following comments are suggested by the Deputy Director on the behalf Social Welfare Department: Locals must be hired Wages should be given according to the work assign to them. Life insurance of the workers should be given as well as all the facilities should be given as per labor laws. She appreciates installation of existing project as it is environment friendly and will improve the sanitary condition of surroundings.
Irrigation Department			
4.		Superintendent Engineer	Following comments were suggested: Proper monitoring must be conducted to check compliance. Efficiency of treatment plant must be examined regularly. Beneficial as job opportunities will be

Sr. No.	Participant	CNIC/Designation	Concerns/Remarks
			available to the local residents.
Forest Department			
5.		Divisional Forest Officer Kasur	Following recommendations were suggested by the forest department: Plantation and landscape activities should be carried out on broader scale. Indigenous species such as, Arjan, Barna, Neem, Suharjna, Amaltas and Jaman should be planted.

**HSE= Health, Safety and Environment*

ANALYSIS OF STAKEHOLDER CONSULTATION

Sample Size

Sample size 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

Statistical analysis of the data collected during the visit of study site villages through questionnaires.

Result and Discussion

The socio-economic survey of the existing project was conducted properly following guidelines. During the survey 50 people were interviewed out of which 20 persons were selected for this study. The 90% people are literate and matric and college / university qualified and 50% people are between 41-50 years old. According to the survey, 100 % of respondents were male. So, according to the survey overall education status of the area is good.

As per survey, 78 % people were satisfied with the project and they gave positive remarks regarding the existing unit and project as they got a job over there, their living standard raised over working there. While 13 % respondents were having no opinion regarding the project and 9% respondents were not satisfied with the production unit due to their concern regarding the aestheticdegradationandnopreferencetolocalpeopleforjobs.Majoritywereinfavorthatno effect will be produced by this project.

The 100% people interviewed were in favor of the project and heard about this project. The 70% people responded that there is no impact of the project on the water quality & quantity due to construction and operation of the project. Moreover, 65% of people's opinion is that project have no impact on soil quality. The survey analysis reflected that there is no or minor

impact on air quality (smoke, rise in temperature, visibility issue etc.) and nearby population problem (irritation, sleeping problems) which will be controlled by the installation of proper pollution control devices and also there will be no problem of traffic congestion.

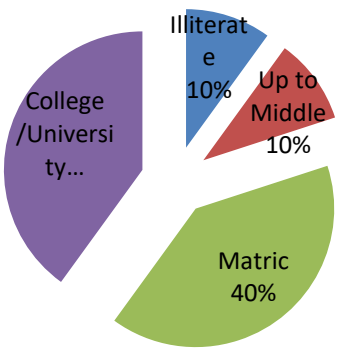


Fig.: Literacy rate of interviewed persons

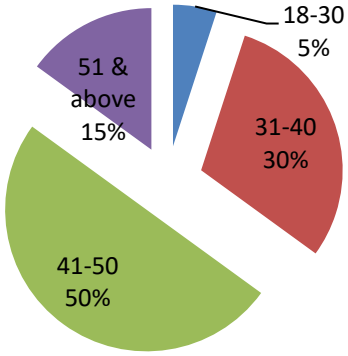


Fig.: Age (Years) of interviewed persons

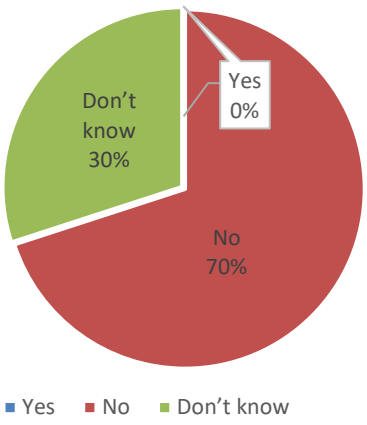


Fig.: Point of view of interviewed persons regarding impact on water quality & quantity due to existing project.

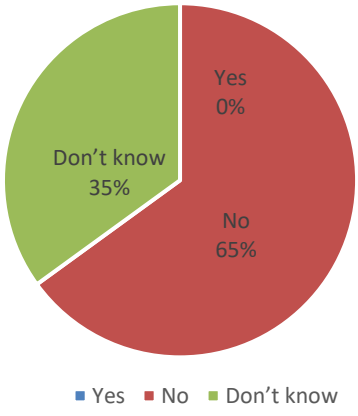


Fig.: Point of view of interviewed persons regarding impact on soil quality due to existing project.

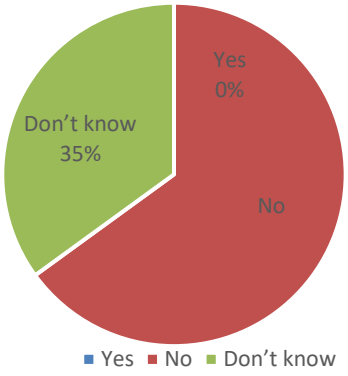


Fig.: Point of view of interviewed persons regarding wastewater issues due to existing project.

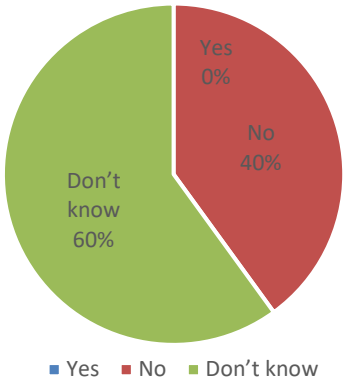


Fig.: Point of view of interviewed persons regarding information of protected area in existing project site.

SUMMARY OF ISSUES RAISED BY STAKEHOLDERS

A summary of the key issues raised by stakeholders and how these are being addressed by Project Proponent is provided in Table below.

Table: Summary of Issues and Commitments by Proponent

Issue	Aspect / Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job in executive level. Maximum persons according to the requirement will be employed by the industry.
Training Opportunities	People are keen to consult with subject industry if the Project offers training and upgrading opportunities to enhance their trade or professional skills.	• Development of the Training Strategy, including commitment of allocation of budget investment for training infrastructure, delivery and design. • Installation of training facilities in for worker of the company and students will also be accommodate.

