EXECUTIVE SUMMARY

This report presents the findings of the Environmental Impact Assessment study regarding waste water treatment plant conducted by Pro Green Environmental Services on behalf of waste water treatment plant by Yousaf Tanneries Located at Niaz Nagar District Kasur. **Coordinates: 31.107944, 74.455083.**

The proponent has planned the installation of Wastewater Treatment Plant for the treatment of waste water generated from Yousaf Tanneries. The wastewater of the Yousaf Tanneries will be treated properly through the primary & secondary treatment. Primary treatment involves screening, equalization, and primary sedimentation. Secondary treatment involves an activated sludge biological processes. In the biological treatment two processes takes place anaerobic digestion and aerobic digestion. In anaerobic digestion/ process some microorganisms like bacteria break down the organic material present in the Tanneries waste water in the absence of oxygen. In aerobic digestion/ process bacteria decomposed the organic matter into simple inorganic material in the presence of oxygen. The specification of the tanneries waste water treatment plant will be grit Chamber, Oil and grease, Pump Pit wall, Equalization Tank, Anaerobic Tank-I, Anaerobic-II, Sand filter will be used to filter, Carbon filter will be separate out the carbon from organic material, Aerobic Tank-I, Aerobic Tank-II, Aerobic Tank-III, Break Tank and Control Room and the flow of water will be 40 m^3 / hour. Emergency exit doors will be present for exit in case of any kind of emergency situation. The proper parking area will be left to avoid traffic congestion issue on site.

The dimension of waste water treatment plant is as follows Grit & grease chamber 2.5x1.5x8.0, Screen chamber 2.5x0.8x0.8, Blower room 3.5x3.0x4.0, Equalization chamber 4.0x3.0, Aeration tank 7.0x3.0, Sludge drying bed 3.0x2.0x1.5, Primary Clarifier 3.25x4.2, Secondary clarifier 3.25x4.2 and Sludge dewatering area 3.4x1.2x0.3.the estimated cost will be 35 million. The total area 1 Kanal 10 Marla.

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **category F (1)** of projects mentioned in Schedule II.

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to this project along with environmental impact statement followed by appropriate Environmental Management Plan. EIA of this proposed project has been carried out in order to conform to the requirements of

the Punjab Environmental Protection Act, 1997, amended in 2012 under section 12 of which no development activity can be initiated anywhere in Punjab without filing before the designated government agency an IEE or an EIA, as may be required and having an NOC for impact construction and operation. As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **category F (1)** of projects mentioned in Schedule II. The purpose of this EIA is to predict all the probable adverse environmental impacts and plan adequate mitigation measures for eliminating, controlling them and drafting the complete institutional framework for their implementation.

TITLE AND LOCATION OF PROJECT

"Waste water treatment plant by Yousaf Tanneries" Located at Niaz Nagar District Kasur.

NAME OF PROPONENT

The proponent of this unit is Muhammad Mujahid S/O Mian Muhammad Anwar.

NAME OF ORGANIZATION PREPARING THE REPORT

This Environmental Impact Assessment report has been prepared by Pro Green Environmental Services.

OUTLINE OF PROPOSAL

1	**Project Title**	Waste water treatment plant by Yousaf Tanneries.
2	**Proponent**	Muhammad Mujahid S/O Mian Muhammad Anwar
3	**Project Location**	Niaz Nagar District Kasur.
4	**Coordinates**	**31.107944, 74.455083**
5	**Land Use in Surrounding of Proposed area** **East:** **West:** **North** **South:**	 Industrial Unit Industrial Unit Road Industrial Unit
6	**Consultant**	Pro Green Environmental Services

7	**Total Covered Area**	1 Kanal 10 Marla
8	**Cost of Project**	35 million
9	**Water Source**	Ground Water
10	**Nature of Area**	Open Area
11	**Source of Power**	WAPDA
WAPDA= Water and Power Development Authority		

MAJOR IMPACTS

The project of waste water treatment plant by Yousaf Tanneries was reviewed with the aim to determine the likely impacts of the project on the environmental and socio-economic conditions of the area. All the necessary elements of the project were reviewed and compared with the existing conditions in the vicinity of the Project Area. The EIA report identifies the adverse environmental impacts due to the construction and operational activities of the project and also suggests proper measures for their mitigation, as described in Environmental Management Plan (EMP).

The impacts by this unit on the surrounding environment are as follows:

Aspects	**Potential Impacts/ Risks**
Construction Phase	
Traffic Congestion due to construction phase	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.
Air Quality degradation due to construction phase of WWTP	Dust produced due to construction activity can affect the health of employees and resident in the surrounding areas

Disposal of Construction Waste/Excavated Material	Dumping of construction wastes / excavated material in the surrounding area may limit use of land
Noise and Vibration due to machinery being used for construction	Noise pollution due to increased construction machinery operation
Sanitation and Waste disposal facilities At Project site	Health risks to construction workers
Workers' Safety and Hygienic conditions	Health risks in case of unsafe and/or unfavorable work conditions
Operational Phase	
Wastewater treatment	It can impact surface water and underground water. If wastewater is not properly treated, then the environment, flora, fauna and human health can be negatively impacted.
Solid waste	A significant impact will be interpreted if the sludge management is not carried out properly; witch may affect health of workers and can be a source of pollution of soil, surface or groundwater.
Groundwater Depletion	Prolonged water consumption may in the long run lower/deplete the underground water table.
Air Quality	From wastewater treatment plant odor may be generated. Furthermore vehicles and generators with excessive smoke can pollute the air quality.
Noise & Vibration	Noise will be generated from operation of wastewater treatment plant It may affect the health of the workers.
Workers' Safety and Hygienic conditions	Health risks in case of Unsafe and/or unfavorable work conditions
Emergency Response	There are always chances of earthquakes and manmade disasters, fire, road accidents etc.
Traffic Congestion	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.

RECOMMENDATIONS FOR MITTIGATION MEASURES

The potential negative impacts during construction and operational stage of the project will be mitigated to an acceptable level. Necessary mitigation measures are recommended in the report to make the proposed project Environment Friendly. Environmental Management Plan identifies monitoring needs and implementation on Environmental Management Plan is also recommended.

The following measures are recommended for the project:

Aspects	**Proposed Mitigation Measures**
CONSTRUCTION PHASE	
Seismic Hazard in the area	Selection of a design for structure with proper consultation that must be safe against earthquakes
Traffic Congestion due to construction phase of	Adequate parking facilities will be provided for the construction machinery and tractor-trolleys bringing the material into the Project Area
Air Quality degradation due to construction phase	Use of dust suppression techniques like water sprinkling etc. will be made to minimize the effect of dust. Construction workers will be provided with masks for protection against the inhalation of dust. Regular monitoring of all vehicles, equipment, and machinery used for construction. All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.
Disposal of Construction Waste/Excavated Material produced in construction phase	Management of Construction activities in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site approved by TMA,
Noise and Vibration due to	Selection of up-to-date equipment and machinery with reduced noise levels ensured by suitable in-built damping techniques;

machinery being used for construction	Regular checkups and maintenance of the construction equipment; and use of appropriate muffling devices
Sanitation and Waste disposal facilities at Project site	All the solid waste will be properly collected and disposed of in accordance with the procedures of TMA.
Workers' Safety and Hygienic conditions	Enforcement of work safety measures such as wearing safety goggles, helmets, protective masks and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
Damage to Flora due to construction	Plantation of different trees will make project area environment friendly
OPERATIONAL PHASE	
Solid waste	▪ Sludge as a result of wastewater treatment, will also be disposed of by management at designated dumping site. ▪ For domestic waste such as office waste, food waste, plastics, rags and paper etc. separate waste bins will be placed for different type of wastes. From there it will be disposed of according to the procedures of TMA.
Groundwater Depletion	Workers will be trained in water conservation measures such as use of water efficient/ economy appurtenances.
Air Quality	• For avoiding the emissions of toxic gas the wastewater will be treated properly by the lime bath treatment. • PPE's such as masks should be given to workers. • Vehicles with excessive smoke should not be allowed to enter the premises of the unit. • Vehicles and generator should be properly tuned and maintained to control emissions. • Generator with modern technology to reduce emissions should be used. • Emissions inspection will be done on regular basis.

	• Regular checkups and maintenance of the machinery should be done. • Chemicals Storage will be done properly and should be properly covered after using it.
Poverty Alleviation	Minor positive
Noise & Vibration	• Workers will be provided with PPE's such as ear plugs. • There will be a sound proof roof room for generator. • There will be a selection of up-to-date generator (if any) with reduced noise levels ensured by suitable in-built damping techniques • Vehicles and generator will be properly tuned and maintained to control noise. • Only those vehicles will be used that are properly tuned and maintained and are equipped with silencers. • Also excessive use of horns will be avoided. Further tree plantation will be done as it acts as noise absorbers. • Oiling and greasing of the mechanical parts of the machinery will be done to control noise. • Maintenance of the machinery will be done on regular intervals.
Workers' Safety and Hygienic conditions	Instruments used to detect and monitor H_2S exposure would be either fixed or portable, whereas personal detectors are worn by employees and typically sound an alarm at levels between 10 ppm and 15 ppm. Due to this nearly permanent life threatening hazard, H_2S meters are always positioned at critical points and/or carried by staff. Enforcement of work safety measures such as wearing safety goggles, protective masks, helmets and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
	• Emergency evacuation plan will be developed to evacuate the

Emergency **Response**	area in case of accidental fire • Emergency response and plan along with safety charts showing symbols and other necessary information will be displayed at various places for the awareness of workers • An Emergency Response Plan for earth quakes and manmade disasters will be developed by the Management. • Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics • Firefighting equipment's should be installed in the unit.
Traffic Congestion	Adequate parking facilities will be provided for the vehicles bringing the material into and out ofthe Project Area

PROPOSED MONITORING

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

Regular monitoring will be required to check that the construction and operation is not going to cause any adverse environmental impacts; hence monitoring visit will be done once in a month during construction phase. During these visits samples will also be taken to check the quality of air, water and soil etc.

Proposed monitoring program:

Parameter/ Receptor	Location	Monitoring	Mechanism Monitoring and Reporting Frequency
Water Quality	• Ground Water • Surface Water	Discrete grab sampling and laboratory testing of water samples.	• Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. • Discharges from the construction sites should be tested for temperature, PH and turbidity. • Treated effluent discharges from the worker's camp to be tested for PH,TSS and BOD.
Dust Emissions	• Tracks along the roads during construction period.	Ambient particulate matter monitoring.	• Sampling and laboratory testing should be done on monthly basis during the construction
Noise Levels	• Camp sites, • Selected Locations alon the access.	Noise meter	Monthly during the construction Stage.
Air Quality	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoring system. Monitoring of ambient air quality.	• Monthly monitoring of air pollution parameters including PM_{10},NO_X, $SO_{X;}$ CO. Hydrocarbons during the construction period, and quarterly monitoring ofPM_{10},NO_X, $SO_{X;}$ CO VOC_S during the operation stage,

Cutting of trees	In all project area during the construction stage and operation stage.	Periodic visits site to ensure that trees cutting is prohibited.	Reported on monthly basis during the construction period, and once in a year monitoring and reporting during the operation period.
Socio-cultural Environment			
Inconvenience community	All around the project area	Consultations with community to get feedback about inconvenience due to the construction activities to perform their daily routine chores.	Monthly monitoring and reporting during the construction period.

Contents

Structure of the Report

This report comprises the following chapters in order stated:

Chapter 1: (Executive Summery**)** Title and location of project, Name of proponent, Name of organization, outline of proposal, major impacts, recommendation of mitigation measures, proposed monitoring

Chapter 2: (Introduction)purpose of report, identification of project, details of consultaants, brief description of nature, size, and location of project

Chapter 3: (Screening) whether the project required IEE/EIA as per regulations

Chapter 4: (Scoping**)**Spatial and temporal boundaries of Environmental Assessment, important issues raised during consultation, significant impacts and factors to be determined

Chapter 5: (Consideration of Alternatives**)** Site alternatives**,** design/ technology alternatives, environmental alternatives, economic alternatives

Chapter 6: (Description of project) objectives of projects, location and site layout, land use on site, road access, vegetation features, cost and magnitude, schedule of implementation, description of project, restoration and rehabilitation

Chapter 7:(Description of Environment) states and specifies the present environmental settings and socio-economic values of the project area and the surroundings

Chapter 8: (Impact Assessment**)** Methodologies for impact identification, checklist, matrices, network, overlays, GIS and computer expert system

Chapter 9: (Screening of Potential Environmental Impacts and Mitigation Measures) project location, design, construction phase, operational phase, potential environmental enhancement measures

Chapter 10: (Environmental Management and Monitoring Plan) throws a light on the authorities or individuals responsible to implement mitigation measures and monitor the environmental parameters against the environmental impacts

Chapter 11:(Stakeholders and Public Consultation)Public consultation plays a vital role in studying the effects of any development project on stakeholders and in its successful implementation and execution

INTRODUCTION

This chapter describes briefly the purpose of study, proposed project in the context of its nature, size, location, objectives and the objectives and methodology used for conducting it.

1-Purpose of EIA Study and Report

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to proposed project construction along with environmental impact statement followed by appropriate Environmental Management Plan. 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 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.

2-Identification of the Project & Proponent

The proponent of this unit is Muhammad Mujahid S/O Mian Muhammad Anwar.

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **F (1) category** of projects mentioned in Schedule II.

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to proposed project along with environmental impact statement followed by appropriate Environmental Management Plan. The proponent will also conform to the other applicable environmental laws, rules and regulations during both construction and operation of the proposed project.

3- Detail of Environmental Consulting Firm

This EIA study has been carried out by Pro Green Environmental Services. This Firm comprises environmental engineers, environmental lawyers etc.

Name	Roles
Shahid Iqbal Environmentalist	Team leader and Author
Ali Naeem Environmental Engineer	Monitoring coordinator and Author
Muhammad Hassan Chemist	Monitoring and Author
Gulzaib Afzal Environmental Engineer	Monitoring Assistant and Author

Address:126,1st Floor Memona Center, Moj Darya Road, Lahore

Contact No. 0333-4041950

4-Brief Description of Nature, Size and Location of Project

The proponent has planned the installation of Wastewater Treatment Plant for the treatment of waste water generated from Yousaf Tanneries. The wastewater of the Yousaf Tanneries will be treated properly through the primary & secondary treatment. Primary treatment involves screening, equalization, and primary sedimentation. Secondary treatment involves an activated sludge biological processes. In the biological treatment two processes takes place anaerobic digestion and aerobic digestion. In anaerobic digestion/ process some microorganisms like bacteria break down the organic material present in the Tanneries waste water in the absence of oxygen. In aerobic digestion/ process bacteria decomposed the organic matter into simple inorganic material in the presence of oxygen. The specification of the tanneries waste water treatment plant will be grit Chamber, Oil and grease, Pump Pit wall, Equalization Tank, Anaerobic Tank-I, Anaerobic-II, Sand filter will be used to filter, Carbon filter will be separate out the carbon from organic material, Aerobic Tank-I, Aerobic Tank-II, Aerobic Tank-III, Break Tank and Control Room and the flow of water will be 40 m^3 / hour. Emergency exit doors will be present for exit in case of any kind of emergency situation. The proper parking area will be left to avoid traffic congestion issue on site.

The dimension of waste water treatment plant is as follows Grit & grease chamber 2.5x1.5x8.0, Screen chamber 2.5x0.8x0.8, Blower room 3.5x3.0x4.0, Equalization chamber 4.0x3.0, Aeration tank 7.0x3.0, Sludge drying bed 3.0x2.0x1.5, Primary Clarifier 3.25x4.2, Secondary clarifier 3.25x4.2 and Sludge dewatering area 3.4x1.2x0.3.the estimated cost will be 35 million. The total area 1 Kanal 10 Marla.

