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PROJECT SUMMARY TABLE

Section	Parameter	Details
1. Project Identification	Name of Project / M/S	M/S Bismillah Tannery
	Project Location	Niaz Nagar District Kasur, Punjab
	Geographical Coordinates	<ul style="list-style-type: none"> • Latitude: 31°06'14.2"N • Longitude: 74°27'35.0"E
2. Proponent Information	Proponent Name	Mr. Muhammad Iqbal
	CNIC	35102-0572092-7
	Proponent Address	Mohalla Defence Colony, near WAPDA Office, Kasur
3. Project Overview	Total Project Cost	Rs. 450 million
	Project type	Establishment
	Process Description	The subject project is the establishment of raw to wet blue processing unit with Chrome Recovery Plant (capacity 20 m ³ /day) and WWTP (capacity 300 m ³ /day) The production capacity will be 80 tons/day raw leather. The Total area of the subject process is 31500 Sq ft (7 Kanal) The cost of the project will be 450 million Rs Approximately.
	Land Area	31500 Sq ft (7 Kanal)- (Owned)
	Ownership	Partnership (Agreement Attached)
	Allied Facilities	Admin Block, Generators
4. Waste Management	Types of Waste	Leather trimmings, shavings and buffing dust etc.
	Estimated Waste Generation	30 Tonnes/Month
	Waste Handling Measures	Labeled plastic covered bins
	Final Disposal Plan	Handed over to Contractors
5. Wastewater Management	Coordinates of WWTP	Latitude: 31°06'14.1"N Longitude: 74°27'34.4"E
	Capacity	300 m³/day
	Treatment Method	Biological Treatment

	Disposal Method & Location	Rohi Nala		
	NOC from Authority	KTWMA		
5. Chrome Recovery Plant	Coordinates of CRP	Latitude: 31°06'14.1"N Longitude: 74°27'34.4"E		
	Capacity	20 m³/day		
6. Rainwater Harvesting	Harvesting Infrastructure	Overhead storage tanks		
	Collection Source	Roofs of the production halls and storage sheds etc.		
	Implementation Status	Planned		
7. Plantation & Green Development	Proposed Green Area	10% of the total area of the project		
	Tree Types and Numbers	Common Name	Scientific Name	Quantity
		Neem	Azadirachta indica	300
		Sukh Chain	Pongamia pinnata	200
		Amaltas	Cassia fistula	150
		Kikar	Acacia nilotica	150
		Arjun Tree	Terminalia arjuna	100
Pilkhan	Ficus virens	100		
8. CSR & Community Welfare	CSR Budget	3% to 5% of the total Project Cost		
	Activities	Health & Safety Education Environment & Sustainability Water, Sanitation & Hygiene (WASH) Livelihood & Skill Development Community Engagement & Welfare		

EXECUTIVE SUMMARY

1. Title and Location of the Project

Project Title	Establishment of Raw to Wet Blue Processing Unit
Location	Niaz Nagar, District Kasur
Coordinates	31°06'14.2"N, 74°27'35.0"E

2. Name of the Proponent

Detail	Information
Name of Proponent	Mr. Muhammad Iqbal
Father's Name	Abdul Rasheed
CNIC No.	35102-0572092-7
Business Ownership	Partnership (Agreement Attached)
Residential Address	Mohalla Defence Colony, near WAPDA Office, Kasur