Issue	Aspect / Concern raised by Stakeholders	Project Proponent Commitments
		• The internship program will offer to the students to develop professional skills.
Health & safety	Truck traffic is used by the Project passes through a number of small communities.	• Keep check on the road corridor and safety aspects, including on herder and animal crossings. • Development of Transport Management Plan including traffic safety training. • Traffic advisory signs will be installed along project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to Local businesses want to receive support in terms of finance and facilities to diversify their businesses. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard ,but are keen to know these requirements so they can become suppliers.	• Proponent has main focus that they will all the material regarding construction and plant operation to buy from the local market. •
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation. Increased waste along project boundary and around economic	• Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. • A Participatory Environmental Monitoring Program will be launched to spread awareness on HSE.

Issue	Aspect / Concern raised by Stakeholders	Project Proponent Commitments
	zone.	
Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all key concerns for nearby herders.	• Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program.

CHAPTER 12: EMERGENCY RESPONSE PLAN & EVACUATION / EXIT PLAN

EMERGENCY RESPONSE PLAN

The objective of this plan is to prepare the workers at the project site to rescue from various emergencies that may occur at the workplace during the operation or else activities at project site.

SCOPE

This plan assesses risks, assign roles and responsibilities, and outlines steps to be followed in any emergency situation. It increases understandings of employees in the handling of different types of emergencies which may occur at the project site.

Types of Emergencies

Enlisted below are some emergencies which may occur at workplace/dormitories:

- Fire Hazards
- Chemical/Oil/ spillage
- Hazardous / Toxic Gas Release
- Extreme Weather Conditions
- Earthquake
- Flood

RESPONSIBILITIES

The overall responsibility lies with EHS Manager supported by Departmental Heads/BUM's/Country Security Manager. Central EHS Team will be overall responsible for implementation of ERP Plan. EHS Manager and Departmental (EHS Rep) will be responsible for emergency preparedness that includes the availability of resources, training of staff and monitoring and maintenance of emergency equipment's and conduction of drills.

Table: EMERGENCY RESPONSE PLAN

Sr. No.	Potential crisis	Likelihood	Consequences	Initiating and secondary events	Control Measures	RESPONSE
1.	Fire hazard (toxic combustion products, substations, and Transformer)	Possible	Major	An explosion which causes structural damage, the fire to spread and injuries	Training, inspections, maintenance schedules, Detection systems, alarm systems, trained ER personnel, ER Exercises	Arrange for safe removal of employees, contractors and the public from any dangerous situation; Secure the area and do not allow any disturbance to the area Allow only designated personnel into the area
2.	Spills (liquids i.e. oils, chemicals, and solids)	Possible	Minor	A release that causes environmental harm	Meeting design standards, Inspection of facilities, small containers, training	Ensure appropriate PPE, Control the leak/flow; Contain the spillage to the smallest area possible, Environmental Manager to arrange for sampling of any water pollution or potential pollution

Sr. No.	Potential crisis	Likelihood	Consequences	Initiating and secondary events	Control Measures	RESPONSE
3.	Gas leak – Flammable	Possible	Major	A fire or explosion that causes structural damage and injuries	Training, inspections, maintenance schedules	Arrange for safe removal of employees, contractors and/or the public from any dangerous situation, Secure the area and do not allow any disturbance to the area; Allow only designated personnel into the area
4.	Natural hazards	Rare	Major	Earthquakes can cause likely harm and injuries	Training, evacuation plans, alarm systems, trained ER personal	Arrange for safe removal of all employees, contractors and/or the public from any dangerous situation; Conduct a survey of the damage caused; and secure the area and do not allow any disturbance of the area

RESPONSE MEASURES

- M/S Century Paper & Boards Mills Ltd maintains a dedicated emergency response department equipped with fire tenders along with all required emergency handling accessories. Fire water network mains coupled with hydrants are encircling the whole premises. A pump maintains the network pressure at 100psi (7 Bar) in normal conditions. A fire diesel engine & electric driven pumps are also installed to maintain the fire network pressure at 7 Bar during the firefighting. A fire water reservoir capacity of approx. 100,000 USG firefighting is also located inside facility. Likewise, an overhead tank of capacity 12000 USG and a Chest of capacity 2,64,000 USG is also available.
- Scenario based emergency response drills & evacuation plans.
- Fire Extinguishers, fire alarm system, fire blankets, Hydrants & monitors, Eye washers, Hose reels, are installed in all buildings, plant areas and other offices.

GENERAL EVACUATION PROCEDURES DURING NATURAL HAZARDS

- Escape route layout are posted throughout the facility. A layout of the facility clearly marked with escape routes is posted in each department. Copy of the layout is available in all area.
- If the alarm sounds or if a supervisor orders the evacuation of the building or plant, remain calm, walk to the nearest exit and leave the building or plant immediately. After leaving the building or plant, proceed to the nearest muster station/assembly area. Do not leave the area. Do not return into the building or plant. Follow your supervisor's instruction.
- As there are plant processes which would require continued operation during an emergency, all employees are expected to leave the plant immediately when an evacuation order is announced expect those performing the critical plant operations.
- No provisions are made for employees who remain within the plant to perform rescue, medical or firefighting duties unless properly trained to do so.

IMPORTANT RECORDS

- HSE Executive / Security Officer / Supervisor must maintain the following updated records at all times:
- List of staff trained in firefighting procedures.
- Location of hazardous materials in each section.
- List of evacuation zones and their assembly points.
- Location of isolation switches/valves.
- List of firefighting and first aid equipment available in each section.

CHAPTER 13: HEALTH AND SAFETY

This Health and Safety Plan (HASP) provides a general description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted at the site. HASP Supplements will be generated as necessary to address any additional activities or changes in site conditions which may occur during field operations.