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **category F (1)** of projects mentioned in Schedule II.

SCREENING

Whether the project requires IEE/EIA as per regulation:

According to the section of the Punjab Environmental Protection Act 2012, no proponent of a project shall commence construction or operation unless he has filed an initial environmental examination or where the project is likely to cause an adverse environmental effects, an environmental impact assessment, and has obtained NOC from the EPA Punjab.

Subject to provision of this Act, proponent Muhammad Mujahid must get a NOC for Construction of the waste water treatment plant under section 12 of PEPA-2012 from provisional Agency in order to start Construction. This project requires an Environmental Impact Assessment (EIA) the project fall in Schedule-II, Category F-(1) of EIA and IEE Regulations 2022. An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to proposed project along with environmental impact statement followed by appropriate Environmental Management Plan. The proponent will also conform to the other applicable environmental laws, rules and regulations during both construction and operation of the proposed project.

The Director General, EPA Punjab is the authority to issue the requisite Environmental Approval after proper review of the project. The IEE report has been prepared under the format of guidelines issued by EPA. The applicable laws for the environmental study of the project are briefly given below

- Punjab Environmental Protection Act, 2012
- National Environmental Policy, 2005
- Review of EIA Regulations, 2000
- Guidelines for Preparation and Review of Environmental Report, 1997
- Solid Waste Management Rules , 2005
- National Environmental Quality Standards 2000
- Punjab Land use Rules 2009

SCOOPING

1- Spatial and Temporal Boundaries of Environmental Assessment:

The Natural Environmental setting, present industrial status and its future trends around the project site covering fairly large distance have been taken into consideration while taking stock of existing and expected conditions. Socio-economic condition, availability of basic infrastructure, availability of water, labor, raw materials, transport and means of communication, electricity and approach to the project site were the major considerations and spatial and temporal boundaries considered during this study.

2-Important Issues and Concerns raised during the Consultation:

Following issues were discussed during the stakeholder's consultation:

- Overall activities of the project and their possible impacts.
- Possible impacts on natural vegetation, flora and fauna
- Possible mitigation measures;
- Beneficial factors and involvement opportunities of the local people in the set of activities of project.

General:

Majority of stakeholders appreciated the project and taken it as a necessary steps towards the current situation of food.

Socio-Economic:

Expectations about employment opportunities and community development were extremely high among all stakeholders

Strict traffic plan will be implemented. If the mitigation measures mentioned in later section of construction and operation phase are properly implemented, the proposed project with respect to location will be environment friendly and will not be involved in the deterioration of environment.

3-Significant impacts and factors to be determined:

Following factors have been taken in the account to assess the Environmental Impacts of the proposed waste water treatment plant:

- Environmental impacts due to land use, location, waste generation, utility services consumption and emergency spillage etc.
- Environmental impacts physical resources i.e soil topography, geology, climate, air quality etc. ecological resources i.e flora as well as health and safety of worker

CONSIDERATION OF ALTERNATIVES

Alternative considerations and reasons for their rejection:

Location Alternatives

The proponent also considered other sites but those sites don't have easy access to roads. Furthermore those sites were the environmentally degraded and polluted lands, and lack of aesthetic beauty is the major factor which urges the proponent to find an alternative. The project area is devoid of any tree cover, so it doesn't involve cutting of trees for carrying out project activities. No species of plants and animals having significance ecological importance present on the proposed project site. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. So, this is the best economically viable option for the proponent. Because of the availability of access roads, communication facilities, electricity, gas, basic infrastructure, sewer etc. was yet the other necessary requirements. Of course neat and clean environment was also the consideration. The project will also facilitate the people of area with increasing the opportunities of the employment, and other related facilities .Keeping these requirements and other feasibility and other basic infrastructural requirements, now the proponent considered other alternative site but the selected site is ideally suited for the said unit.

Reasons of rejection

- Cost of alternatives lands was very high.
- There are thick fields/vegetation at the site of project.
- Populated areas were present near the project site.
- Basic infrastructure was not there.
- There was no easy access to roads.

Site Selection

The proponent has selected this site due to the following reasons:

- Located on accessible road
- No settlements at a safe distance
- No watercourse within a safe distance
- There was no need of tree clearance for the said project
- No ecologically sensitive or declared protected area within 10 km of the selected site

In the light of above mentioned points Yousaf Tanneries considered the subject site as most suitable for this project.

2.3.2 TECHNOLOGY OPTIONS:

The machinery/technology which will be installed in Yousaf Tanneries is considered to be 'state of the art' in terms of being environment friendly, energy efficiency and modern plant & process design for similar units.

2.3.3 Environmental Alternatives:

The unit site is located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area.

Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site.

This location was determined to be the most convenient location in proximity to the market and domestic supply chain. This site has least environmental & social impacts.

Keeping these requirements and their availability, the present site is the best suited for the the project. All the other basic infrastructural requirements are available at the selected site.
The site is ideal for this unit and this EIA report has also been prepared for getting the environmental approval for at this site. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. Availability of access roads, communication facilities, electricity, gas, basic infrastructure, sewer etc. was yet the other necessary requirements. Of course neat and clean environment was also the consideration.

Economic Alternatives their selection and rejection criteria:

The proponent also considered other site which economically undesired to proponent. Furthermore those sites were the environmentally degraded and polluted lands, and lack of aesthetic beauty is the major factor. The project area is devoid of any tree cover, so it doesn't involve cutting of trees for carrying out project activities. Availability of land at the best convenient place and at reasonable price was yet the other considerations for the site selection. So, this is the best economically viable option for the proponent

Reasons of rejection

- Cost of alternatives lands was very high.
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Site Selection

The proponent has selected this site due to the following reasons:

- Located on accessible road
- No settlements at a safe distance
- No watercourse within a safe distance
- There was no need of tree clearance for the said project

DESCRIPTION OF PROJECT

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

1-Type and category of project

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the proposed project falls in the **F (1)** category of projects mentioned in Schedule II.

2-Objectives of project

The proposed project shall yield following benefits:

- To treat the effluent effectively.
- To meet the limits of PEQS
- To protect the degradation of water bodies.
- To provide Job opportunities for locals
- To elevate the socio-economic status of the area.

3-Alternatives

General:

This is the Yousaf Tanneries & proponent has planned the installation of wastewater treatment plant. This site which is selected for proposed installation is devoid of any tree cover and has no environmental sensitivity. The proposed site is best suited and economically viable option for the proponent.

The proponent has selected this site due to the following reasons:

- Located on accessible road
- No settlements at a safe distance
- No trees cutting is required at this site
- No ecologically sensitive or declared protected area within 10 km of the selected site

2.3.2 TECHNOLOGY OPTIONS:

The machinery/technology which will be installed by the Yousaf Tanneries for said Wastewater treatment plant considered to be 'state of the art' in terms of being environment friendly, energy efficiency and modern plant & process design for similar tanneries unit.

The said WWTP for this unit will be built according to the applicable Best Available Technologies (BAT) defined for similar industry.

2.3.3 PROJECT SITE OPTION

The proposed project is located at Niaz Nagar District Kasur.

The proposed unit site is to be located in an area which is devoid of any biodiversity including forestry, wildlife, migratory birds, game reserves (flora and fauna), or protected species of fauna & flora; fishery or aquatic biology; watershed. There is no cultural or any other heritage in the project area. There are no scientific institutions anywhere in the project jurisdiction. Agriculture and labor is the major source of income for the people of nearby villages.

Summarily, there is no environmental sensitivity in the project area. These factors are also strongly supportive of the proposed project site.

The proposed location was determined to be the most convenient location in proximity to the market and domestic supply chain. The proposed site has least environmental & social impacts.

Keeping these requirements and their availability, the present site is the best suited for the construction of the project. All the other basic infrastructural requirements are available at the selected site. Accordingly, the selected site is ideally suited for construction of the Tannery Unit because it has least environmental impacts. The proponent has only this area for this project and this area is best suited in all aspects.

The site is ideal for the construction of this WWTP and this EIA report has also been prepared for getting the environmental approval for at this site.

4-Location and layout of project

The proposed project is located at Niaz Nagar District Kasur.

The surrounding area detail of this project is given below

East	Industrial unit
West	Industrial unit
North	Road
South	Industrial unit

Layout of the Project

Layout map of the project site is attached with the report.

5-Land use on site

Land is currently open for proposed construction and due to the Project in unit premises, it will be brought to industrial use and also it will give employment opportunities, which is really very positive.

6-Road access:

Main roads and markets are in easy and close access of the project site.

7-Vegetation features of site

Only local plant, herbs and shrubs species area present at the road side. This site is included in the industrial area. Significant or well-shaped trees and shrubs are not present on the project site. There is neither the biologically important or endangered species of plant were present and nor the plant or vegetation of any significance stands at the site to be dismantled. However, various local plants will be grown at the project site in the open areas and grounds.

8-Cost and magnitude of operation

The estimated cost of this project is 35 million rupees.

Project involves Machinery Cost (10 Million), Infrastructure Cost (20 Million) and land cost (5 million). Despite all these costs, project is found to be feasible. Activities include the following.

a. Demarcation of Land for various required facilities
b. Construction/Installation of Machinery
c. Operation

9-Schedule of Implementation

a- Phase-I (Start-up Phase)

Phase -1 is the start-up phase, which involves construction of boundary wall around the entire site. Most of the NOC's from various departments are in approval process and this report has been prepared to obtain NOC from EPA Punjab.

b- Phase-II (Main implementation Phase)

In phase II, required machinery will be purchased including primary & secondary treatment plant tanks, transfer pump, firefighting system, etc. During this phase, machinery will be brought on site and installed.

c- Phase-III (Wrap-up Phase)

Phase-III is the wrap-up phase. In this phase, all outstanding activities will be completed, required staff will be recruited, and contracts will also be signed after which the operational phase finally commenced.

10-Description of Project

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The dimension of waste water treatment plant is as follows Grit & grease chamber 2.5x1.5x8.0, Screen chamber 2.5x0.8x0.8, Blower room 3.5x3.0x4.0, Equalization chamber 4.0x3.0, Aeration tank 7.0x3.0, Sludge drying bed 3.0x2.0x1.5, Primary Clarifier 3.25x4.2, Secondary clarifier 3.25x4.2 and Sludge dewatering area 3.4x1.2x0.3.the estimated cost will be 35 million. The total area 1 Kanal 10 Marla.

As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **category F (1)** of projects mentioned in Schedule II.

An Environmental Impact Assessment (EIA) study report has been prepared to identify and assess the significant environmental impacts likely to occur due to this project along with environmental impact statement followed by appropriate Environmental Management Plan. EIA of this proposed project has been carried out in order to conform to the requirements of the Punjab Environmental Protection Act, 1997, amended in 2012 under section 12 of which no development activity can be initiated anywhere in Punjab without filing before the designated government agency an IEE or an EIA, as may be required and having an NOC for impact construction and operation. As per Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2022 the said project falls in the **category F (1)** of projects mentioned in Schedule II. The purpose of this EIA is to predict all the probable adverse environmental impacts and plan adequate mitigation measures for eliminating, controlling them and drafting the complete institutional framework for their implementation.

The steps in this process are as follows:-

- ## Primary treatment:

Primary treatment involves screening, equalization, and primary sedimentation. It is mainly employed to remove suspended solids, chromium, oil and grease in some cases. The objective here is the removal of settle able organic and inorganic solids by sedimentation, and the removal of materials that will float (scum) by skimming. Approximately 25-50% of the incoming bio- chemical oxygen demand (BOD_5), 50-70% of total suspended solids (SS), and 65% of the oil and grease are removed during primary treatment. The effluent and sludge from primary sedimentation are referred to as primary effluent and sludge.

Grit Chamber/ Remover:

Grit chambers are long narrow tanks that are **designed to slow down the flow** so that solids such as Inorganic solids present in the dairy waste water will settle out of the water. Grit causes excessive wear and tear on pumps and other plant equipment.

An aerated grit removal system removes particles by forcing water that has passed through bar screens into a grit chamber, which has air pumped into it. The air causes a spiral of water to flow through the tank and heavier particles are thrown out of the water's streamline. Eventually, after hitting the wall, the heavier particles settle to the bottom of the tank, while the lighter organic particles are suspended and eventually passed through the tank.

Grease Chamber:

Oil and grease includes **fats, oils, waxes, and other related constituents found in water**, generally wastewater. If these compounds are not removed before discharge of treated wastewater, oil and grease can interfere with biological life in surface waters and create unsightly films.

Oil and grease rises rapidly to the surface of the water tank under calm conditions. The droplet size is *150 microns. This oil can be removed by an overflow weir in the oil and grease chamber/ tank and a skimmer. The traces can be removed by passing the wastewater through an adsorber tank (such as a carbon tank) filled with organoclay.

- **Pumping (Pump pit)& Filtration (Screening):**

  The general effluent discharged by the Yousaf Tanneries unit collected in a concrete channel & by gravity it gets into the inlet pumping station of the plant. The effluent is firstly coarsely filtered through the **bar screen**. An existent submersible pump lifts the effluent to treatment plant. The effluent is pumped into the self-cleaning rotary drum, for fine filtration. The screen is installed onto the roof of equalization tank. Filtered water flows downstream to the equalization tank.

- **Equalization Chamber/ Homogenization:**

  Equalization aims to control the fluctuation in flow of wastewater & balanced the flow. It provides optimum condition for the subsequent treatment process. It serves mainly two purposes, Homogenization (flow, temp) & chemical homogenization (PH, nutrient, organic matter). Mixing & aeration are provided through the mean of venture aerators.

The flow is pumped into the primary sedimentation tank. The objective here is to remove the settle able solids readily, & to reduce the suspended solids.