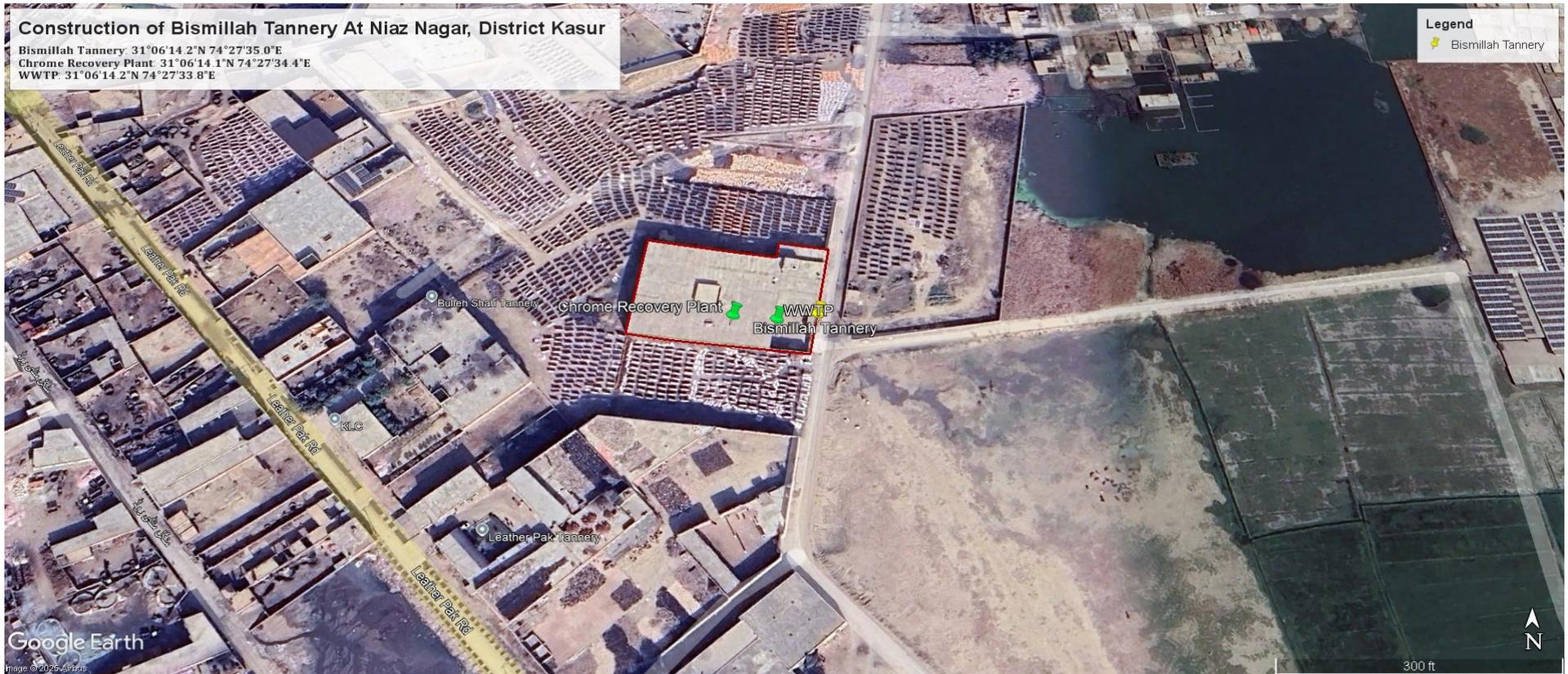
3. Name of the Organization Preparing the Report

Name	Pak Green Enviro-Engineering (Pvt.) Ltd.
Address	46-M, Gulberg III, Lahore
Contact	042-35441444, 0303-4442335

4. Brief Outline of the Proposal

Component	Detail
Production Capacity	80 tons/day of raw leather
Chrome Recovery Plant (CRP)	20 m ³ /day capacity (for chromium recovery and recycling)
Wastewater Treatment Plant (WWTP)	300 m ³ /day capacity (to meet PEQS compliance)
Total Project Area	31500 Sq ft (7 Kanal)
Estimated Project Cost	PKR 450 million (Approx.)
Screening Parameter	Details
Project Name	Establishment of Raw to Wet Blue Processing Unit
Proponent	Mr. Muhammad Iqbal (Bismillah Tannery)

Industry Type	Tannery and Leather Processing
Schedule Classification	Schedule II
Regulatory Clause	Category B, Sub-category 10 – Tannery and Leather Units
Screening Outcome	Full Environmental Impact Assessment (EIA) Required
Basis for Classification	High water usage, chemical-intensive process, and environmental sensitivity
Regulatory Framework	PEPA 1997 (Amended 2022), EIA/IEE Regulations 2000 (Amended 2022)



The Project site is located at **Niaz Nagar, District Kasur**. The geographical coordinates of the project site are approximately:

Entity	Latitude	Longitude
Bismillah Tannery	31°06'14.2"N	74°27'35.0"E
CRP	31°06'14.1"N	74°27'34.4"E
WWTP	31°06'14.2"N	74°27'33.8"E

Surrounding of the project site is as follows:

North	Shafqat Leather	South	Leather Pak Tannery
East	Access Road	West	Bulleh Shah Tannery

5. Major Impacts and their mitigation measures:

The project involves the establishment of a leather processing facility (Raw to Wet Blue), including:

Construction Phase Impacts

Impact	Source	Magnitude	Duration	Mitigation Measures
Land Disturbance	Site clearance and leveling	Moderate	Short-term	Minimize clearing, erosion control
Dust Emissions	Earthwork, construction activity	Moderate	Short-term	Water sprinkling, windbreaks, covered transport
Noise Pollution	Equipment and machinery	Low	Temporary	Time restrictions (daytime work), equipment mufflers
Waste Generation	Construction debris	Low	Short-term	Proper disposal, reuse of recyclable materials
Labor Influx	Temporary workforce (~50 workers)	Low	Short-term	Sanitary facilities, code of conduct enforcement
Traffic Disruption	Material transport	Low	Temporary	Scheduling, traffic routing plans

Operational Phase Impacts

Impact	Source	Magnitude	Duration	Mitigation Measures
Water Pollution	Effluent from tanning (Cr, BOD, sulfides)	High	Long-term	WWTP (300 m ³ /day), Chrome Recovery (20 m ³ /day),
Air Emissions	VOCs, PM, H ₂ S from processing	Moderate	Continuous	Enclosed units, scrubbers, stack emissions monitoring
Soil Contamination	Leaching/spills of chemicals (Cr, acids)	Low–Moderate	Reversible	Impermeable flooring, secondary containment, regular soil monitoring
Noise Pollution	Machinery, ventilation systems	Low	Intermittent	Acoustic insulation, maintenance of equipment