Health and Safety Rules of this Site

All site personnel shall adhere to General Safety Rules, during site operations. In addition, the housekeeping and personal hygiene requirements will also be observed. Housekeeping

During site activities, work areas will be continuously regulated for identification of excess trash and unnecessary debris. Excess debris and trash will be collected and stored in an appropriate container (e.g., plastic trash bags, garbage can, roll-off bin) prior to disposal. At no time will debris or trash be intermingled with waste PPE or contaminated materials. Smoking, Eating or Drinking

Smoking, eating, and drinking will not be permitted inside any controlled work area at any time. The workers will first wash hands and face immediately after leaving controlled work areas (and always prior to eating or drinking). Personal Hygiene

The following personal hygiene requirements will be observed:

Water Supply

A water supply meeting the following requirements will be utilized:

Potable Water-

An adequate supply of potable water will be available for personal consumption. Potable water can be provided in the form of water bottles, water coolers, or drinking fountains. Where drinking fountains are not available, individual-use cups will be provided as well as adequate disposal containers. Potable water containers will be properly identified in order to distinguish them from non-potable water sources.

Non-Potable Water

Non-potable water may be used for hand washing and cleaning activities. All containers of non-potable water will be marked with a label stating: -

Toilet Facilities

A minimum of one toilet will be provided, with separate toilets maintained for each sex except where there is less than 8 total personnel on site. For mobile crews where work activities and locations permit transportation to nearby toilet facilities, on-site facilities are not required.

Washing Facilities

Employees will be provided washing facilities (e.g., buckets with water etc.) at each work location. The use of water and hand soap will require by all employees following exit from the Exclusion Zone, prior to breaks, and at the end of daily work activities.

Stop Work Authority

All employees have the right and duty to stop work when conditions are unsafe and to assist in correcting these conditions. Whenever the site person determines that workplace conditions present an uncontrolled risk of injury or illness to employees, immediate resolution with the appropriate supervisor shall be sought. Upon issuing the stop work order, the site person shall implement corrective actions so that operations may be safely resumed. Resumption of safe operations is the primary objective; however, operations shall not resume until the Safety Professional has concurred that workplace conditions meet acceptable safety standards.

Personal Protective Equipment

The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. The PPEs to be provided are as follow:

Safety Helmets

- Face Masks
- Ear Plugs
- Gloves
- Boots etc.

First Aid Facility

Adequate first aid facility will be available at the site.

CHAPTER 14: CONCLUSIONS AND RECOMMENDATIONS

This section presents conclusion of the EIA study of the proposed project. The overall objective of this EIA is to carry out an environmental assessment to assess impacts caused by the different activities and to address measures to mitigate adverse environmental impacts that may arise from the execution of the proposed project.

CONCLUSION

This report has been prepared to comply with Punjab Environmental Protection Act, 1997 (Amended 2012 & 2022). The proposed Project involves construction of Waste Water Treatment Plant (WWTP) along with conveyance system and treatment facility at M/S Century Paper & Board Mills Limited, District Kasur. The Activated Sludge Process (ASP) will be opted for proposed WWTP on the basis of criteria discussed in Analysis of Alternatives.

Apart from the positive impacts, the proposed project will also have some potential minor negative, temporary in nature environmental and social impacts during the construction and operational phases. Some significant impacts include land acquisition, soil contamination, health risks and work safety problems, traffic management during construction phase, sludge handling, odor issues. Most of these adverse impacts during construction are of a temporary nature.

In order to minimize, avoid or reduce the potential adverse impacts appropriate mitigation and remedial measures have been suggested against each identified impact. Efforts are made to propose economical and sustainable mitigation and remedial measures which can be easily implemented. An EMP has also been developed to provide proper framework for the implementation of the suggested mitigation measures. A project will be executed under environmentally sustainable manner. An extensive Tree Plantation will add value to the project.

RECOMMENDATIONS

Following recommendations must be taken care prior to any of the decision about the proposed project:

- The plantation of 10,000 trees as part of tree plantation plan provided in the EMP must be implemented.
- Layout of WWTP and conveyance system should be design in such a way to avoid temporary loss of utilities and infrastructure;

- Sustainable use of resources in the construction of the proposed project must be ensured by incorporating renewable and recycled resources into construction;
- Odor from WWTP should be minimized by implementation of tree plantation plan;
- Blowing of dust and particulate matter from stockpiled loose materials (e.g. sand, soil), during excavation and loading and unloading of construction materials may be avoided either by sheeting them with tarpaulin or plastic sheets or by regular sprinkling with light shower of water;
- Proper implementation of EMMP should be ensured during all three phases of the proposed project;
- The construction process should be strictly monitored by enforcing all the environmental mitigations provided in the EMP as it can cause nuisance to the surrounding settlements in terms of noise, dust, traffic management, privacy and waste; and
- The EMP, its mitigation and monitoring programs, contained in this report should be included within the Bidding documents for project works for all Project components.
- The implementation of these steps will ensure that the project is executed in an environmentally sustainable manner.