- **Secondary treatment**

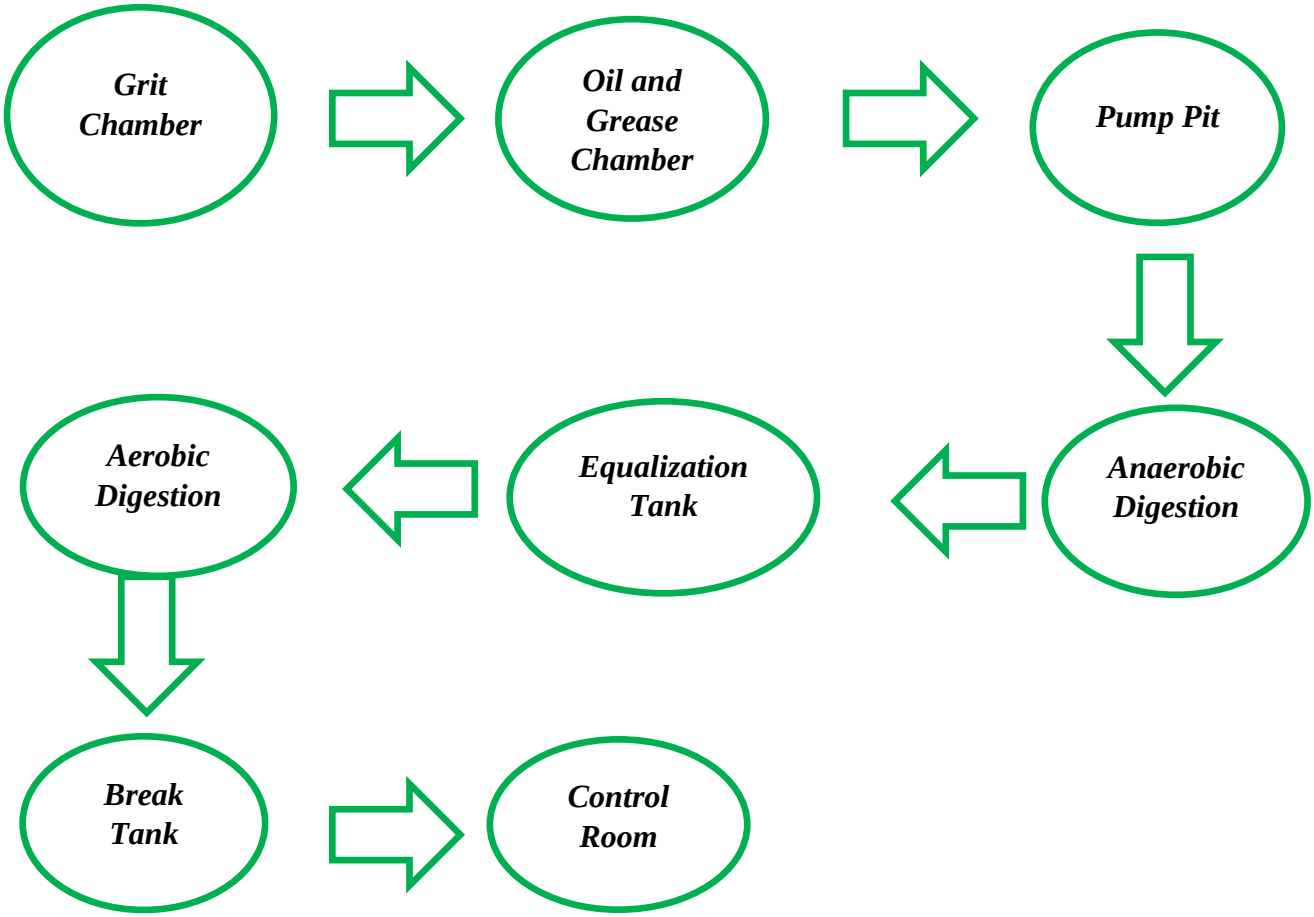
Anaerobic Digestion/ biological treatment:

Decomposition of organic and inorganic matter by micro-organisms in the absence of oxygen is termed as anaerobic digestion. Anaerobic digestion is a complex, natural, multi-stage process. It occurs in oxygen free conditions and it is an engineered methanogenic process where organic matter gets decomposed under a mixed consortium of different species of anaerobic microorganisms that transform organic matter into biogas. Biogas typically refers to a gas produced by the biological breakdown of organic matter present in the dairy waste water in the absence of oxygen. The process is also called bio methanation. All the above mentioned process will be takes place in the anaerobic chambers in the waste water treatment plant.

Aaerobic Digestion/ biological treatment:

Secondary treatment involves the removal of biodegradable dissolved and colloidal organic matter using aerobic activated sludge system with extended aeration. Aerobic biological treatment is carried out in the presence of oxygen by aerobic micro-organisms (principally bacteria) that metabolize the organic matter in the wastewater, thereby producing more micro-organisms. The flocks of micro-organisms are kept in suspension by air blown into the bottom of the tank. The Dissolved oxygen for bio-chemical oxidation is supplied by the air distribution system, composed of submerged membrane diffusers, assembled in submerged grid of pipes. The Mixed Liquor (effluent + biological activated sludge) from the oxidation tanks flow by gravity, into two secondary sedimentation tanks for physical separation between sludge & treated water. The biological sludge that settles down is recirculated & in access sent to the sludge thickening reservoir. The treated water discharged into the final receptor.

The flow chart of the process is given below:



Manpower

A total of 20 to 25 employees including mechanically, electrical, machine operators, sweepers and other managerial and office staff shall be working here.

Health & Safety

For health and safety of 4 first Aid Boxes will available and worker will be provided Following PPEs

Sr. #	PPEs	Qty.
1	Gloves	10 Pairs
2	Shoes	10 Pairs
3	Mask	10 Pairs

Treatment Capacity

The treatment capacity of the said Wastewater Treatment Plant will be 40 Cubic meter/hours.

11- Restoration and rehabilitation plans

There exists no human settlement on the selected project site to be displaced owing to the commencement of the Project. No structure of any significance stands at the site to be relocated or dismantled. Land is already under proponent's ownership, and no fresh land is to be occupied; hence, no relocation is required.

12-Government approvals

Management has applied for Environmental Approval and approvals from other government departments are also in approval process.

DESCRIPTION OF THE ENVIRONMENT

This chapter contains a brief description of the prevailing environmental state of the area. The main components of the environment include physical resources, ecological resources, cultural resources and socio-economic conditions of the area. A comprehensive detail of each is given below:

○ Physical Environment

An account of different components of the physical environment of the area is given hereunder:

Topography

The project area is a part of the flat plain with very little slope. Hence, the topography is plain, unrelieved by any formations. The height of the area is nearly 575 feet above mean sea level. The natural slope of the land is towards south eastern side. The project area is located in the outskirt of Kasur District.

Soils

The soil of the area is formed of the alluvial sediments and is clayey in nature. The color of silt is brown; plasticity is low and nature is inorganic. The soil is humidified to a great depth and has relatively high natural fertility and is non-calcareous. The soil is thick and fairly homogenous in context. The top soil consists of brown soft to firm silty clay dissolved salts. The top layer is likely to extend 2.5 to 4 meters below ground followed by silty sand layer, which continues to deeper depths up to 10 meters. The second layer extending down to 28 feet depth is plastic, loose to medium silty sand. The third layer which extends from 28 feet to the bored depth of 50 feet is colored non plastic- dense sand. The ground water table (GWT) is encountered at depth of 90-100 feet.

Climate

A short description is given hereunder to present the climatic conditions of the area:

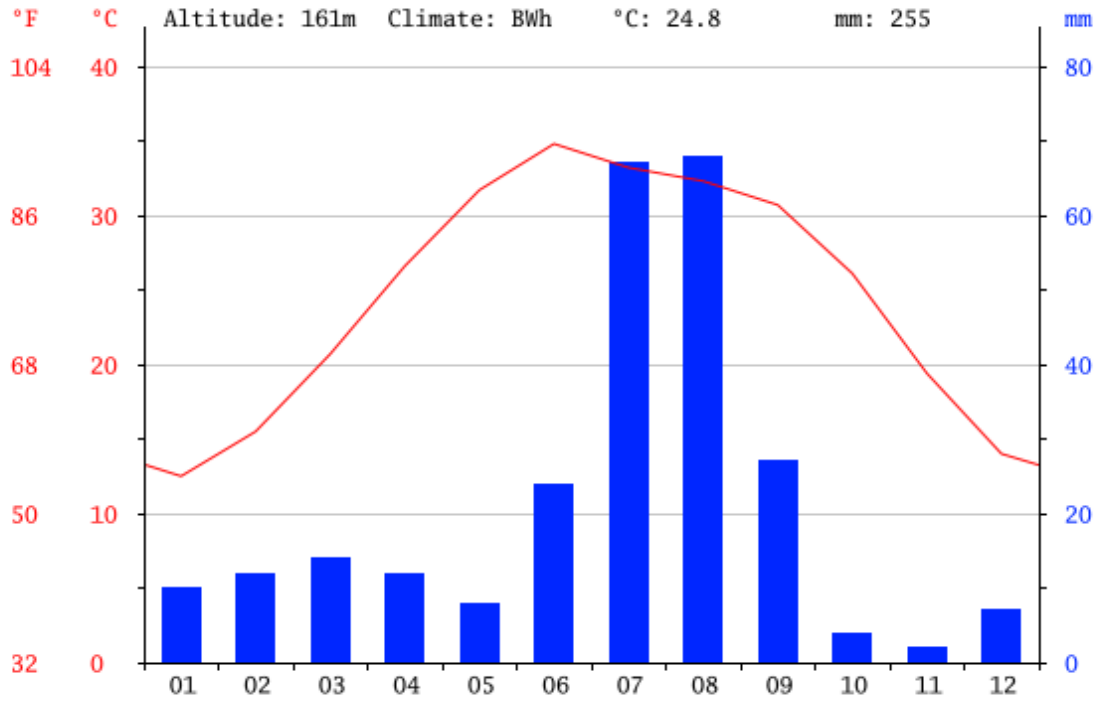
i) Temperature

The area is cold during winters and hot and humid during summer. The May, June, July and August are the hottest months of the year. The temperature during June rises up to 38.0^{o}C and drops as low as 27.0^{o}C. The summer season starts towards the end of April and continues till September. The winter begins in November and lasts till February. The spring season exists during March and April and is pleasant.

ii) Humidity Monthly relative humidity for this area has been worked out as 59.0%. The maximum recorded humidity for the district is 74.0% while the minimum humidity is 37.0%.

iv) Precipitation

The average monthly precipitation in the tract is 27.94 mm. Most of the rain occurs during monsoon in summer which often results in flooding of the nearby water drain and canal. Climate graph is also given below:



Ambient Air Quality

In the project area, Particulate Matter (SPM & PM10) and Oxides of Nitrogen (NOx), Sulphur Dioxide (SO2) and Carbon Monoxide (CO) are the major air pollutants. Traffic on road is the main source of air pollutants including NOx, SO2, CO, PM, HCs, smoke, etc.

Ambient Air Gases

As already explained, there are very few industrial units in the Study Area which are far away from this project site. However, traffic activities are continuous source of contamination of ambient air within the project influence zone.

Ambient Noise

The existing noise pollution sources in the area include small industrial units and vehicles used for transportation and traveling purposes.

Water Resources

Ground Water

Ground water is the source of potable water in the area. Depth of water table varies between 90 to 100 feet. All the localities in the area with no exception utilize ground water for the

drinking and cooking purposes mostly through hand pumps and private motors. Sufficient ground water resources are available within the site to meet water requirements

Geology

The project area is located in vast Indus Plain which was developed due to the continued deposition of terrestrial sediments derived from the Himalayas highlands. These unlithified sediments are post organic in nature and are generally invariably compacted. However, compaction of these sediments progressively improves with depth as the character of top soil changes from cohesive (clayey silt) to relatively non-cohesive (sandy silt) sub-soil. These pre-dominantly fluvial deposits form a sedimentary cover over the basement rocks of Indian Plate and are believed to be tectonically under formed. The age of these deposits range from Upper Pleistocene to Recent and have a varying thickness from over 1000 to nearly 5000 meters.

The said Project Area is located in seismic zone 2A (peak horizontal ground acceleration-0.8~0.16) and negligible damages were observed during the October 08, 2005, earthquake.

Land Use

Limited and its surrounding area fall in agricultural and semi-urban zone of area and mostly consist of industrial land with blend of rural and urban settlements. Different localities, connecting roads, fields and wastewater drain are other topographical features of the area. As the awareness and also national and international pressure has been increased a lot regarding the environment protection and conservation and sustainable development; therefore, many units have established Environmental Management Systems to control their emissions and to improve their working conditions to ensure the better worker's health and general public health and for the betterment of the Environment in and around their facilities.

○ Ecological Environment

A detail of ecological account of the Project and Study Area is given below:

Flora

The area in which the project site is located was once covered with native vegetation, mostly consisting of trees like Kikar (Acacia nilotica) and Shisham (Dalbergia sissoo). With the onslaught of civilization and industrialization, this vegetation was cleared for agricultural, commercial or industrial land use purposes. The current ecological details of the area in general and study area in particular are given below:

Trees

A field study related to the identification of tree species in the study area was also conducted. A vast majority of trees were observed in the localities visited as well as open fields. These are Tali/Sheeshum (Dalbergia sissoo), Kikar (Acacia nilotica), Safeda (Eucalyptus cinerea), Neem (Azadirachta indica), Papaya (Carica papaya), Bottle Brush (Callistemone citrinus) and Borh (Ficus bengalensis).

A tabular comparison is given hereunder to explicit frequency of each species in three zones of study area:

List of Trees Identified in the Project Area

Serial Number	Common Name	Scientific Name
1	Tali/Sheshum	Dalbergia sissoo
2	Kikar	Acacianilotica
3	Safeda	Eucalyptus cinerea
4	Neem	Azadirachta indica
5	Piple	Ficus religiosa
6	Papaya	Caricapapaya
7	Shree	Acaciagreggii

Grasses

A number of grass species were identified. These are Crow Foot Grass (Dactyloctenium aegyptium), Dabri Grass (Dichanthium annulatum) and Indian Dab (Cynadone dactylone).

Grasses in Study Area

Different types of grass species were also identified outside the project site during our visits to the nearer localities, these species include Dabri Grass (Dichanthium annulatum), Lesser Bulrush (Typha angustifolia) and Indian Dab (Cynadone dactylone).

Frequency (of occurrence) of these species in different zones of the study area is as under:

List of Grasses Identified in the Project Area

Common Name	Scientific Name
IndianDab	Cynadonedactylone
Dabri Grass	Dichanthium annulatum
LesserBulrush	Typhaangustifolia

Herbs and Shrubs

A large number of herbs and shrubs species were identified in the area. Among these species, the most dominant were Jangli Booti (Parthenium hysterophorus), Bathu (Chenopodium album) and Ak (Calotropis procera). Frequency of these species in different zones of the study area is as under:

List of Herbs and Shrubs Identified in and Around the Project Area

Common Name	ScientificName
JangliButi	Partheniumhysterophorus
Puth canda	Achyranthesaspera
Bathu	Chenopodiumalbum
Ak	Calotropis Procera
Bhang	Canibus sativa

Medicinal Plants

Medicinal Plants within project site

A number of medicinal plants in the area were identified which are AK (Calotropis procera), Amaltas (Cassia fistula), Pilak, Jangli kashni and Itsit (Boerhavia diffusa).

List of Medicinal Plants Identified in the Project Area

Sr #	Study Area	
	Common Name	**Scientific Name**
	AK	Calotropis procera
	Amaltas	Cassia fistula
	Itesit	Boerhavia diffusa
	Ajwain	Hyoscyamus niger

Ornamental Plants

Ornamental Plants Project Site

During our ecological survey to the nearby localities, a number of ornamental plants were identified at some houses and Deras, which are listed in table below.

List of Ornamental Plants Identified in and Around the Project Area

Sr #	Study Area	
	Common Name	**Scientific Name**
1	Bottle Brush	Callistemone citrinus
2	Araucaria	Araucariaheterophylla
3	Bouginvillea	Bougainvilleaspectabilis
4	Milkwood pine	Alostonia scholaris

Vegetables

Vegetables in around and Project Site

No vegetables are grown in or around project site.

Vegetables in Study Area

Some important of these are Phool Gobhi/cauliflower (Brassica oleracea Ver. botrytis), Band Gobhi (Brassica oleracea Ver. capitate) Turnip, Raddish (Raphanus sativus), Carrot (Daucus carota), Bhindi, Tomato (Lycopersicum esculentum), Vegetable Marrow (Cucurbita pepo), Baingan, etc.

List of vegetables Identified in and Around the Project Area

Sr #	Study Area	
	Common Name	**Scientific**
1	Bangun	Solanum melongena
2	Bhendi	Abelmoschus esculentus
3	Karela	Momordica charantia
4	Phool Gobhi	BrassicaoleraceaVer. Botrytis
5	Raddish	Raphanus sativus
6	Tomato	Lycopersicum esculentum
7	Marrow	Cucurbitapepo

Agriculture

The soil of the area is quite suitable for all kinds of vegetation including fodder, orchards, vegetables and other seasonal crops. The pattern mainly consists of wheat-rice system, while other agriculture practices include the cultivation of sugarcane, Maize, etc.

Farm Traction Power

Tractor is the sole source of farm traction power. No farmer was found using animal traction power. There was significant variation in tractor ownership across farm size groups. However, more than half of the farmers owned tractor while rest were hiring the services for land preparation.

Irrigation

The tube-wells and canal water are the main source of irrigation water for wheat, rice and other crops and fodder. Also, many farmers irrigate their fields with contaminated water of drain and also many studies have been conducted to assess the level of toxic heavy metals in the soil and vegetables irrigated by drain water and their ultimate impacts on human health. It has been highly recommended during these studies not to use the contaminated water of drains for agricultural practices. On the other hand plenty of ground water is easily accessible for agriculture use.

Crops and Fodder

Crops usually seeded in the area include Wheat (Trticum indicum), Potato, Maize, Rice, Sugarcane, Barley (Hordeum vulgare) and Jawar (Andropogan sorghum) along with other fodder.

Cropping Pattern

Rice and wheat are the major kharif (summer) and rabi (winter) crops, respectively covering more than 65 percent of the cropped area in both seasons. Two third of the cropped area is under paddy, a cash crop of the area. Also, the rice-wheat is the dominant sequential cropping system, yet fodders and sugarcane are the other important crops of the area in Kharif and Rabi seasons.

Forests

No natural or artificial forest exists in the project influenced area.

Fauna

The area provides healthy environment for the growth and reproduction of a diverse nature of fauna. A short description is given in the following paragraphs

Mammals

Mammals within project site

During our survey to the project site, some mammals were identified evidently while some were reported by the workers like Cats (Felis catus), Rats (Rattus rattus) and Squirrel (Sciurus carolinensis).

Mammals in Study Area

The wild and common or domesticated mammals found in the study area are Dogs (Canis familiaris), Cats, House Rats (Rattus rattus), Bats, Horses (Equus caballos), Donkeys (Equus africanus asinus), Mules, Buffaloes, Cows (Heracleum lanatum), Goats (Copra hircus) and Sheep.

List of Mammals Present in and Around the Project Area

Project Site		**Study Area**	
Common Name	Scientific	Common Name	Scientific
Cat	Felis catus	Cats	Felis catus
Rat	Rattus rattus	Dogs	Canis familiaris
Squirrel	Sciurus carolinensis	Cows	Heracleum lanatum
		Goats	Copra hircus
		Horses	Equus caballos
		Donkeys	Equus africanus asinus
		Sheep	

Reptiles

Reptiles within Project Site

No reptiles were identified within the project site

Reptiles in Study Area

Above reptiles were also seen in study area in localities and field. The most common reptiles include Snakes, Pakistani Cobra (Naja naja karachiensis), Lizards, Varanis (Goh/large lizard), Spiders and Scorpions, etc.

List of Reptiles Present in and Around the Project Area

Common Name	Scientific Name
Lizards	
Spiders	
Scorpions	
Pakistani cobra	Naja naja karachiensis
Goh/large lizard	Varanis

Amphibians

A number of Amphibians found in the tract include Common Frog (Rana tigrina), Common Toad (Bufo bufo) and Tortoise (Chitra indica).

List of Amphibians Present in and Around the Project Area

Project Site		Study Area	
Common Name	ScientificName	Common Name	ScientificName
Common Frog	Ranatigrina	Common Frog	Ranatigrina
Common Toad	Bufo bufo	Common Toad	Bufo bufo
		Tortoise	Chitraindica

Birds

Different types of birds' species were identified within the project site. The bird's species identified in these areas include House Sparrow (Passer domesticus), House Crow (Corvus splendens), Common Mynah (Acredotheres tristis), Tatiri (Vanellus indicus), Cheel, Bagle, Bulbul (Pycnon tus cafer), Parrots (Psittacula krameri), Pigeons (Columbia livia), Dove (Stigmetopelia senegalensis), Surkhab, Ullu, etc. are also seen in the area.

List of Birds Present in and Around the Project Area

Sr #	Project Site		Study Area	
	Common Name	ScientificName	Common Name	ScientificName
1	House Sparrow	Passerdomesticus	Parrots	Psittacula krameri
2	HouseCrow	Corvus splendens	HouseSparrow	Passerdomesticus
3	Common Mynah	Acredotheres Tristis	HouseCrow	Corvus splendens
4	Tatiri	Vanellus indicus	Common Mynah	Acredotheres tristis
5	Pigeons	Columbia livia	Tatiri	Vanellus indicus
6			Pigeons	Columbia livia
7			Dove	Stigmetopelia Senegalensis
8			Bulbul	Pycnon tus cafer
9			Cheel	

Wildlife Sanctuaries and Game Reservoirs

No wild life sanctuary or game reservoir is located in the vicinity of the project area or in the project influenced area.

Rare or Endangered Species

There are no rare or endangered species in the study area.

○ Socioeconomic Environment

Human settlements are symbol of typical haphazard rural growth based on ill planned developmental procedures showing common indicators of all the unorganized procedure of rural settlement of the province. These localities were developed on need oriented basis. No

bye-laws, rules and obligations necessary for human settlement, construction or expansion and infrastructure development were considered. These localities are also the picture of stereotype rural residential areas which lack basic amenities, improper roads, and poor drainage system, deteriorating hygienic and sanitary conditions causing bad effects on human health.

Objectives of the Study

The main objectives of socio- economic study of the project area were:

- To furnish appropriate information about the baseline socio-economic conditions
- To identify and assess significant social impacts of the Project activities on the surrounding area and people
- To propose suitable means for probable mitigation of the significant adverse social impacts

An Overview of Socio-economic Conditions

This section describes the status of overall socio-economic baseline conditions prevailing in the study area. It deals with various socio-economic and cultural aspects of the community including income, employment, professions, basic facilities, education and health, social structure, culture, women's status, traditions, ethnics, sectarian status and residential needs of the local people.

Area represents lacking some basic amenities of an urban area. Improper social structure, deprived status of youth and aged are common social factors in the area.

Analysis of Socio-economic Conditions

This section presents a locality-wise analysis of existing status of various socioeconomic parameters such as income, employment, basic facilities, education, health, recreation, migration, conflicts, ethnic status, role of women, professions, residential conditions, etc.

A) Sources of Income

Due to low-income level and inconsistent income opportunities, majority of the people has to adopt seasonal occupation to supplement their income. Majority of the people were working

as labors, farmers and many do their own common business (shopkeepers). A fair number of people, works as laborers in the nearby industries.

B) Basic Facilities

Basic facilities like electricity, roads, transport etc. are available but are disorganized and mismanaged.. Civic amenities like markets are not available in some of the area.

C) Educational Facilities

Educational facilities up to primary level are available in almost all the localities and are easily approachable.

D) Medical Facilities

The proper health care facilities are not present in the area for both male and female population.

E) Recreational Facilities

Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

Religious, ethnic, political and tribal conflicts do not exist among the people of the study area.

G) Types of Community

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life.

H) Types of Family

The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

I) Ethnic Status

An overwhelming majority of the people belongs to Arain, Mayo, Gujjar, Malik, Pathan, Changar, etc. tribes living together with peace and harmony. This shows social cohesiveness, solidarity and harmony among them.

J) Status of Women Literacy

A vast majority of the females of the Study Area are illiterate which shows very low educational trend among females; however, young females have high literacy rate showing positive trend in female education.

K) Decision Making Authority

Majority of the females have no authority in decision-making process regarding their life. This shows non-participation of the females in decision-making process regarding the females and other issues.

L) Role of Women

Role of female is conventional and traditional. Most of the females are engaged in housekeeping. However, females also perform outdoor activities and duties. Females are supposed to be responsible to perform all the family activities and are involved in all types of family functions.

3- Quality of Life Values

The Qasoor district consists of mostly rural areas. If we specifically talk about the project area then majority of the people has to adopt seasonal occupation to supplement their income due to low-income level and inconsistent income opportunities. Majority of the people were working as labors, farmers and many do their own common business (shopkeepers). A fair number of people, works as laborers in the nearby cities. The locals of this are provided with basic facilities like electricity, roads, transport etc. but are disorganized and mismanaged. If we talk about educational facilities then education up to primary level are available in almost all the localities and are easily approachable. The proper health care facilities are not present in the area for both male and female population. Open and level fields of the localities are used as playgrounds by the youth. Urs and Melas are playing a vital role to provide some recreational opportunities to the locals.

It was observed that being the members of a typical/traditional blend of rural and urban community, almost all the old people are very conservative in their life style. People practice their traditional, social and cultural values strictly in all walks of life.The joint/extended family system is generally prevailing among people of the whole area; however, nuclear family system is also observable in the area.

4- Lab Reports of Environmental Analysis

Testing of different parameters has been done by proponents. The copies of lab reports of different environmental parameters are given in annexure

Impact Assessment

8.1; Identification of Impacts:

For the identification of all the possible impacts such as social, economic and biological checklist are used.

8:1.1 Methodologies for Impact Assessment:

Checklist:

All types of impacts associated with the project of waste water treatment plant by Yousaf Tanneries are covered in this checklist. All kind of impacts are organized to ensure that no potential impact is overlooked.

Activities	*Adverse effect*	*No Effect*	*Beneficial Effect*	*Minor Effect*
Land Use			✓	
Ground Water Resources			✓	
Air Quality				✓
Noise & Vibration				✓
Transportation System		✓		
Socio-economic			✓	
Surface Water Quality			✓	
Vegetation			✓	
Flora and Fauna		✓		

This section discusses the potential environmental impact for the establishment of waste water treatment plant by Yousaf Tanneries. The impacts may include; soil contamination, water resources damage, air pollution, biological resources disturbance and socio-economic impacts and, where applicable, identifies mitigation measures that will reduce significantly, if not eliminate its adverse impact. The assessment carried out in this Section is based on potential impacts on overall environmental receptors within the project area.

Impact Assessment Methodology

The impact assessment methodology for the installation of waste water treatment plant by Yousaf Tanneries given below:

Screening of Potential Impacts

Based on site visit, observations, brain storming, provided information, studying related projects and social interviews, significant impacts were anticipated and evaluated. Then qualitative and quantitative (where possible) assessment of these anticipated impacts is to be carried out.

Identification of Mitigation Measures

After anticipation and screening of significant impacts, certain mitigation measures are to be provided in order to enhance benefits of said project and reducing the adverse environmental and social impacts. These measures can be classified as:

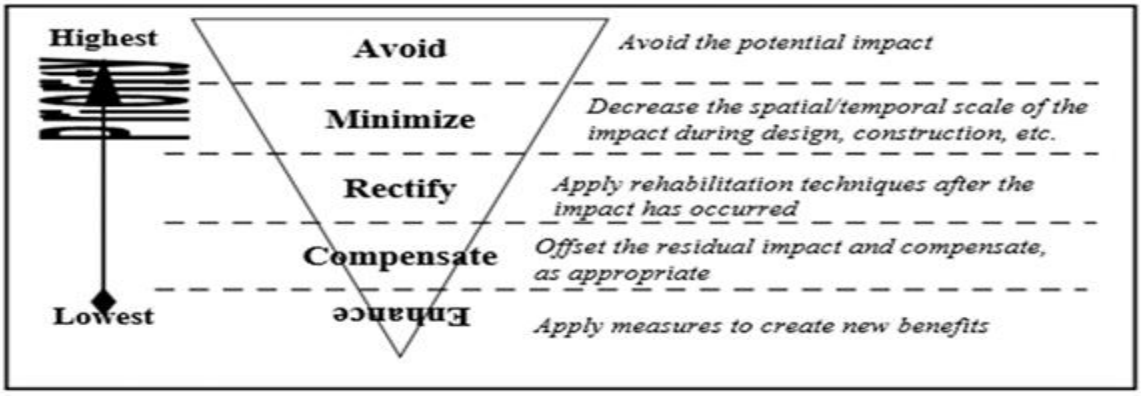


Figure 1: Hierarchy of Mitigations

Evaluation of the Residual Impacts

Incorporation of suggested mitigation measures may reduce the magnitude of the environmental impacts of aforesaid project but sometimes, it may fail in bringing them within the acceptable limits. This step refers to the identification of the anticipated remaining impacts after mitigation measures have been applied.

It can be concluded in view of these reasons that the selected site is best suited for project and the technology adopted for production of medicinal drugs & personal hygiene products is the most suitable and sustainable option. The aforesaid project will not pose any adverse impact or threat on any component of environment. The impact assessment criteria are given below along with their impacts:

Table 1: Impact Significance Criteria

Impact	
No Impact	When the proposed activity will have no impact
Long Term	When the impact is of high intensity with high spread and high duration or of high intensity with medium spread and medium duration
Moderate Term	When the impact is of moderate intensity with high spread and high duration or of high intensity with low/ moderate spread and low duration
Short Term	When the impact is of low intensity but with moderate spread and moderate duration or of moderate intensity
Insignificant	When the impact is of low intensity, low spread and low duration
Adverse	When the impact is of large intensity, spread easily and long-term
Beneficial	When the impacts are positive and improve the environmental conditions

Table 2: Impact Matrix Checklist for Designing Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	Low Intensity	Moderate Intensity	High Intensity	Local	National	Regional	Beneficial	Adverse	Insignificant	No Impact	Short Term	Moderate	Long Term
Physical Parameters													
Topography	✓			✓									
Land Acquisitions	✓			✓									
Seismicity													
Biological Parameters													
Land Environment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Social Parameters													
Local Economy	✓			✓									
Social Impacts	✓			✓									

Table 3: Impact Matrix Checklist for Construction Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	LowIntensity	ModerateIntensity	HighIntensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	ShortTerm	Moderate	LongTerm
Physical Parameters													
AirQuality	✓			✓									
Noise	✓			✓									
WaterQuality	✓			✓									
Biological Parameters													
LandEnvironment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Physical Parameters													
LocalEconomy	✓			✓									
Social Impacts	✓			✓									
Health & Safety	✓			✓									

Table 4: Impact Matrix Checklist for Operational Phase

Environmental Sensitivities	Intensity of Impact						Impact Nature		ImpactSignificance				
	LowIntensity	ModerateIntensity	HighIntensity	Local	Moderate	Regional	Beneficial	Adverse	Insignificant	No Impact	ShortTerm	Moderate	LongTerm
Physical Parameters													
AirQuality	✓			✓									
Noise	✓			✓									
WaterQuality	✓			✓									
Biological Parameters													
LandEnvironment	✓			✓									
Flora	✓			✓									
Fauna	✓			✓									
Physical Parameters													
LocalEconomy	✓			✓									
Social Impacts	✓			✓									
Health & Safety	✓			✓									

5.2 Identification of Monitoring Requirements

The last step in the assessment process is the identification of minimum monitoring requirements. The scope and frequency of monitoring depends on the residual impacts. The purpose of the monitoring is to confirm that the impact is within the prescribed limits and to provide timely information if acceptable limits are being breached.

Characteristics of impacts (nature, magnitude, extent and location, timing, duration, reversibility, risk):

Impact Characteristics	*Air Quality*	*Health*	*Water Quality*	*Flora & Fauna*
Nature	No Impact	Indirect	Indirect	Positive
Magnitude	Low	Low	Moderate	Low
Extent/location	Surroundings	Project area	Surroundings	Surroundings
Timing	Construction & operation	Construction & operation	Operation	Operation
Duration	Intermittent	Short term	Continuous	Continuous
Reversibility	Irreversible	Reversible	Irreversible	Reversible
Likelihood (risk)	Uncertainty	Probability	Probability	Probability
Significance	Global	Local	Regional	Regional

8.6 SOCIAL MANAGEMENT AND MITIGATION PLAN

It is clear that the existing social environment within the primary impact area has virtually no social carrying capacity to absorb and service the estimated workforce and service providers.

It is also clear that there is a risk of large number of service providers living in uncontrolled and unsanitary conditions. The risk of incoming human trafficking and to lesser degree outgoing human trafficking will be substantial. There are also a number of specific impacts arising from the interaction between the social and physical environment which requires immediate mitigation such as the risk of exposure to dust, the increased risk of traffic accidents and the increased risk to water supply. The opportunity to support the local community will be an additional project benefit.