APPENDICES

TERMS OF REFERENCE

The agreement hereinafter called Agreement, is made between M/S A.S Enterprises (Consultant) and M/S Century Paper & Board Mills Limited (Client) to prepare and carry out follow up of Environmental Study Report for obtaining Environmental approval under Section 12 of Punjab Environment Protection Act 1997 (Amended 2022) for Proposed Project for the Installation of WWTP by M/S Century Paper & Board Mills Limited"

The client has requested the consultancy firm to provide consultancy service to prepare and follow up of EIA Report and so that client may obtain Environmental Approval from EPA, Punjab under the Section 12 of PEPA 1997 (As Amended 2022) so mutually agreed terms and conditions are as under:

NOW THEREFORE, the parties here to hereby agree as follow:

- The client shall provide assistance and access to the information contained in the feasibility study, layout plan and other project relevant documents as and when required by the consultancy firm/consultant for performance of his obligations.
- The client shall provide all available data, maps, reports, etc. about the project including but not limited to layout plan of the project. Client will provide Lab Test Reports from EPA certified lab including noise level monitoring, wastewater analysis and stack emissions report or any report/document/information demanded by the EPA.
- The client will provide to the consultancy firm with the letter of introduction and authorization and other documents as may be needed to enable consultancy firm consultant to perform the service.
- Responsible to pay all the dues of the consultants as per the agreed terms and conditions.
- The consultancy firm/consultant shall carry out the services in accordance with the provisions of the agreement including:
- Shall follow up the EIA Report and other file required with due diligence necessary/required for obtaining its approval from EPA Punjab under the statutory requirements of PEPA 1997 (amended in 2022).
- Shall give the consultancy for the preparation of the detailed Environmental Management & Monitoring Plan for enhancing the environmental conditions during installation and operational phases such as mitigation measures for wastewater, solid

waste, air emissions, plantation, management of surface runoff, mitigation of socially adverse impact, if any.

- Will evaluate all the activities during the installation and operational phases and recommend suggestions/actions to comply with PEQS.
- Will follow up the EIA Report and file documents considering information/documents provided by the client.
- Shall examine the entire activities and list of the details of activities likely to cause adverse impacts during and after installation phase.
- Shall suggest mitigation measures for all such activities which may cause adverse impacts.

For and Behalf of	For and Behalf of
M/S A.S Enterprises	M/S Century Paper & Board Mills Limited
(Consultants)	(Proponent)

GLOSSARY

EIA (Environmental Impact Assessment): It is the process of identifying, predicting, evaluating and mitigating of effects of biophysical, social and other relevant proposed projects and physical activities prior to major decisions and commitments being made.

EMP (Environmental Management Plan): An EMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation.

ESIA (Environmental Social Impact Assessment): It is to identify the impacts of the project on social and environmental conditions.

FAUNA: Word used for combination of all the species of animals.

FLORA: Word used for combination of all the species of plants.

IEE (Initial Environment Examination): Initial examination of projects for identification of hazards of project.

NCS (National Conservation Strategy): Three objectives of the National Conservation Strategy (NCS) are: (i) conservation of natural resources; (ii) sustainable development; and (iii) improved efficiency in the use and management of resources.

NOC (No Objection Certificate): It is a kind of clearance issued by EPA necessary for any project to be constructed.

PEPA (Pakistan Environmental Protection Act 1997): An act to provide the protection, conservation, rehabilitation and improvement of environment, for the prevention and control of pollution and promotion of sustainable development.

Topography: Physical features of any area including soil, water and air are called topography.

LIST OFABBREVIATIONS

1	atmosphere
CO_2	Carbon dioxide
°C	Degree Celsius
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EMMP	Environment Management & Monitoring Plan
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
EPD	Environment Protection Department
IEE	Initial Environmental Examination
km	kilometer
kVA	Kilo Volt Ampere
NO2	Nitrogen Dioxide
PEQS	Punjab Environmental Quality Standards
NOC	No Objection Certificate
PA	Protected Area
PEPA, 1997	Pakistan Environmental Protection Act, 1997
PEPA, 2012	Punjab Environmental Protection (Amendment) Act, 2012
PEPO	Pakistan Environmental Protection Ordinance
PKR	Pakistani Rupees
PM	Particulate Matter
PPEs	Personal Protective Equipments
SFT	Square Foot

SOPs	Standard Operation Procedures
SO_x	Oxides of Sulphur
WASA	Water and Sanitary Agency
WAPDA	Water and Power Development Authority

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- The Punjab Local Government Ordinance, 2001

List of names, qualifications and roles of team members carrying out the IEE/EIA study

PERSON NAME	DESIGNATION	QUALIFICATION	ROLES & RESPONSIBILITY
Mr. M Sami Ullah	Director	Environment Law, MS Environmental Sciences	• Head Environment Cell
Mr M Hannan Yousaf	Environment Specialist	Mphil Environmental Sciences	• Preparation of Environmental Management Plan (EMP) • Preparation of Environmental Monitoring Plan (EMP) • Author of EIA Report
Mr. Awais Saleem	Environment Engineer	Environmental Engineering	• Preparation of Environmental Management Plan (EMP) • Preparation of Environmental Monitoring Plan (EMP)
Ms. Nadeem Akhtar	Environment Consultant	BS Environmental Sciences	• Site visits
Mr. Haseeb	Field Officer	Intermediate	• Site visits

List of individuals and organizations consulted along with their written feedback

Table: Summary of issues and commitments by Proponent

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Employment Opportunities	Expectations of employment are very high. Job opportunities are less for herders as they generally have less skills and training.	Employment is the main priority of the industry. Mostly locally skill and unskilled labor will be prioritized and also there will be job at executive level. Maximum Persons according to the requirement will be employed by the Housing Scheme.
Health & safety	Traffic is a main concern because the road used by the Project passes through a number of small communities and commercial business and there will be a high volume of trucks transporting construction materials.	Extensive consultation on the road corridor and safety aspects. Traffic advisory signs will be installed along the project site and all nearby specific areas.
Local economy and business development	Local service providers are keen to participate in providing services to provide raw material and expect to receive in order to adjust their businesses to meet specific needs. Local businesses want to receive support in terms of facilities to diversify their businesses. Local/regional companies and entrepreneurs have limited understanding about meeting the high volumes required by the Project and the quality standard, but are keen to know these requirements so they can become suppliers.	Proponent has the main focus that they will buy all the material regarding construction and plant operation to buy from the local market. This will help the local and small business and to people who are keen interested to become suppliers.