In order to reduce these risks, social management and mitigation program should cover the following main components:

- Capacity Building for Local Agencies and Staff
- Infrastructure
- Health Issues
- Security and Population Management Issues
- Traffic Safety and Regulations

8.6.1 Water Supply

With an expected increase in population of at the peak of the construction phase and non-existent of in safe drinking water the area (ground water is brackish in the area), there is a need for ensuring a regular supply of safe drinking water to designated camp and service provider's area. The following steps are needed:

- Draft a plan for the supply of water to camps by contractors, based on estimated population increase and scenarios for the construction period.
- Plan should access needs, resources and need for examining all types of safe water sources.
- Management arrangements for water supply to be considered in Plan, including private water supplier for camps and service providers.
- Camp areas will be a key location for water quality and use monitoring due to the relative high population density and risk of contamination of water supplies by the different users.

8.6.2 Sanitation

Sanitation relates to the construction of toilets in camp and service providers areas. This will require the following activities:

- Draft a plan for the construction of toilet facilities for camps and service providers areas, based on estimated population increase and scenarios for the construction period;
- Construction to commence as soon as possible for health reasons;
- Management arrangements for maintaining toilet facilities to be outlined in the plan – responsible party to be identified and funds secured for maintenance.

8.6.3 Waste Disposal

Given the expected population increase, there will be a need to organize an effective waste collection and disposal system. The following steps are required:

- Draft a plan for waste collection and disposal system for camps and service providers areas, based on estimated population increase and scenarios for the construction period;
- Contractors should be engaged to construct disposal areas as identified in the plan;
- Work should commence as soon as possible for health reasons;

8.6.4 Health Issues

In addition to safe water supply, sanitation and waste collection and disposal, there are a number of other outstanding health issues. The District and/or Tehsil Administration & Health Offices will be required to carry out a number of monitoring activities and possible interventions for camps and service providers and will be requiring additional training and funding in order to do this.

- Price monitoring of essential goods since inflation is likely to occur with demand exceeding supply at various times during construction (socio-economic monitoring will cover these issues and service providers and hereby villages/towns will be key locations for monitoring).
- Monitoring of births, mortality, causes of mortality and illness by Village Heads or Local health authorities to be reported on a monthly basis
- Support by Yousaf Tanneries to local health staff for carrying out the above work in camps areas.
- The services of local police along with local health officials need to be extended to cover service provider areas. This will monitor infectious diseases, injuries, violence and other potential health problems.

8.6.5 Population Management and Security Issues

Security and population management are important aspects for service providers, both from the point of view of internal security (ensuring safety and order) and potential negative impacts on nearby communities (crime or negative social influences). There are two main preventative issues: 1) supporting and improving security measures; and 2) demographic management and monitoring.

Security and population management of the contractor's camps will be the responsibility of the contractors.

8.7 OPERATION PHASE - SMP

waste water treatment plant by Yousaf Tanneries shall maintain and implement a Stakeholder Engagement Plan (SEP) and grievance mechanism relevant for each Phase of the Project to ensure that all stakeholders are identified, that sufficient information about issues and impacts arising from the Project and proposed mitigation are disclosed in a timely manner and that all stakeholders are consulted in a meaningful and culturally appropriate way throughout project implementation and operation phases. Determine whether any vulnerable / disadvantaged groups or communities are likely to be disproportionately or permanently and adversely

affected by the Project and identify and implement appropriate communication methods to consult with them about mitigation measures.

Waste water treatment plant by Yousaf Tanneries shall plan grievance mechanism principles and requirements within their own Management Systems as appropriate, and provide training to staff on the SEP requirements. Waste water treatment plant by Yousaf Tanneries will aim to involve stakeholders and to keep good communication practices during the lifetime of the project through its Administration Department. The objectives will be:

- Providing local communities with a project schedule and information on project activities that may affect them, together with mechanisms for their feedback.
- Provide general information to improve knowledge of what the project involves, with all stages and expected performance
- To make available to the public a grievance procedure, in order to collect, respond and resolve issues and complaints on a timely basis.

For each of the stakeholder groups defined in the SEP communication tools suggested will be used in order to ensure easy, transparent, direct, open and interactive communication\ with all stakeholders.

Any grievances are resolved on a timely basis, with evidence of formal and informal communication retained.

Most of the SMP mentioned for the construction phase will also apply during operation phase where appropriate.

8.7.1 Traffic Management Plan

Traffic Management Plan will be developed for the safe use of vehicles on and off site; driving standards; safe access to construction sites as well as within waste water treatment plant by Yousaf Tanneries boundary, with minimum negative impact on the existing roads and in parallel for ensuring community safety and easy access to their properties (homes, land and gardens), construction and operation Workforce transportation should be considered within this plan.

For traffic control and safety, the information about the project activities and driving standards will be announced through, discussion forums, and any other means of communication available. waste water treatment plant by Yousaf Tanneries will openly and transparently inform residents in the affected places and villages as a

minimum on a quarterly basis regarding the planned activities and safety measures to be employed.

The traffic flow through the site and within the urban areas will be coordinated with the responsible traffic officers/authorities responsible in the municipalities.

8.7.2 Truck Parking & Rest Area

About 10 trucks will be daily moving in & out of the waste water treatment plant by Yousaf Tanneries unit. Since most of the movement will be during daytime a parking, lodging and rest area for truckers will necessary. Normally, such areas get developed in an unorganized fashion, creating environmental and social problems. If allowed to proceed un-mitigated the area can become a major environmental hazard.

8.8 COMMUNITY HEALTH AND SAFETY

A Community Health and Safety Educational Program will be developed to inform and build awareness and understanding of the local community and transport drivers on the hazards and potential adverse impacts during the construction & operation phases and how to minimize the potential for an accident and/or injury to occur. The Program will be linked to the SEP and utilize various communication methods to address the needs of vulnerable groups such as children and illiterate residents.

Workers must receive training and guidance on how to avoid conflicts with the local community members and sign a code of conduct, in order not to create conflicts with the local environment. Any damage or grievance shall be managed by the Grievance Mechanism and any repair/compensation be made in a timely basis.

In order to avoid negative impacts on local residents, Worker transportation and modes for workforce movements during construction works and plant operation will be organized in a way that will minimize negative impacts on local residents.

8.9 HEALTH AND SAFETY

During and after construction traffic accidents will increase due to higher traffic volumes and speeds, and there is a risk of the spread of HIV/AIDS. Road safety and HIV/AIDS awareness campaigns have been proposed to mitigate these impacts.

As a part of its social management plan waste water treatment plant by Yousaf Tanneries will include special campaign against the spread of HIV/AIDS. Urban expansion and higher immigration rates along the project road will lead to greater demand on infrastructure services and natural resources; this will require regulation by the regional / district planning authorities.

8.10 RECOMMENDATIONS AND MITIGATION MEASURES

Based on the initial benchmark study following recommendations are made:

- The management of the Project can capitalize on the positive attitude of the people of area towards proposed Project by offering them maximum employment opportunities at the construction stage and operational phase of the proposed plant.
- Insufficient and inadequate socio-economic structure of the community of the area also provides ample opportunities to unit management town sympathies of local people in their favor, by introducing meaningful and manageable plan of community development.
- Aggressive and comprehensive plantation plan can also lessen fear of local people towards environmental issues.
- waste water treatment plant by Yousaf Tanneries management can explore direct or indirect chances of female employment opportunities. Such efforts can be fruitful to minimize negative social impacts.
- Sustainable development approach through conservation of natural resources would be the best strategy to compensate negative socio-environmental impacts.
- waste water treatment plant by Yousaf Tanneries management should offer technical training opportunities to the local youth, if possible, to remove relative sense of deprivation.
- Social responsible attitude and stewardship of unit management towards local people and resources can make project area people friendly.
- Prior to action of the Project installation a comprehensive awareness campaign may be launched at masses level to avoid any conflict.
- To avoid any political, ethnic and value conflict**,** the administration of the plant may win the confidence of local elites, authorities, leaders and interest groups by adopting informal confidence building measures.

The SMP establishes the role and responsibilities of waste water treatment plant by Yousaf Tanneries, government, stakeholders and communities in mitigating and managing social impacts and opportunities during the construction and operational phases of the proposed project.

In general terms, the plan shall provide a program that will:

- avoid or reduce negative social impacts
- maximize positive social impacts
- Monitor effectiveness of mitigation strategies.

The use of seven over-arching initiatives to reduce the negative social impacts of the Project and to uphold waste water treatment plant by Yousaf Tanneries Business Principles, include:

- monitoring social impacts and other social issues and co-developing management initiatives with government and the community;
- ensuring Project employment, training and business benefits include a focus on local communities;
- supporting enterprise development to foster a strong local economy;
- sponsoring and giving to local community organizations sufficient development opportunities;
- setting strong behavior protocols for employees; and
- Being responsive to community concerns by gathering community feedback through engagement.

The plan includes potential timing of impacts, measures of any change to be experienced by the community, who may be affected by change, how changes will be measured and what actions will be taken, by whom and when in order to manage impacts.

8.11 COMMUNITY DEVELOPMENT

Waste water treatment plant by Yousaf Tanneries is committed to support the communities in which it operates and to this end will implement a community development plan, through engagement with local stakeholders and includes activities to:

- Address skills development needs.
- Eradicate poverty and projects to create jobs.
- Investigate and implement community investment opportunities.

Waste water treatment plant by Yousaf Tanneries Community Policy will express the organization's commitment to communities affected by its operations. To this end, communities are defined as those individuals or groups that may be directly affected by the

company's activities. As a result, waste water treatment plant by Yousaf Tanneries operations are required to formalize their community engagement strategies by preparing a Community Engagement Plan. The plan defines a technically sound and culturally suitable approach to community engagement

8.12 ENVIRONMENTAL STANDARDS:

8.12.1 NATIONAL ENVIRONMENTAL REGULATORY/LEGAL REQUIREMENTS

Hereunder, the major national applicable laws applicable for the project are given in table

Table - : Key Environmental Laws in Punjab Province

LEGAL INSTRUMENT	*SCOPE AND APPLICABILITY*	*RELEVANCE*
Pakistan Penal Code, 1860	In the context of the environment, the Penal Code empowers local authorities to control noise, toxic emissions and disposal of effluents.	The project activities will have to be carried out in spirit of this ordinance.
Land Acquisition Act 1894	Empowers the government to acquire private land for projects of national importance and lays down the acquisition procedure.	If the land for the project is acquired through the government, the acquisition process shall comply with this law.
Forest Act 1927	Regulates forest resources. Empowers the government to declare any forest area reserved or protected.	Not relevance as there is no reserve or protected forest in the Project area.
National Conservation Strategy (NCS)	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	For a sustainable development the project must follow the spirit of NCS.

LEGAL INSTRUMENT	***SCOPE AND APPLICABILITY***	***RELEVANCE***
Pakistan Environmental Protection Act, 1997	PEPA, 1997 is a fairly 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 Apex Environmental law for the protection of environment whole project cycle shall follow this law.

LEGAL INSTRUMENT	***SCOPE AND APPLICABILITY***	***RELEVANCE***
Punjab Environmental Protection (Amended) Act 2012[1]	After the 18th amendments in the Constitution of Islamic Republic of Pakistan the Environmental subject is now in provincial hold and Provincial EPA is now an autonomous body for the implementation of Environmental Laws. 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 Environmental Quality Standards for wastewater, air emissions and noise, etc. • Law provides clear cut guidelines for IEE/EIA for various projects as per their magnitude and anticipated impacts. • Law also empowers Government to issue notices and to enforce them for the protection of the environment.	The Apex Environmental law for the protection of environment whole project cycle shall follow this law.

[1] http://epd.punjab.gov.pk/system/files/pepa_2012_0.pdf

LEGAL INSTRUMENT	***SCOPE AND APPLICABILITY***	***RELEVANCE***
Punjab Environmental Quality Standards (PEQS) for Drinking Water[2]	The Punjab EPA has published a set of standards for drinking water quality for the protection of public health and for sustainable development.	The project is required to show the compliance with the PEQS for drinking water at site and during the whole project cycle.
Punjab Environmental Quality Standards (PEQS) for Liquid Waste Water [3]	The Punjab EPA has published a set of standards 35 various parameters for waste water quality for the protection of natural drainage and for sustainable development.	The project is required to show the compliance with the PEQS for waste water before the final discharge of effluent from the site and during the whole project cycle.
PEQS for Ambient Air [4]	The EPA has published the standards for ambient air applicable for the whole province.	The project has to show the compliance with the Ambient Air Quality Standards during its whole project life
PEQS for Noise [5]	The EPA has published the set of standards related with the noise levels of the area in respect to the various zones like Silence Zone, Commercial Zone, and Industrial Zone.	The project falls in Industrial Zone hence shall follow the standards of noise related with the Industrial Zone.

http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20%20Drinking%20Water.pdf

[3] http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Municipal%20And%20Liquid%20Industrial%20Effluents%20final.pdf

[4] http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Ambient%20Air.pdf

[5] http://epd.punjab.gov.pk/system/files/Punjab%20Environmental%20Quality%20Standards%20for%20Noise.pdf

LEGAL INSTRUMENT	***SCOPE AND APPLICABILITY***	***RELEVANCE***
Local Government Ordinance, 2001	This Act empowers the Government of Pakistan and provincial governments to enforce laws for land use; conservation of natural vegetation; air, water, and land pollution; disposal of solid waste and wastewater effluents; and public health and safety, including some provisions for environmental protection. Section 93 of this Ordinance pertains to environmental pollution.	The project activities will have to be conceded out in accordance with this Ordinance and Rules
Canal and Drainage Act 1873	This act prohibits corruption or fouling of water in canals (defined to include channels, tube wells, reservoirs and watercourses), or obstruction of drainage.	The project activities will have to be carried out in accordance with this Act.

1-

8.13 Punjab Environmental Quality Standards (PEQS)-2016,

The following standards are specified therein:

- 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)
- Maximum allowable concentrations of pollutants (16 parameters) in gaseous emissions from the industrial sources

8.13.1 Punjab Environmental Quality Standards for Ambient Air- 2016

The Ministry of Environment, Government of Punjab vide its Notification, Islamabad, the 5th August, 2016 under SO (G)/EPD/7-26/2013 established standards which provide the maximum allowable limits, in the ambient air, of Sulphur Dioxide (SO2), Oxides of Nitrogen as (NOx) and as (NO), Suspended Particulate Matter-(SPM), Respirable Particulate Matter - PM10, Respirable Particulate Matter-PM2.5, Lead and Carbon Monoxide (CO).

8.13.2 Punjab Standards for Drinking Water Quality - August, 2016

The Ministry of Environment, Government of Punjab vide its Notification, Islamabad, the 5th August, 2016 under SO(G)/EPD/7-26/2013 established standards for Drinking Water Quality. The major quality parameters fixed depend upon Bacterial, Physical and Chemical ones.

8.13.3 Punjab Environmental Quality Standards for Noise - August, 2016

The Ministry of Environment, Government of Punjab vide its Notification, Islamabad, the 5th August, 2016 under SO(G)/EPD/7-26/2013 established standards for Noise. These standards are based on Category/zone i.e. residential area, Commercial area, Industrial area and Silence zone. The limiting values for day and night have also been fixed for all categories/zones.

SCREENING OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section discusses the project's potential environmental impact on the area's geomorphology, soil, water resources, air, biological resources and socioeconomic condition and, where applicable, identifies mitigation measures that will reduce, if not eliminate, its adverse impact. The assessment carried out in this section is based on potential impacts on overall environmental receptors within the project area.

Objectives of screening out all possible impacts and then providing their mitigation measures are:

- To find different alternatives and ways of carrying out the project activities.
- To enhance the Environmental and Social benefits of proposal.
- To avoid, minimize and remediate adverse impacts.
- To ensure that residual adverse impacts are kept in acceptable limits

2- Impacts Associated with Project Location

The proposed project is located at Niaz Nagar District Kasur. The project area is industrial many others industries is also located nearby the project area. However it could affect the people around the project area if proper mitigation measures will not be taken. The transportation of material can cause traffic problems in the area. Otherwise, there is no as such impacts are associated with project location.