Issue	Aspect/Concern raised by Stakeholders	Project Proponent Commitments
Environmental Issues	Dust and noise impacts, particularly from the construction activities and in operation of mechanically unfit machines, are of concern to herders and other residents. Environmental degradation during road construction and use. Loss and change of vegetation due to soil degradation. Increased waste along the project boundary and around the economic zone.	Implementation of controls under the Environmental Management Plans, including on and off-site dust and noise monitoring. A seed rehabilitation program has been established and initial work has been completed in the economic zone and along the boundary. A Participatory Environmental Monitoring Program will be launched to spread awareness.
Water quantity and quality	Water quality and quantity, and impacts from the wastewater disposal are all key concerns for nearby herders.	Implementation of consultation in relation to water use and development of the Participatory Environmental Monitoring Program. Water treatment facility will be installed by the proponent that will help to safe disposal of the water.

Table: List of individuals consulted

Serial No.	Name	Adress	ID Card No.
1	Muhammad Thair Javeed	Multan Road, Jamber Pattoki	35202-6816291-7
2	Muhammad Shazad Ali	Multan Road, Jamber Pattoki	35202-4130818-5
3	Naeem Abbas	Multan Road, Jamber Pattoki	35202-3753526-3
4	Liaqat Ali	Multan Road, Jamber Pattoki	35201-9453676-9
5	Riaz Ali	Multan Road, Jamber Pattoki	35102-2318903-1
6	Muhammad Ramzan	Multan Road, Jamber Pattoki	35201-1370481-1
7	Ro Sohib Khan	Multan Road, Jamber Pattoki	35102-9768177-5
8	Ahmed raza	Multan Road, Jamber Pattoki	35202-7874884-5
9	Muhammad Shazad Alam	Multan Road, Jamber Pattoki	35200-5659816-9
10	Muhammad Shaoib mehar	Multan Road, Jamber Pattoki	35200-1150557-7
11	Muhammad intikhab	Multan Road, Jamber Pattoki	35202-1089481-5
12	Nazam Ali	Multan Road, Jamber Pattoki	35202-3544949-5
13	Muhammad Usman Khan	Multan Road, Jamber Pattoki	35102-5263508-9
14	Nasar Mehmood	Multan Road, Jamber Pattoki	35102-8751269-5
15	Usama Saleem	Multan Road, Jamber Pattoki	35102-5167324-7
16	Muhammad Tabraiz	Multan Road, Jamber Pattoki	35102-3269610-7
17	Maratab Ali	Multan Road, Jamber Pattoki	35202-6817062-3
18	Imran Murtaza	Multan Road, Jamber Pattoki	35202-5107486-9
19	Muhammad Asad	Multan Road, Jamber Pattoki	35202-4729263-9
20	Sajid Ali	Multan Road, Jamber Pattoki	35204-6723783-8

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Muhammad Thair Javeed

CNIC Number: 35202-6816291-7

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric✓	College/ University
3.	Marital Status	○ Single ✓ ○ Married ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Businessman			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					

16.	Will there be any impact on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)	Yes	No ✓	I don't know
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Muhammad Shazad Ali

CNIC Number: 35202-4130818-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3✓	4-6	More than 7
5.	Total Family Members	2-4	5-7	8-12	More than 12 ✓
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Shopkeeper			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					

16.	Will there be any impact on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)	Yes	No ✓	I don't know
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Naeem Abbas

CNIC Number: 22401-3541154-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3	4-6 ✓	More than 7
5.	Total Family Members	2-4	5-7	8-12	More than 12✓
6.	Religion ✓	Muslim	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	School Teacher			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1	2 ✓	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Tahir Mehmood

CNIC Number: 35502-0292438-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single✓ ○ Married ○ Divorced			
4.	If Married, Number of kids	None✓	1-3	4-6	More than 7
5.	Total Family Members	2-4	5-7	8-12✓	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Govt. Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Liaqat Ali

CNIC Number: 0307-5643175

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single✓ ○ Married ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4	5-7✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Govt. Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No	I don't know ✓
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited GENERAL PROFILE

Name: Riaz Ali

CNIC Number: 82501-0383216-1

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single✓ ○ Married ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4	5-7 ✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Businessman			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact on Soil quality due to project?	Yes	No ✓	I don't know	

	(Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No	I don't know ✓
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Ramzan

CNIC Number: 35404-4455814-1

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40 ✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3	4-6✓	More than 7
5.	Total Family Members	2-4	5-7	8-12 ✓	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	School Teacher			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1	2 ✓	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Sohaib Khan

CNIC Number: 0348-0551022

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate ✓	Upto Middle	Matric	College/ University
3.	Marital Status	○ Single✓ ○ Married ○ Divorced			
4.	If Married, Number of kids	None✓	1-3	4-6	More than 7
5.	Total Family Members	2-4	5-7✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Self Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No	I don't know ✓
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Ahmed Raza

CNIC Number: 12103-1882219-1

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric ✓	College/ University
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4	5-7	8-12✓	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Self Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No	I don't know ✓
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Muhammad Shahzad Alam

CNIC Number: 36304-0980418-7

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle✓	Matric	College/ University
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4	5-7✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Shopkeeper			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 02-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Shaoib Mehar

CNIC Number: 35103-8573972-3

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Businessman			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1	2 ✓	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Intikhab

CNIC Number: 35103-7762877-3

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4	5-7 ✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Shopkeeper			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Nazam Ali

CNIC Number: 35303-4855679-9

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40 ✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None ✓	1-3	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	School Teacher			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Usman Khan

CNIC Number: 35103-1277226-6

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40 ✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3✓	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Govt. Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Nasar Mehmood

CNIC Number: 36303-6500158-7

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40 ✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Govt. Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No	I don't know ✓
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Usama Saleem

CNIC Number: 35202-1490904-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40 ✓	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4	5-7 ✓	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Businessman			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No	I don't know ✓
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Tabraiz

CNIC Number: 35202-4036952-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4	5-7	8-12 ✓	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	School Teacher			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes ✓		No	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Maratab Ali

CNIC Number: 35103-1333593-9

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3	4-6 ✓	More than 7
5.	Total Family Members	2-4	5-7	8-12 ✓	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Self Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No	I don't know ✓
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: Imran Murtaza