Mitigation

Strict traffic plan will be implemented. If the mitigation measures mentioned in later section of construction and operation phase are properly implemented, the proposed project with respect to location will be environment friendly and will not be involved in the deterioration of environment.

- The site is undisputed and under the ownership of the proponent
- There is no need of relocation of utilities.
- There is no community or human settlement on the site.
- There is no fauna flora (particularly belonging to an endangered species) on the site
- Main road network runs in front

- There is no ecologically sensitive or declared protected area (PA) like forest, fish hatcheries, Territorial Waters, wildlife or game reserves, any structure of socio-cultural significance (historical or archaeological site or religious structures; Masjid, temples, etc.) within 10 km of the selected site

It can be concluded in view of these reasons that the selected site is best suited for the project, and will not pose any adverse impact or threat on any component of the environment.

3- Impacts Associated with Design Phase

At the design phase, considerable impact can occur on land, soil, ground water, and on people of the area.

Mitigation Measures at Design Phase

The design has sought to minimize any environmental potential impacts by ensuring that the project should be in according to the environmental standards. The design of this unit is state-of-art and environmentally friendly. At design phase special attention should be given to the design of the project in the sense that it has been designed in such a way as to cause minimum disruption and deterioration of environment and surroundings. However in pre-construction phase a management system should be provided at design level so impacts can be reduced. Design of the unit will adhere to all standard technical requirements in order to avoid adverse impacts on environment and human health.There will not be any environmental problems at any stage from design stage to its operational stage. The project is to be designed in a way that it guarantees all out compliance with the Punjab Environmental Quality Standards (PEQS).At the design phase, no considerable impact will

occur on land, soil, topography, ground water, and on people of the area. The Proponent intends to construct the unit on modern lines, meeting International Standards, with incorporation of new Technology. The design, if maintained and operated in an environment-friendly manner, is expected to cast positive impact on the Environment and will not pose any adverse impact or threat on any component of the Environment.

4- IMPACT DURING CONSTRUCTION PHASE

It is as follow:-

- **Impact on Soil**

During construction phase the soil quality may be affected due to very small amount of discharges during vehicle and equipment maintenance and leakage from equipment's and vehicles. The impact is not significant.

Mitigation

Any spill if occur will be immediately clean up. If the problem of water logging occurs during development phase the area will be immediately reclaimed. The impact is not significant.

Depending on the nature of the material, location of spill and quality of spill, soil can get contaminated. Low permeable membrane should be present at the bottom of vehicles. Proper tuning of vehicles is also necessary. Due to mitigation measures, the overall impact on soil during construction phase is minor.

- **Impact on Geology**

The geology of the area is flat. No hills, mountains and slopes are present so during construction phase there will be no impact on geology of area.

Mitigation

No impact

- **Ecological Impacts**

There would be a considerable impact on flora and fauna if present in area and it could be a cause of their elimination from the area.

Mitigation

There is no impact. No flora and fauna present around the proposed project site. The project area is devoid of any trees cover or any endangered or threatened animal species.Plantation will be done to improve the ecological conditions of the area. The impact will be Nil.

- **Impacts on Air Quality**

Following potential impacts on air quality may occur during construction phase.

Emission of Dust and Particulate Matter

During the development / construction vehicles and machinery will be employed. These will generate some dust and smoke temporarily. During construction phase due to continuous

operation of machinery and movement of heavy trucks and vehicles can generate gaseous emissions and can have a slight adverse effect on the surrounding environment. Combustion exhaust from vehicles and construction equipment's during construction phase can affect ambient air quality of project area.

Mitigation

All vehicles, machineries, equipment and generators used during construction activities should be in good working condition, properly and be properly maintained in order to minimize exhaust emissions. This impact is classified to be short term, reversible and limited, as it will only occur during the excavation activities. Also these impacts are expected to be contained within the site boundaries. For dust sprinkling of water is done to avoid dust.

- ## Solid Waste

The solid waste generated during the construction phase of Project can pose a health hazard, pollute soil, surface and ground water if not managed properly. A significant impact will be interpreted if the waste management is not carried out properly; witch may effect to health of workers, pollution of soil, surface or groundwater.

Mitigation

The Potential sources of solid waste from operational activities include excavated material, construction waste, food waste, plastics, and paper. Dumping of excavated waste will be done at a designated site approved by TMA, and it will be ensured minimum degradation to the soil around the Project area. Construction waste will also be disposed off as per TMA procedures. Other generated solid waste comprise of a domestic waste. Waste storage bins will be installed. The waste from these bins will be collected by the sanitary workers. The waste will be disposed off in accordance with the procedures of Tehsil Municipal Administration. No significant impact on the environment is anticipated from solid waste generation at the project site as the solid waste is managed efficiently.

- ## Noise and Vibration

When the construction work is undertaken, constant rattle of heavy machinery will raise the noise level in the Project Area. This noise and vibration will affect directly the residents of nearby areas. Noise due to the construction will be a minor negative impact.

Mitigation

Mitigation measures mentioned below will be adopted to minimize the noise pollution. Those measures include, but are not limited to the following:

- Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built dampening techniques or appropriate muffling devices.

- Confining of excessively noisy areas and limiting the work to normal working hours in the day;

- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; and

- Regular checkups and maintenance of the construction equipment, and oiling and greasing of the noise making mechanical parts.

- **Traffic Congestion and Disturbance to People**

During the construction phase, the movement of heavy machinery and transportation of raw material and equipment may cause traffic congestions. As a result the daily activities of the people of nearby localities as well as of the visitors may be disturbed, which will require proper mitigation measures. This will be a moderate negative impact.

Mitigation

During construction, following mitigation measures will be followed:

- Observation of timing by the vehicles carrying construction material of infrastructure to cause minimum disturbance to traffic on existing road. The construction equipment and machinery must be stationed in the boundary premises to avoid the traffic congestion on the main Road.

- Transportation of raw material and heavy machinery will be done early in the morning; and

- There will be coordinated planning of traffic movement by the Traffic Police and the Transport Department in accordance with the construction program with advance warnings to the affected residents and road users.

- All the machinery will stay inside the periphery of project so it will not cause disturbance in the traffic.

- **Workers' Safety and Hygienic Conditions**

During construction phase minor and severe injuries to workers due to operation activities may occur. The construction activities impose certain negative impacts on health and safety of the workers and public in case of unsafe and/or unfavorable working conditions. Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

Mitigation

Mitigation measures will be required to minimize health and safety related negative impacts of the project. This will be a minor negative impact.

Implementation of the following measures will ensure health and safety of the workers and the public during the construction phase:

- The Administrator will ensure that the construction workers/labours are trained in safety procedures for all relevant aspects of construction;

- Construction workers will be provided with proper safety equipment such as helmets, goggles, masks, etc.;

- Formal emergency procedures will be developed for construction site in case of an accident. First aid kits and other necessary equipment will be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident;

- The safety of the public at all stages of the construction will be ensured through appropriate public education and safety measures such as use of sign boards, barriers and flags; and Proper illumination will be provided at night.

Proposed Mitigation Measures during Construction / Development Phase

The potential negative impacts during construction and operational stage of the project should be mitigated to an acceptable level. Following environmental protection measures are adopted to eliminate adverse environmental impacts or to reduce them to an acceptable level

within the legislative and regulatory framework. The proposed mitigation measures are listed below:

- Appropriate waste disposal mechanism should be followed during the construction phase. The construction waste would be disposed in a manner that does not contaminate surface or groundwater.

- The construction waste generated will be used for earth filling within the project site premises.

- The Contractor needs to make sure that their machinery and equipment's are properly tuned and serviced and there is no leakage of oil from construction equipment's and machineries.

- Contractor should give assurance of quality of machineries and equipment's which will be used during excavation and construction process.

- All vehicles, machineries, equipment and generators used during construction activities should be in good working condition and be properly maintained in order to minimize exhaust emissions.
- Construction labor must be trained in safety procedures for all relevant aspects of construction
- Helmets or hard hats should be worn by workers at all time of work and everywhere on the Project Site.
- Regular checks should be carried out to ensure that the contractor is following safe working procedures and practices.
- Workers should be provided with personal protective equipment's (PPE's) such as safety jackets, ear plugs or ear muffs, special boots and dust masks.
- Use of up-to-date and well maintained machineries or equipment with reduced noise level.
- Confining excessively noisy work to normal working hours in the day, as much as possible.
- Providing construction workers with suitable hearing protection like ear cap, or ear muffs and training them in their use.
- Ear muffs or ear caps should also be provided to those people living in nearby area.

5- ***IMPACTS OF OPERATIONAL PHASE***

The Environmental and Socio-Economic impacts associated with the operation phase of the unit are following:

Mitigation Measures

Both are collected and properly stored in the unit. Both will be recycled in next process.

- **Waste Water**

The domestic wastewater will be generated during the operational phase of the project. The domestic waste water will be produced from sanitary uses. It would deteriorate the surface and ground water quality if not treated properly. Waste water will mainly be domestic waste water in nature. It could affect the underground water table, which in turn affects the health of the people. The effects of untreated sewage on the environment are largely negative. If wastewater is not properly treated, then the environment and human health can be negatively impacted.

Mitigation

There is a proper management of wastewater generated from the unit so it has no considerable impact on environment. Wastewater generated from unit will be domestic waste water which will be collected in the sewer system and after treatment through septic tank,it will finally be discharged into the municipal committee sewerage system.

- **Solid Waste**

The sludge will be produced as a result of wastewater treatment. The concentrations of various metal ions in the sludge are very high, mainly the concentrations of Cr and Na ions. So, the leather industrial effluent is highly polluted and not suitable for irrigation or any other uses. The solid waste generated during the operational phase of Proposed Project can pose a health hazard; pollute soil, surface and ground water if not managed properly. A significant impact will be interpreted if the waste management is not carried out properly; witch may affect health of workers and can be a source of pollution of soil, surface or groundwater.

- Other sources of solid waste from operational activities include:
  - Office waste
  - Plastics
  - Rags
  - Paper

Mitigation Measures

Key elements of the Waste Management System will be the following:

- Sludge as a result of wastewater treatment, will be disposed off by management at designated dumping site at Kasur.
- For domestic waste such as office waste, food waste, plastics, rags and paper etc. separate waste bins will be placed for different type of wastes. From there it will be disposed off according to the procedures of TMA.
- Records of all waste generated will be maintained. Quantities of waste disposed, recycled, or reused will be logged on a Waste Tracking Register.

Residual Impacts

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

- ## Air Quality

Odors associated with wastewater are difficult to quantify because they are caused by a wide variety of compounds and they are a nuisance that is more qualitative than quantitative.

Mitigation

- For avoiding the emissions of toxic gas the wastewater will be treated properly by the lime bath treatment. The pH of the water will be controlled for controlling the hydrogen sulphide smell and, if needed, alkalis like NaOH or lime are added to achieve pH > 9.5-10. More extensive, uninterrupted aeration may help, but sometimes rigorous (and expensive) methods such as adding hydrogen peroxide or pure oxygen are necessary.
- PPE's such as masks should be given to workers.
- Regular checkups and maintenance of the machinery should be done.
- Chemicals Storage should be done properly and should be properly covered after using it.

- ## Noise and Vibration

Minor Noise will be generated from generator and operation of the wastewater treatment plant. It may affect the health of the workers.

Mitigation

- Workers should be provided with PPE's such as ear plugs.
- There should be a sound proof roof room for generator.

- There should be a selection of up-to-date generator (if any) with reduced noise levels ensured by suitable in-built damping techniques
- Also excessive use of horns should be avoided. Further tree plantation will be done as it acts as noise absorbers.
- Oiling and greasing of the mechanical parts of the machinery should be done to control noise.
- Maintenance of the machinery should be done on regular intervals.

Residual Impacts

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

Monitoring Requirements

During project operation, it should be ensured that the noise level at the project site does not exceed the prescribed limits.

- ## Water Consumption

Water will be required for the domestic use of workers and during process. The increased withdrawal of surface water for the proposed project may affect the water availability for the other users of the Project Area.

Mitigation Measures

- Water conservation program will be initiated in plant to prevent wastage of water.

- ## Safety of Workers

Operation of the project may cause some concerns for safety, public health and nuisances within the project area.

Mitigation:

- Personal Protection Equipment (PPEs) such as ear plugs, safety Helmets, Gloves, Goggles and Masks will be provided to the employees to ensure their safety at work place.
- While dealing withraw material, the workers should wear gloves and shoes. In short worker's body should be completely covered.

- Workers' awareness and safety wall chart showing safety symbols and other necessary information will be displayed at various places.
- First Aid Box will be kept in every department which will be within the approach in case of any injury or mishap.
- To avoid any chance of fire, a comprehensive firefighting system will be developed that includes all types of fire Extinguishers, fire hydrants, sand Buckets and firefighting Vehicles.
- Basic medical and safety training will be held from time to time to minimize the risk of health and safety issues which can result from ignorance (ergonomic hazards in particular) in the industry premises.

Residual Impacts

Implementation of the suggested mitigation measures may leave behind some residual impacts of safety incidents.

Monitoring requirements

Visual monitoring of hazards and accidents will be done

- ## Emergency Response

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;

- Fire hazard

Fire Hazard

During operational phase of the project, fire hazard poses a serious threat.

Mitigation

For firefighting different types of fire extinguishers, sand buckets, fire hydrant etc. are recommended to be installed.

6- Potential Environmental Enhancement Measures

Tree plantation and cropping within and outside the premises has been planned by the proponent for environmental enhancement. Among plants native flora like Peepal and Amaltas will be involved which have maximum capacity to reduce noise pollution and tolerance index of these species are more than 10. Some floral species like rose will also be introduced in the lawn for aesthetic beauty and trees like sufaida will be planted as boundary wall inside the lawn which will look like green wall

Excavation for planting shall include plant pits and planting beds. The minimum depths of plant pits or beds shall be measured from finished the grade. Plants beds and pits shall be tested for drainage before planting by filling with water twice in succession. Conditions permitting the retention of water in planting the beds or pits for more than 24 hours shell be brought to the attention of the Architect. If rock, underground construction, .obstructions, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be select by the architect. The contractor shall be responsible for all damages resulting from any neglect and failure to comply with this requirement.

Following excavation planting pits, the pits shall be back filled with the sweet soil mixture as specified. Three day prior to planting, the pits shall then be filled with water for consolidation of soil. The dimensions of the panting pits are as follows:

A. Trees: 3x3x3

B. Shrubs: 2x2x2

C. Hedges: trenching 2wide x'2 deep of required length.

D. Creepers and vines: 2wide x 2 deep of required length.

E. Edges and flowers beds: 'fill flower box with sweet soil as per the Architect's drawings. For seasonal flowers, the beds are to have the minimum of 12" sweet soil and 4" 'manure.

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plants become damage or injured, they shall be treated or replaced. Protection shall also include all temporary protections fences and barriers. all signs and all other work incidental to proper maintenance.

ENVIRONMENTAL MANAGEMENT& MONITORING PLAN

I. Description of proposed mitigation action:

Proposing the mitigation measures for the negative environmental (physical, biological and socio-economic) impacts arising from the various project activities is not the only responsibility of the proponent; rather the proponent is liable to provide a complete plan showing in-depth details of how the activities will be managed in a way to keep environment undisturbed or in a state receiving least burden from the project construction and operation. This plan; called as the "environmental management plan" not only states the mitigation measures of the negative environmental impacts but also makes some person or authority responsible for carrying out that mitigation measure. Having an EMP in an EIA binds the specified people for taking the indicated mitigation measure.

An environmental management plan is a project or site specific plan developed to ensure that all the necessary measures are identified and implemented in order to protect the environment and to meet the environmental legislations.

Aspects	**Potential Impacts/ Risks**	**Proposed Mitigation Action**
CONSTRUCTION PHASE		
Traffic Congestion due to construction phase of	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.	Adequate parking facilities will be provided for the construction machinery and tractor-trolleys bringing the material into the Project Area
Air Quality degradation due to construction phase of	Dust produced due to construction activity can affect the health of employees and residents in the surrounding areas	Use of dust suppression Techniques like water sprinkling etc. will be made to minimize the effect of dust. Construction workers will be provided with masks for protection against the inhalation of dust. Regular monitoring of all vehicles, equipment, and machinery used for construction. All

		vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and properly tuned and maintained in order to minimize the exhaust emissions.
Disposal of Construction Waste/Excavated Material produced in construction phase	Dumping of construction wastes / excavated material in the surrounding area may limit use of land	Management of Construction activities in a way to ensure minimum degradation to the soil around the Project area and dumping of excavated waste will be done at a designated site approved by TMA,
Noise and Vibration due to machinery being used for construction	Noise pollution due to increased construction machinery operation	Selection of up-to-date equipment and machinery with reduced noise levels ensured by suitable in-built damping techniques; Regular checkups and maintenance of the construction equipment; and use of appropriate muffling devices
Sanitation and Waste disposal facilities at Project site	Health risks to construction workers	All the solid waste will be properly collected and disposed off in accordance with the procedures of TMA.
Workers' Safety and Hygienic conditions	Health risks in case of unsafe and/or unfavorable work conditions	Enforcement of work safety measures such as wearing safety goggles, protective masks and boots and fixing of cautionary signs at designated sites. First aid box should be at the site in case of any injury or mishap.
OPERATIONAL PHASE		

Wastewater treatment	It can impact surface water and underground water. If wastewater is not properly treated, then the environment, flora, fauna and human health can be negatively impacted.	The domestic wastewater will be generated during the operational phase of the project. The domestic waste water will be produced from sanitary uses. The domestic wastewater generated will be treated properly through the septic tank. After treatment it will be collected in the sump from where after further treatment it will be collected in the sewer system. After treatment from the waste water treatment area, it will finally be discharged into the drain.
Production of solid waste in operational phase	During the operational phase sludge will be produced as a solid waste and domestic waste will also be produced.	▪ Sludge as a result of wastewater treatment, will also be disposed of by management at designated dumping site. For domestic waste such as office waste, food waste, plastics, rags and paper etc. separate waste bins will be placed for different type of wastes. From there it will be disposed of according to the procedures of TMA.
Groundwater Depletion	Prolonged water consumption may in the long run lower/deplete the underground water table.	Workers will be trained in water conservation measures such as use of water efficient/ economy appurtenances.
Air Quality	Odors associated with wastewater are difficult to quantify because they are caused by a wide variety of compounds and they are a nuisance that is more	• For avoiding the emissions of toxic gas the wastewater will be treated properly by the lime bath treatment. The pH of the wastewater will be controlled for controlling the hydrogen sulphide smell and, if needed, alkalis like NaOH or lime are added to achieve pH > 9.5-10. More extensive, uninterrupted aeration may help, but

	qualitative than quantitative. Vehicles and generators with excessive smoke can pollute the air quality.	sometimes rigorous (and expensive) methods such as adding hydrogen peroxide or pure oxygen are necessary. Furthermore the ETP will be covered to avoid the odor issue. • PPE's such as masks should be given to workers.
Noise & Vibration	Minor Noise will be generated from generator and operation of the wastewater treatment plant. It may affect the health of the workers.	• Workers should be provided with PPE's such as ear plugs. • There should be a sound proof roof room for generator. • There should be a selection of up-to-date generator (if any) with reduced noise levels ensured by suitable in-built damping techniques • Vehicles and generator should be properly tuned and maintained to control noise. • Only those vehicles should be used that are properly tuned and maintained and are equipped with silencers. • Also excessive use of horns should be avoided. Further tree plantation will be done as it acts as noise absorbers. • Oiling and greasing of the mechanical parts of the machinery should be done to control noise. • Maintenance of the machinery should be done on regular intervals.
Workers' Safety and Hygienic conditions	Health risks in case of Unsafe and/or unfavorable work conditions	Enforcement of work safety Measures such as wearing safety goggles, protective masks and boots and fixing of cautionary signs at designated sites. First aid box

		should be at the site in case of any injury or mishap.
Emergency **Response**	There are always chances of earthquakes and manmade disasters, fire, road accidents etc.	• Emergency evacuation plan will be developed to evacuate the area in case of accidental fire • Emergency response and plan along with safety charts showing symbols and other necessary information will be displayed at various places for the awareness of workers • An Emergency Response Plan for earth quakes and manmade disasters will be developed by the Management. • Emergency Response Plan will be implemented in close consultation with the Fire Fighting Department, Bomb Disposal Squad and Paramedics • Firefighting equipment's should be installed or present in the unit.
Traffic Congestion	Movement of vehicles may result in traffic disruption if proper parking facilities are not provided.	Adequate parking facilities will be provided for the vehicles bringing the material into and out the Project Area

II. Schedule of Implementation & Environmental Budget:

The schedule of implementation for the commencement of the civil work involved for the construction is approximately 06 month and the detail timeline of the construction period is given in **Table 14:**

Table 5: Timeline for Project Development

Sr#	Activities	1.5 Months			1.5 Months			1.5 Months			1.5 Months		
		2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2W	2 W
1	Detailed Designing												
2	Mobilization of Contractors												
3	Lean Development Period												
4	Peak installation Period												
5	Plantation at Site												
6	Commissioning												*
W=Weeks													

- **Environmental Budget**

A total of 250,000 rupees approximately will be assigned for environmental budget. Tree plantation will be done from this budget. This budget can be increased in case of any requirement.

Sr.no	PROJECT ACTIVITIES	ALLOCATED BUDGET
1	Water Sprinkling	30,000 PKR
2	Personal Protective Equipment's (PPEs)	50,000 PKR
3	Safety & awareness Board	40,000 PKR
4	Sanitation and Waste disposal facilities, Solid Waste Bins	50,000 PKR
5	Tree Plantation	80,000 PKR
6	**Total Amount**	**250,000 PKR**

III. Environmental Management Team along with their Roles and Responsibilities:

It is the responsibility of the management of the project to ensure that monitoring of air, water, soil and noise are being carried out efficiently and properly maintain the records of monitoring in order to access the environment quality. There should be precise recording and maintenance of all information generated during the monitoring. The management must hire a person to look over the monitoring. It is also the responsibility of management to ensure that all mitigation measures are being implemented to eradicate the possible adverse environmental impacts. For capacity building, all the employs should be given awareness about the environment and what should be their roles to protect the environment. Hired workers should be aware of the safety procedures and what to be done in emergency situations. Lectures should be given on environment safety twice a year. Training should be conducted yearly or twice a year to cope with emergency situations. The management must ensure that environment management plan is properly carried out. 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
- The biodiversity of the site is conserved or enhanced
- All relevant legislation is complied with
- The project is monitored for environmental impacts

Local workers will be hired during operation phase and one person from management should be there in order to implement EMP for construction phase. There will be 25-30 workers during construction phase and 30 workers will be hired during operational phase of the project. There will be a contractor who will head the workers in construction phase and supervisor will head the workers during operational phase. It is the responsibility of

management that contractor and supervisor should implement safety procedures of health and environmental safety.

The environment management and monitoring plan will be implemented by the following;-

- **Project Manager**
- **Supervisor**
- **Contractor**

The proponent will also manage EMP during operational phase and at least one person (supervisor) should be given the task to work on EMP and check and monitor that all the activities are going in compliance. Furthermore, monitoring of different parameters will also be done on regular intervals to check the quality parameters related to environment.

The duty of that person (supervisor) from management side would be to:

- Describe how it fits into the overall planning process for the project
- Detail the activities that are to be carried out
- Identify the impacts those activities may have on environment
- Propose environmental control methods to be used to prevent or minimize those environmental impacts
- Assign responsibility for each control measure to specific staff members
- Identify key monitoring parameters and schedule of monitoring of these parameters
- Identify training requirements at various stages of the development of the project
- Identify the resources required to implement the EMP and outline relevant expenses arrangements

Organizational structure & Responsibilities

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

Primary Responsibilities

The administration is primary responsible for implementing EMP within this project construction and operational phase

Operational Management and Control

Conducting the operational activities in the environmentally sound manner will be the responsibility of the administration.

Supervision and Monitoring

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

IV. Proposed Monitoring program to assess Performance or output of EMP:

The proposed monitoring program to access the performance of suggested mitigation measures and the output of EMP along with the role & responsibility of Environmental Management Team is discussed in detail.

Category	Impact	Project Activity	Monitoring Mechanism	Frequency	Monitoring Agency
Development and Operation Phases					
Land Resource	Solid Waste and By-Products	Implementation of SW* Management System	• Record keeping and timely transfer of SW from bins and its ultimate disposal • Incineration of chemical residues	Weekly and Annually	Contractor
	Soil Contamination	Implementation of Management Plans	Visual monitoring and regular site inspection Incineration chemical residues	Daily, Monthly and Annually	Project Manager
Air Resource	Air Emission	Air quality will deteriorate due to transportation related activities and	Monitor of the air exhaust emissions as per SMART parameters	Monthly Monitoring	Project Manager/Self-Monitoring

		during the production of the final goods			
Ecological Resource	Flora	Uprooting of trees during construction phase and maintenance of photographic record of the removed vegetation	Inventory of uprooted trees and re-vegetation plan during operation phase	During Baseline Survey, once in a year and after the completion of the project	Project Manager/Self-Monitoring
Wastewater		Wastewater will be generated mainly from domestic use and from the production of the final goods	The process wastewater will be testing of the effluents will be carried out as per SMART parameters on regular basis before finally discharging	Monthly basis	Project Manager/Self-Monitoring
Noise		The noise will be produce during constructional and operational	Noise will be monitored through Digital Sound Meter	Monthly	Project Manager/Self-Monitoring
SW= Solid Waste, **EA= Executive Agency					

V. Proposed monitoring program to assess performance or output of EMP:

Environmental impact of a project is worked out using various factors and parameters, so that an Environmental Management Plan can be evolved to take mitigation measures, wherever these might be considered necessary in order of appropriateness of elimination, reduction and compensation as the goals. The development of the EMP is to make some person responsible for implementing the mitigation measures as identified so that smooth implementation of the mitigation measures can be assured. Monitoring plans have also been included to ensure the compliance of the EMP by contractors and other responsible authorities.

Regular monitoring will be required to check that the construction and operation is not going to cause any adverse environmental impacts; hence monitoring visit will be done once in a month during construction phase. During these visits samples will also be taken to check the quality of air, water and soil etc.

Parameter/ Receptor	**Location**	**Monitoring**	**Mechanism Monitoring and Reporting Frequency**
Water Quality	• Ground Water • Surface Water	Discrete grab sampling and laboratory testing of water samples.	• Sampling and laboratory testing should be done on monthly basis during the construction and annually during the operational stage. • Discharges f r o m the construction sites should be tested for temperature, PH and turbidity. • Treated effluent discharges from the worker's camp to be tested for PH TSS and BOD.
Dust Emissions	• Tracks along the roads during construction period.	Ambient particulate matter monitoring.	• Sampling and laboratory testing should be done on monthly basis during the construction
Noise Levels	• Camp sites, • Selected Locations alon	Noise meter	Monthly during the construction Stage.

	the access.		
Air Quality	Silencers of heavy machinery, trucks and other vehicles.	Emissions monitoring system. Monitoring of ambient air quality.	• Monthly monitoring of air pollution parameters including PM_{10},NO_X, $SO_{X;}$ CO. Hydrocarbons during the construction period, and quarterly monitoring ofPM_{10},NO_X, $SO_{X;}$ CO VOC_S during the operation stage,
Cutting of trees	In all project area during the construction stage and operation stage.	Periodic visits site to ensure that trees cutting is prohibited.	Reported on monthly basis during the construction period, and once in a year monitoring and reporting during the operation period.
Socio-cultural Environment			
Inconvenience community	All around the project area	Consultations with community to get feedback about inconvenience due to the construction activities to perform their daily routine chores.	Monthly monitoring and reporting during the construction period.

- **Training Schedules**

The whole staff will be given training on different things like:

1- Health Safety & Environment Awareness Session

This training would be for whole unit staff and it would be done once in every 6 months.

2- Emergency Preparedness Training

This training would be arranged once in a quarter of every year by hiring consultant firm. This training would be helpful to ready the employees to handle any kind of emergency situation.

3- Fire Safety

This training would be for whole staff and it would be done once in every 6 months.

- **Equipment's Maintenance Plan**

The project involves the processing & manufacturing of cephalosporin antibiotic medicine. The said Yousaf Tanneries unit maintains the records for Health Safety & Environment and will hire HSE manager to check and deal with the HSE issues. The unit shall maintained PPEs, medical facilities, firefighting Equipment's, SOPs, conduct trainings, design for proper fencing and records for their periodic fillings or replacement. All machines require routine cleaning and maintenance after every three months and an annual service which costs around 1% to 5% of the total cost depending upon the use of the machine and operator's skill. The inspection should be done because inspection process will highlight any kind of disorder in them prior to its occurrence. All the mechanical equipment will be cleaned on regular intervals of time, like on a very seventh day, and necessary maintenance will be done.

Involvement of Stakeholders/Public Consultation

7. INVOLVEMENT OF STAKEHOLDERS/PUBLIC CONSULTATION

7.1 GENERAL

This section describes the regulatory policy, planning and current practices of project proponent pertaining to the stakeholder engagements and outcomes of stakeholder consultation process initially done as part of the EIA report. The feedback from communities and other stakeholders directly or indirectly affected by the project is collected so that it may be used to adjust and improve the project's design, planning, implementation and help the implementation structure ensuring that the project is both environmentally and socially sound. The consultation process was carried out in accordance with the requirements of the Punjab Environmental Protection Act and Government of Pakistan on public consultation.

The objectives of this process were;

- To disseminate information on the project and its expected impact, long-term as well as short-term, among primary and secondary stakeholders,
- To gather information on relevant issues so that the feedback received could be used to address these issues at an early stage of the project,
- To determine the extent of the negative impacts of different project activities and suggest appropriate mitigation measures.

7.2 IDENTIFICATION OF STAKEHOLDERS

There are two types of stakeholders, i.e.

a. Primary stakeholders
b. Secondary stakeholders

7.2.1 Primary Stakeholders

The primary stakeholders are the initial stakeholders, such as affected persons, general public and women residing in the project area. Accordingly, the consultations / focus group discussions were made with all primary stakeholders for sharing of information about the proposed project and expected impacts and understanding about the concerns by category of stakeholders.

7.2.2 Secondary Stakeholders

The secondary stakeholders are the representatives of Government Departments/Agencies involved in the planning, design, implementation and operation of the project, including various government departments such as District Administration, EPA, WAPDA, and

Agriculture including the Horticulture wing, Irrigation, Forest, and other relevant departments.

7.3 STAKEHOLDER ENGAGEMENTS PLANNING

A two fold stakeholder engagement is planned and carried out for the proposed project as following:

Stakeholder Consultation during the Preparation of EIA Report:

The consultation with the primary and secondary stakeholders has been conducted initially during the preparation of the EIA report.

7.3.2Stakeholder Consultation / Public Hearing during the Approval of the project:

The proponent is bound to complete as a regulatory obligation by the Environment Protection Agency (EPA), Punjab to conduct such Consultative Event known as "Public Hearing" under Section 12(4) of Punjab Environment Protection Act, 2012. This process shall be carried out during the review of the project to get the Environmental approval from the EPA, Punjab, Pakistan.