CNIC Number: 35103-8251607-5

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30	31 – 40	41- 50 ✓	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Self Employee			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No ✓	I don't know	
If Yes, then How?					
16.	Will there be any impact	Yes	No	I don't know ✓	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No	I don't know ✓
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No	I don't know ✓
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No	I don't know ✓
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

SOCIO ECONOMIC SURVEY FORM

Project Name: M/S Century Paper & Board Mills Limited

GENERAL PROFILE

Name: M Asad

CNIC Number: 35103-768412-6

Home Address: Multan Road, Jamber Pattoki

Sr.#	Questions	Options			
1.	Age (Years)	18 – 30 ✓	31 – 40	41- 50	51 & above
2.	Education	Illiterate	Upto Middle	Matric	College/ University ✓
3.	Marital Status	○ Single ○ Married ✓ ○ Divorced			
4.	If Married, Number of kids	None	1-3 ✓	4-6	More than 7
5.	Total Family Members	2-4 ✓	5-7	8-12	More than 12
6.	Religion	Muslim ✓	Hindu	Christian	Any other

SOCIO ECONOMIC PROFILE

Sr.#	Questions	Responses			
7.	Occupation	Shopkeeper			
8.	Total Income	5 – 10 Thousand	11 – 15 Thousand	16 – 25 Thousand	More than 25 ✓ thousand
9.	No. of earning family members	1 ✓	2	3	More than 3
10.	Nearest Hospital and Distance (approx.)	THQ PATTOKI 05-Km			
11.	Nearest Educational Institute	Govt. High School Pattoki			
12.	Any disease in the family?	Yes		No ✓	
If Yes, What kind of disease?					
ANTICIPATED IMPACTS DUE TO PROPOSED PROJECT					
13.	Have you heard about the project?	Yes		No ✓	
14.	Are you in favor of this project?	Yes ✓		No	
15.	Will there be any impact on Water quality & quantity due to project?	Yes	No	I don't know ✓	
If Yes, then How?					
16.	Will there be any impact	Yes	No ✓	I don't know	

	on Soil quality due to project? (Soil Erosion, Soil Salinity etc.)			
If Yes, then How?				
17.	Will there be any impact on Air quality due to project? (Smoke, rise in Temperature, Visibility issue etc.)	Yes	No ✓	I don't know
If Yes, then How?				
18.	Will the Noise due to project have impact on nearby population? (Irritation, Sleeping problem etc.)	Yes	No ✓	I don't know
If Yes, then How?				
19.	Are you expecting any wastewater issues due to project activities? (Effecting groundwater, causing waterborne diseases etc.)	Yes	No ✓	I don't know
20.	Will there be traffic congestion due to vehicle movement pertaining to project activities?	Yes	No ✓	I don't know
21.	Is there any Protected area (Forests/botanic gardens, birds/animal sanctuaries etc.) near the project site?	Yes	No ✓	I don't know
22.	Please mention if you have any suggestion / complaints regarding the project.	Promote welfare of the society and local employment		

Interviewed by: _____

1. Project overview

1.1 Water Capacity

According to the water quantity data provided by BPDB, the design scale of phase I (PM7) is 300m3 / hr, and that of phase II (PM8) is 300m3 / hr.

Total: 600m3/hr.

1.2 Influent quality

The parameter of main pollutants in wastewater include pH, chroma, CODCr, BOD5, etc. with reference to the water quality of similar manufacturers, the influent water quality parameter of the treatment project are as follows;

1400≤CODcr≤2700mg/L 300≤BOD_5≤500mg/L

1000≤TSS≤3200mg/L

PH:7.06 *Temperature:(please advise)*

1.3 Effluent quality discharge standard

The discharge standard of effluent from wastewater treatment station meets the following standards:

CODcr≤150mg/L BOD_5≤50mg/L TSS≤200mg/L

1.4 Sludge treatment

The sludge produced by the sewage treatment station will be transported to landfill after gravity concentration and mechanical dehydration.

1.5 Scope of work

The design scope of the scheme is within the wastewater treatment plant: from the ETP inlet to the standardized outlet, all the engineering contents involved

purify the water quality. After contact oxidation treatment, the wastewater containing microbial suspended particles enters the sedimentation tank for slurry separation, and the supernatant is filtered by the multi-media filter tank, and the water quality reaches the discharge standard or reused.

The sludge flows to the sludge storage tank, and is lifted to the filter press for dehydration by the sludge pump, and the dry sludge is transported out for disposal.

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in the process, equipment supply, electrical and Installation guidance & Commissioning guidance.

The project owner is responsible for the design of the waste water pipe trench from the production workshop to the grid pool of the sewage station and the outlet pipe after treatment as well as the local civil work.

2. Wastewater Treatment Process

2.1 Wastewater treatment process

The short fibers and impurities in the waste slurry are intercepted by the inclined screen and recycled after collection. The wastewater enters into the regulating tank to regulate the water quality and water quantity, so as to reduce the adverse effect of the fluctuation of water quality and water quantity on the subsequent biochemical treatment. The wastewater in the regulating tank is pumped into the air flotation tank, and then coagulates and flocculants are added to form flocs. The flocs are quickly lifted by the tiny bubbles released by the dissolved air water preparation system, so as to complete the solid-liquid separation. Most of the pollutants in the wastewater are removed, and the air flotation sludge is discharged into the pulp reuse sludge tank.