During this process following activities shall be carried out.

i. The proponent shall cause to be published, in any English or Urdu national newspaper, a public notice mentioning therein the type of project, its exact location,

ii. The public notice issued shall fix a date, time and place for public hearing of any comments on the project or its EIA. The date fixed for public hearing shall not be earlier than 30 days from the date of publication of the notice.

iii. The EPA shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.

iv. All comments received by the EPA from the public or any Government Agency shall be collated, tabulated and duly considered by it before its decision for approval

7.4 STAKEHOLDER CONSULTATION PROCESS

The overall strategy for stakeholder's consultation is as follows:

Table - 7.1: Process of Stakeholder Consultation

Stakeholders	Purpose of Consultations	Methodology	Stage
Primary Stakeholder	• Information gathering and data collection. • Information sharing about the project (disclosure) • Opinion seeking (concerns and expectations) • Grievance redress	• Focus Group Discussions • Household surveys • Formal and informal Community meetings	• Base line Study Impact Assessment
Secondary Stakeholder	• Participation in the development process • Information gathering • Authentication and validation of the development processes • Verification of the record	• One on one meetings • In-depth interviews	• During the EIA preparation • On need basis during the project implementation and

Stakeholder consultation for this project was planned during the preparation of EIA report. In first step during the scoping, which has already taken place, consisted of meetings with individuals, groups, relevant organizations and government departments, which are in some way linked to the project and therefore considered stakeholders. The meetings were conducted to inform stakeholders about the project and how it may affect their lives/activities, and to record their concerns, whether real or perceived. Through the use of various tools the study team tried to involve the stakeholders in active decision-making. The results of this exercise are described below, where mitigation measures have been developed addressing the pertinent stakeholder concerns.

7.5 PRIMARY STAKEHOLDERS CONSULTATION

Apart from gathering of quantitative data through household survey of the area of influence of the project and survey of local community to share the information about the project and record their concerns/ feedback associated with this project. In this context, nearest community shared their view point regarding the assessment especially procedure for entering their concerns/ grievances, employment opportunities, and implementation of the project.

Topics for Discussion

The topics discussed in the consultations were:

- Employment and livelihoods of communities.
- Gender and women issues
- Contractor's camp and access
- Environmental issues during construction and operation of project
- Company responsibility for employment, etc.

7.6. PROPONENT'S ENVIRONMENTAL MANAGEMENT TEAM:

The proponent's Environmental management team consists of 3 members. It will include; Project Manager, Quality Assurance Officer and HSE Manager

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

7.7. THE RESPONSIBLE AUTHORITY

The proponent of the proposed unit shall be the responsible authority to take all measures prior to start the project and during operation.

7.8. OTHER DEPARTMENTS AND AGENCIES

For the impact analysis detailed with the management, local community, educational institutes, health institutes, hospitals and NGOs. All issues were discussed related to implementation of the project. Scoping sessions, focused group discussion and way side consultations were held with the relevant stakeholders in the area.

7.9. ENVIRONMENTAL PRACTITIONERS AND EXPERTS

Team of Pro Green Environmental Consultants visited the project site, had discussion with stakeholders and consulted with the local people of nearby and other villages to evaluate the project socio-economic impacts. People of the area belong to different professions like mostly belong to employment, own businesses, doctors, some of them communicated but according to social value of the area they mostly hesitate to communicate comfortably and get pictured. People provide the massive information about the project and have positive remarks regarding the project development.

7.10. Affected and Wider Community

There is no affected community present in the area of proposed project. Consultant's team has consulted with the inhabitants of different villages. The remarks of people are positive regarding the project and people foresee positive impacts like employment opportunities, business, development of the area etc.

7.11. COMMUNITY CONCERNS

7.11.1. Project Approval

The community consultations demonstrated that goodwill towards the project proponents indeed exists; approval for project activities by the communities was evident. The consultations were considered a good gesture and appreciated, especially by the men and women. This project will provide employments to the local as well as non-local poor community in its construction as well as in operational stages.

7.11.2. Resettlement/ Relocation

The proposed site is located on the land already owned by proponents of the project. Therefore, no issue of the resettlements is there.

7.11.3. Local Employment

Communities in the project area emphasized that local poor community should be given priority when employing people for various project-related works and activities according to their skills

7.11.4. Interaction with Local Community

Non-Local work force coming in the project area that will not be aware of the local customs and norms, may result in conflicts with the local community, keeping in mind the sensitive law and order situation and culture of the area.

Appendices

	Appendices	Detail
	1- Glossary	This is attached with this report.
	2- List of Abbreviations	This is attached with this report.
	3- List of individuals or organizations consulted along with their written feed back	This is attached with this report.
	4- Sources of data and full list of all reference material used	This is attached with this report.
	5- Terms of references for environmental reports and those given to individual specialists	This is attached with this report.
	6- List of names, qualifications and roles of team members carrying out the IEE/EIA study	This information is given on page 20 of this report
	7- Approvals from other concerned departments	

GLOSSARY

Words	Dictionary
Anticipated Impacts	Expected Impacts
Low Permeable Membrane	Which resist the things to pass through
Magnitude of operation	Scale of carrying out project
Endangered species	Which will extinct in near future
Threatened species	Those in danger of extinction
Aesthetic Beauty	Scenic beauty of the area
Domestic wastewater	Wastewater from sanitary uses
Ambient	Surrounding of all sides
Topography	Physical features of the site
Yield	Productivity
Watercourse	Channel of water
Wildlife Sanctuary	A protected area within which wildlife is protected
Baseline	Conditions prevailing at the time of study or before initiation of any project
Environment Budget	Monetary assets reserve for Environmental activity
Evaluation	Assessment
Fauna	Variety of Animals found in an area
Flora	Variety of Plants found in an area
Million	10,00,000
Mitigation Measures	Measures aimed to curtail or entirely control an adverse impact or to compensate some loss or cause additional improvements
Nuisance	Annoyance
pH	Negative log of hydrogen ion concentration

Potential Issue	Problems likely to arise
Proposed Project	Planned activity
Residual Impacts	Impacts left behind after implementation of the mitigation measures
Significant	Important
Statutory Requirements	Legal Requirements

LIST OF ABBRIVIATIONS

CO	Carbon monoxide
CO_2	Carbon dioxide
°C	Degree Celsius
dB(A)	A weighted decibel scale
EIA	Environmental Impact Assessment
CSR	Cooperate Social Responsibility
CSR	Cooperate Social Responsibility
EMMP	Environment Management & Monitoring Plan
EMP	Environmental Management Plan
Engr.	Engineer
EPA	Environmental Protection Agency
EPD	Environment Protection Department
OGRA	Oil and Gas Regulatory Authority
HSD	High Speed Diesel
HSMS	Health Safety Management System
FM	Fire Monitor
FH	Fire Hydrant
HC	Hose Cabinet
GWT	Ground Water Table
PM_{10}	Particulate Matter >10
SPM	Suspended Particulate Matter
HC	Hydrocarbon
BOD	Biological Oxygen Demand

TSS	Total Suspended Solid
VOC	Volatile Organic Compounds
ERP	Emergency Response Plan
BDS	Bomb Disposal Squad
HSE	Health Safety and Environment
SWM	Solid Waste Management
GDP	Gross Domestic Product
IEE	Initial Environmental Examination
Km	Kilometer
Ltd.	Limited
M/S	Masses
NEQS	National Environmental Quality Standards
No.	Number
NOC	No Objection Certificate
NO_x	Oxides of Nitrogen
O_3	Ozone
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 Equipment's
SFT	Square Foot

SOPs	Standard Operation Procedures
SO_x	Oxides of Sulphur
TMA	Town Municipal Authority
WAPDA	Water and Power Development Authority
WASA	Water and Sanitation Agency
WHO	World Health Organization

4. REFERENCES

- Guidelines for Preparation and Review of Environmental Reports
- Guidelines for Public Consultation
- Labor Laws
- Pakistan oil (refining, blending, transportation, storage and marketing) rules, 2016
- Oil and Gas Regulatory Authority Ordinance, 2002
- Oil and Gas regulatory Authority (amendment) ordinance 2009
- Meteorology Department Data (from website)
- National Environmental Policy 2005
- National Environmental Quality Standards (Self-Monitoring and Reporting by Industries) Rules, 2001
- Pakistan Biosafety Rules 2005
- Pakistan Environmental Protection Act, 1997
- Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations, 2000.
- The Land Acquisition Act, 1894
- The Punjab Local Government Ordinance, 2001
- Punjab Environmental Protection (Amendment) Act, 2012

Schedule-IV

Application Form

1.	Proponent Detail	i. Muhammad Mujahid S/O Mian Muhammad Anwar ii. Muhammad Mujahid iii. House No. 214, Munir Shaheed Colony, Kasur.
2.	Consultant Detail	i. ProGreen Environmental services. ii. Letter of Authority from proponent in favor of consultant. (Attached with EIA Report)
3.	Project Detail	i. Location of project Niaz Nagar District Kasur. Alternative site ,If any ii. Google or scale Map of the project(and alternatives) vicinity clearly showing the distance from nearest settlement, water bodies or other notable geographical features/ protected or reserved forests/ National Parks/ Environmentally sensitive Areas **(Attached)** **Yes** iii. Objectives of the project. • To increase the availability of leather. • To create job opportunities for Locals iv. Description of project: The proposed project is waste water treatment plant in which the waste water of Yousaf Tanneries will be treated properly through the primary & secondary treatment. Primary treatment involves screening, equalization, and primary sedimentation. Secondary treatment involves the anaerobic digestion and aerobic digestion. The estimated cost will

		be 35 million. v. Projects sub component that fall within the list of project enumerated in schedule-II Category F (1) of Regulation 2022.
4.	Project category	i. Mentioned Schedule of regulations ii. Attached : IEE ☐ EIA Yes
5.	IEE/EIA Details	i. Baseline data on meteorology, ambient air quality and ground water quality ii. Assessment of potential environmental impacts iii. Identification of environmental impacts of the project through its life cycle iv. Assessments of social impacts of the project v. Identification and description of preventive, mitigatory and compensatory measures to be adopted vi. Environment Management plan vii. Monitoring Arrangements viii. Project construction labor details ix. Project operation details. **The above detail has been mentioned in EIA report.**

VERIFICATION: I do solemnly affirm and declare that the information given above and contained in the attached IEE/ EIA is true and correct to the best of my knowledge and belief.

Name and Designation of Proponent: **Muhammad Mujahid**

Signature _____

Date _____

TERMS OF REFERENCE FOR IEE / EIA

Title of Project	Waste Water Treatment Plant by Yousaf Tanneries
Title of Assignment	Preparation of Environmental Impact Assessment (EIA) Report
Proponent	Muhammad Mujahid S/O Mian Muhammad Anwar
Location of Project	Niaz Nagar District Kasur
Procurement Method	Formal Quotations

Project Description:

The proposed project is waste water treatment plant in which the waste water of Yousaf Tanneries will be treated properly through the primary & secondary treatment. Primary treatment involves screening, equalization, and primary sedimentation. Secondary treatment involves the anaerobic digestion and aerobic digestion. The estimated cost will be 35 million.

Objectives of Study:

- To assess and establish the existing environmental and socio-economic conditions of the area.
- To assess and evaluate the potential environmental and socio-economic impacts of the project activities and identify the issues of high concern.
- To implement and execute environmental safeguards.
- To propose mitigation measures and monitoring arrangements that can be incorporated into the operation of the project to remove or reduce any damaging effects as far as possible.
- To categorize the significant impacts requiring further consideration.
- To devise the Environmental Management Plan for the project.
- To prepare an EIA Report as per the relevant guidelines for submittal to EPA Punjab.

Scope of Work for Consultants:

- Secondary Data Collection
- Field Survey and Primary Data Collection
- Scoping Meeting
- Baseline Monitoring
- Public Consultation
- Socio-economic surveys (Interviews + Questionnaires)
- Compilation of Data
- Preparation of EIA Report according to Regulation (6) of Review of IEE / EIA Regulations, 2000 and Guidelines for Preparation and Review of Environmental Reports, 1997.
- Responding to any queries by EPA Punjab

Key Deliverables:

- 10 Hard Copies of IEE/EIA Report shall be filed as per Regulation (8) of Review of IEE / EIA Regulations, 2000
- 2 Soft Copies of IEE/EIA Report shall be submitted along with report as per Regulation (8) of Review of IEE / EIA Regulations, 2000
- IEE/EIA Report shall be accompanied by;
  - An application, in the form set out in Schedule IV of Review of IEE / EIA Regulations, 2000
  - An undertaking as per Schedule VII of Review of IEE / EIA Regulations, 2000
  - Copy of receipt showing payment of the review fee
- Reply of Query Letter (will be submitted if EPA requires additional information)

Time Line:

- 09-02-2024 (Draft EIA Report)
- 12-02-2024 (Comments by proponent)
- 14-02-2024 (Final EIA Report)
- 16-02-2024 (Filing of EIA Report in EPA after incorporating changes Suggested by Proponent)

- According to clause (a) of sub-regulation(1) of regulation 9, within ten working days of filing of IEE, EPA shall be responsible to confirm IEE is complete for the purpose of initiation of review process
- According to clause (b) of sub-regulation(1) of regulation 9, EPA require such additional information as may be specified
- According to clause (c) of sub-regulation (1) of regulation 9, return IEE to the proponent for revision, clearly listing the points requiring further discussion and consideration for make-up.
- According to sub-regulation (1) of regulation 11 of Review of IEE/EIA Regulations, 2000, EPA shall review IEE within forty five (45) days and EIA within ninety (90) days, of issue of conformation of completeness under clause (a) of sub-regulation (1) of regulation 9.
- According to Section 12 (4) of Punjab Environment Protection (Amendment) Act 2012, "The Government Agency shall communicate its approval or otherwise within a period of four months from the date the Initial Environmental Examination or Environmental Impact Assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the Initial Environmental Examination or, as the case may be, the Environmental Impact Assessment shall be deemed to have been approved to the extent to which it does not contravene the provisions of this Act and the rules and regulations."

Qualifications:

Personnel involved in the survey and preparation of EIA Report of the said project have the following qualifications;

- BS/MS/M Phil Environmental Sciences
- BS/MS Environmental Engineering

Responsibilities of the Proponent:

- Responsible to pay all the dues of the consultants as per the agreed terms and conditions.

- According to regulation 7 of Review of IEE and EIA Regulations, 2000, proponent shall pay, at the time of submission of IEE/EIA, a non-refundable review fee to EPA, in accordance with rates specified in schedule III.
- Arrange transportation for the survey teams and laboratory
- Fulfill all pre-requisites of EIA Report
- Provide all documents / details required for completion of EIA Report
- Proponent shall be responsible for paying any fines / penalties levied by the EPA Punjab or Environment Tribunal
- Proponent shall be responsible for the validity and correctness of the information provided to the consultants
- Proponent shall be responsible to abide by all the conditions contained in the Environmental Approval accorded to him by EPA Punjab.

The area below will be used for signatures and stamp.

Proponent

Muhammad Mujahid S/O Mian Muhammad Anwar
Address: House No. 214, Munir Shaheed Colony, Kasur

Consultation Firm

Pro Green Environmental Services

Address: 126,1st Floor Memona Center, Moj Darya Road, Lahore

Detail of Environmental Consulting Firm

This EIA study has been carried out by Pro Green Environmental Services. This Firm comprises environmental engineers, environmental lawyers etc.

Name	Roles
Shahid Iqbal Environmentalist	Team Leader
Ahmad Waqar Environmental Engineer	Monitoring and Author
Ali Naeem Environmental Engineer	Monitoring coordinator and Author
Muhammad Hassan Chemist	Monitoring and Author
Gulzaib Afzal Environmental Engineer	Monitoring Assistant and Author
Muhammad Masud Adil Environmentalist	Team Leader

Address:126,1st Floor Memona Center, Moj Darya Road, Lahore

Contact No. 0333-4041950