The water from the clean water area of the air flotation machine enters the pulse hydrolysis acidification tank. Under the anaerobic condition, the macromolecular organics in the wastewater are transformed into small molecule organics, which are finally decomposed into CH4 and CO2, and then enter the biological contact oxidation tank. Under the condition of rotary fan aeration, the microorganisms in the tank further decompose and digest the pollutants in the water through aerobic action, and degrade the organic matter into water and carbon dioxide, so as to

2.3 Process characteristics

- The biological treatment not only effectively controls the investment cost and greatly reduces the operation cost, but also effectively guarantees the treatment effect to meet the discharge standard.
- The large volume design of the regulating tank can keep the fluctuation of water quality and quantity small, and ensure the stability and safety of subsequent treatment.
- In each unit system, the application of industrial on-line control instruments makes the wastewater treatment always within the stable operation range of the system.
- According to the characteristics of the wastewater, the inclined screen can intercept most of the short fibers and impurities standard;
- Biological aerobic treatment was used to ensure the water quality up to the standard.
- PLC automatic control, stable operation, simple management, the application of automatic control system to save operating costs and enhance processing.

2.4 Process description

2.4.1 Inclined screen tank

The main function of inclined screen is to recover the fine fibers in the sewage and remove the substances that are difficult to degrade in the water. It can not only intercept the short fibers in the recycled sewage, but also prevent the short fibers from blocking the mesh and affecting the water throughput, which is also conducive to the recovery of fine fibers.

2.4.2 Equalization tank

In order to adjust the peak and valley of sewage discharge and the homogeneity of sewage content, improve the impact resistance of the whole system and reduce the design scale of subsequent treatment unit, the homogeneous regulating tank is set up, and the steel concrete anti-corrosion structure is adopted in the regulating tank. The structure is plug flow.

2.4.3 Pre acidification tank

In order to increase the treatment effect of IC-Plus, a Pre acidification tank is added at the front end, which is more resistant to the impact load caused by uneven wastewater quality and quantity, and ensures that microorganisms are in suspension state, which can more effectively treat wastewater and pump water from the pre acidification tank into IC-Plus reactor.

2.4.4 IC-plus Anaerobic Reactor

2.4.4.1 Introduction of IC-plus process

1. Uniform distribution of water.

IC anaerobic reactor has more uniform distribution of water due to the use of partition, multi-point, single inlet pipe flow control and other measures.

2. High volume load.

Due to the internal circulation of IC anaerobic reactor, the first anaerobic reactor not only has a high biomass, a long sludge age, but also has a large upwelling rate, which makes the granular sludge in the first anaerobic reactor fully expand. In fluidization state, it has a high mass transfer rate, which makes mud and water fully mixed, thus greatly improving the biochemical reaction rate and organic matter removal capacity. The volume load can reach 15-30 kgcod / m3 per Day, and the rising speed of water flow in expansion zone can reach 10-20 M / h.

3. It has strong impact resistance and good effluent effect

IC high efficiency anaerobic reactor is composed of EGSB and UASB in series. The two-stage three-phase separator in the reactor can effectively retain the biomass. The first stage (bottom) separator separates biogas and water, and the second stage (top) separator separates granular sludge and water. Since most of biogas has been separated in the first stage separator, there is almost no turbulence in the second anaerobic reaction chamber, so the second stage separator can effectively separate granular sludge in the effluent without the influence of high gas flow rate, so the effluent effect is good.

At the same time, IC anaerobic process under high COD volume load, according to the principle of gas lifting, using biogas expansion to work without additional energy, realizes the internal circulation sludge reflux, so that the actual water quantity in the first reaction zone is far greater than the influent quantity, and the circulating water quantity can reach 10-20 times of the influent quantity. The circulating water dilutes the influent, and improves the anti impact load capacity and acid-base regulation of the reactor The ability of saving energy.

4. Less capital investment and less land occupation:

The volume load of IC anaerobic reactor is 3-4 times of that of UASB, and the volume required is only one third and one fourth of that of UASB.

2.4.4.2 Advantages of IC-Plus Technology

The structure and working principle of IC reactor determine that it has more advantages than other reactors in controlling the influencing factors of anaerobic treatment.

(1) high volumetric load: the IC reactor has high sludge concentration, large microbial biomass, internal circulation and good mass transfer effect, and the influent organic load can be more than three times of that of the ordinary anaerobic reactor.

(2) saving investment and floor area: the volume loading rate of IC reactor is about 3 times higher than that of ordinary UASB reactor, and its volume is about 1 / 4 ~ 1 / 3 of that of ordinary reactor, which greatly reduces the capital construction investment of reactor. Moreover, the height diameter ratio of IC reactor is very large (generally 4 ~ 8), so it is very suitable for industrial and mining enterprises with tight land use.

(3) strong anti impact load capacity: when treating low concentration wastewater (COD = 2000 ~ 3000mg / L), the internal circulation flow of the reactor can reach 2 ~ 3 times of the inflow; when treating high concentration wastewater (COD = 10000 ~ 15000mg / L), the internal circulation flow can reach 10 ~ 20 times of the inflow. A large amount of circulating water and influent water are fully mixed, so that the harmful substances in raw water are fully diluted, which greatly reduces the influence of poison on anaerobic digestion process.

(4) strong resistance to low temperature: the effect of temperature on anaerobic digestion is mainly on digestion rate. Because IC reactor contains a large number of microorganisms, the effect of temperature on anaerobic digestion is no longer significant and serious. Generally, the anaerobic digestion of IC reactor can be carried out at room temperature (20 ~ 25 ℃), which reduces the difficulty of digestion and heat preservation and saves energy.

(5) it has the ability of buffering pH: the internal circulation flow is equivalent to the effluent reflux of the first anaerobic zone, and it can buffer pH by using the alkalinity of COD conversion, so as to keep the pH in the reactor in the best state, and reduce the alkali dosage of the influent at the same time.

(6) internal automatic circulation, no need external power: the reflux of ordinary anaerobic reactor is realized by external pressure, while the IC reactor uses the biogas generated by itself as the lifting power to realize the internal circulation of mixed liquid, and there is no need to set up a pump for forced circulation, thus saving power consumption.

(7) good effluent stability: the use of two-stage UASB series anaerobic treatment can compensate for the adverse effect of high KS in anaerobic process.

(8) short start-up period: high sludge activity and rapid biological proliferation in IC reactor provide favorable conditions for rapid start-up of the reactor. The start-up period of IC reactor is generally 1-2 months, while that of ordinary UASB is 4-6 months.

(9) high utilization value of biogas: the purity of biogas produced by the reactor is high, with CH4 of 70% ～ 80%, CO2 of 20% ～ 30% and other organic matter of 1% ～ 5%, which can be used as fuel.

2.4.5 Aerobic tank

The oxygen supply of aerobic tank is aeration by blast, and the type of tank is push flow biological method. After the wastewater enters the aerobic tank from one end, it moves forward along the tank as piston flow. In this process, the organic matter in the wastewater is continuously absorbed and degraded by the aerobic microorganisms attached in the tank. As the concentration of wastewater gradually decreases along the length of the pool, the population and quantity of microorganisms in the pool will naturally optimize the water quality, thus improving the sewage treatment effect and effluent quality.

The effluent from the aerobic tank is separated from the sludge in the subsequent final sedimentation tank. According to our previous engineering experience and the actual situation of the plant, the secondary sedimentation tank is in the form of radial flow sedimentation tank, and the sludge is immediately returned to the aerobic tank, and the excess sludge is pumped to the sludge thickening tank for concentration treatment.

2.4.6 Radial flow half bridge sedimentation tank

The sewage enters the radial flow sedimentation tank for sedimentation treatment. The high efficiency radial flow sedimentation tank is based on the sedimentation principle of horizontal flow sedimentation tank to remove dispersive particles. Therefore, at the same horizontal velocity V, the Reynolds number Re can be

greatly reduced, so as to reduce water turbulence and promote sedimentation. In addition, the radial flow sedimentation is added to shorten the sedimentation distance of particles and greatly improve the sedimentation efficiency. The high efficiency radial flow precipitation has the characteristics of remarkable precipitation effect. The tank is of steel concrete structure.

2.4.7 Sludge disposal

The sludge discharged from the secondary sedimentation tank of biochemical treatment and the sludge discharged from the coagulation sedimentation tank are concentrated in the concentration tank, and then pumped into the sludge dewatering machine room. After being dried by the belt filter press, they are transported out. The supernatant of the sludge concentration tank and the filtrate during dewatering are returned to the regulating tank for further treatment.

2.5 Treatment Efficiency

According to the requirements of inlet and outlet water quality, the required pollutant removal rate of the project is shown in the table below (Refer to table 2-1)

2-1 Treatment effect of wastewater and reuse water (unit: mg / L, except pH)

Parameter / Each Process	COD_{Cr}	BOD_5	TSS
Part 1. Wastewater treatment system			
Raw waste water	≤2700	≤500	≤3200
After Pretreatment	≤2565(5%)	≤475(5%)	≤80
IC-PLUS	≤513(80%)	≤95(80%)	
Aerobic tank	≤102.6(80%)	≤19(80%)	
Secondary Sedimentation Tank	**≤92**	**≤18**	**≤10**
Part 2. Reuse water system			
Sand / carbon filter	≤79(5%)	≤15(5%)	≤5(83%)
Precision filter	≤79	≤20	≤1(80%)
UF system	≤63(20%)	≤12(20%)	0
Reuse water standard	0	0	0

Note: The Part2. Reuse water system efficiency is for reference only, this system is not included in the current enclosed quotation.

3. Equipment List with Parameters

3.1 Main structures and equipment of wastewater treatment system

3.1.1 Equalization tank

Main parameters:

Function: mainly used for collecting and regulating waste water to make it homogeneous.

Net size : 25000×16000×5000mm,Total volume 2000m^3, Effective volume 1800m^3, HRT=6.0h.

Tank structure: underground steel concrete structure.

Main equipment:

Corrosion resistant lifting pump : Q=155m^3/h,H=10m,3 pcs

3.1.2 Pre acidification tank (cooling tower + inclined screen)

Cooling tower (TBD，depending on the water temperature.)

Inclined screen:

Function: remove large particles and fine fibers.

Net size: 25000 × 8000 × 5000mm.

Tank structure: steel concrete structure.

Main equipment:

Inclined screen: 16 sets of rhg-1218 screen gap 1mm stainless steel

3.1.3 IC-PLUS

Function: Transform macromolecular organic matter into small molecule organic matter, and finally decompose into CH4 and CO2.

Net size: 20000 × 20000mm, total volume: 6280m3,

effective volume: 6000m3, HRT = 20h.

Tank structure: above ground steel structure.

Main equipment:

It includes cylinder part, water inlet pipe, sludge discharge pipe, external circulation pipe, water outlet pipe, sampling pipe, gas-liquid separator, rotary ladder and reflux pump.

3.1.4 Biological aerobic tank

Main parameters:

Function: Transform macromolecular organic matter into small molecule organic matter, and finally decompose into CO2.

Net size: 31000 × 26000 × 6000mm, total volume: 4836m3, effective volume: 4433m3, HRT = 14.8h.

Tank structure: above ground steel concrete structure.

Main equipment:

8 sets of UPVC pipeline and UD660 * 160 plate fine bubble aeration system

3.1.5 Secondary sedimentation tank

Function: after aerobic treatment, the water contains certain suspended sludge, which can be separated in the secondary sedimentation tank.

Net size: Φ 26000 × 4000mm

Tank structure: above ground steel concrete structure.

Main equipment:

Half bridge radial flow mud scraper 1 set

Triangle outlet weir: 250 * 1500mm, 1 batch

Dosing box: 1000L 2 sets

Metering pump: 10L / min, n = 0.75KW, 2 sets

pH meter: 1 set

3.1.6 Sludge concentration tank

Net size: Φ 10000 × 4000mm = 314m3.

Above ground steel concrete structure.

It is equipped with a pneumatic diaphragm pump.

Model: 50zw-10-20, q = 20m3 / h, H = 70m. Air

compressor: 7.5kw

One plate and frame filter press for sludge dewatering.