Water Use	Process water demand (200 m ³ /day)	High	Continuous	Groundwater agreements, recycling, rainwater harvesting system
Solid Waste	Leather scraps (~1 tons/day)	Moderate	Continuous	Sold to recyclers, formal disposal agreements

6. Recommended Mitigation Measures

• Water and Wastewater Management

- Operate the WWTP and chrome recovery plant at full capacity.
- Install water meters to monitor water usage.
- Reuse treated water in non-critical operations to reduce groundwater dependency.

• Air and Soil Quality Control

- Use enclosed processing units to limit emissions.
- Conduct biannual air quality monitoring.
- Conduct annual soil testing for chromium, pH, and heavy metals.

• Noise and Vibration Management

- Equip generators with silencers during construction.
- Ensure noise levels remain below 85 dB at site boundaries.
- Maintain a green belt with noise-dampening vegetation around the facility.

• Solid and Hazardous Waste Management

- Engage authorized recyclers for the disposal of leather scraps.
- Keep accurate waste tracking logs.

• Community Engagement and Traffic Control

- Appoint environmental/social manager for local engagement.
- Schedule transport activities during non-peak traffic hours.
- Establish a grievance redress mechanism for public complaints.

7. Proposed Monitoring

Parameter	Frequency	Responsible Entity
Ambient air and stack emissions (PM, NO _x , SO _x , CO)	Quarterly	Environmental Consultant / Lab
Noise levels	Quarterly/ on complaint	HSE Department
Treated wastewater (BOD, COD, TSS, pH)	Quarterly	External Lab
Solid waste handling	Weekly	Waste Management Officer
Community grievance tracking	Monthly / on complaint	Admin / EM

8. Conclusion

Bismillah Tannery project, while having potential environmental impacts—particularly related to water—has incorporated essential infrastructure and planning (WWTP, chrome recovery, enclosed systems) to mitigate risks. With continuous monitoring and regionally coordinated sustainability strategies, the project can operate within environmental compliance while delivering strong socio-economic benefits to the Kasur region.

Chapter 01: Introduction

1.1 Purpose of the Report

The purpose of this Environmental Impact Assessment (EIA) report is to identify and evaluate the potential environmental impacts associated with the project titled “*Establishment of Raw to Wet Blue Processing Unit*”, initiated by Mr. **Muhammad Iqbal S/o Abdul Rasheed** (the Proponent), and to suggest appropriate mitigation measures. The report is prepared to obtain the necessary environmental approval from the Punjab Environmental Protection Agency (EPA) in accordance with the, Punjab Environmental Protection Act, 1997 (Amended 2012) and the applicable Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations 2022.

This EIA has been undertaken as part of the screening and scoping process, which identified the need for a comprehensive environmental assessment based on the nature, scale, and sensitivity of the project activities. The project involves industrial processes that may interact with the surrounding environment, requiring careful evaluation to prevent adverse outcomes.

The report aims to:

1. Provide a detailed description of the project to be established, including its technical, operational, and locational aspects;
2. Describe the existing environmental baseline conditions of the area where the project is to be established, covering physical, biological, and socio-economic components;
3. Identify and assess anticipated hazards and potential environmental impacts during both the construction and operational phases of the project;
4. Recommend appropriate mitigation measures to eliminate or reduce the severity of adverse impacts;
5. Present a Monitoring Plan to track environmental performance and ensure compliance with environmental standards and mitigation commitments;
6. Outline an Environmental Management Plan (EMP) that defines roles, responsibilities, and procedures for environmental protection during project execution;
7. Facilitate public and stakeholder involvement to ensure transparency and address any concerns from the local community and other stakeholders.

This EIA report provides a structured framework for decision-makers to evaluate the potential impacts of the project and to determine whether it should proceed further for project-specific conditional environmental approval.

1.2 Identification of the Project

The project involves the

- ✓ Establishment of a Raw to Wet Blue Processing Unit integrated with a Chrome Recovery Plant and a Wastewater Treatment Plant (WWTP). The purpose of this project is to process raw hides into wet blue through chemical and mechanical treatment processes while ensuring environmentally responsible operations through the recovery of chromium and the treatment of wastewater generated during production.

The inclusion of a Chrome Recovery Plant aims to reclaim chromium used in the tanning process, thereby minimizing the environmental footprint and promoting resource efficiency. The Wastewater Treatment Plant (WWTP) is designed to treat effluents generated during the blue processing operation to meet the environmental discharge standards set by the Punjab Environmental Protection Agency (EPA).

This project falls under **Sub-Category 10: "Tannery and Leather Units"** of **Category B: "Manufacturing and Processing"** as listed in **Schedule II** of the *Punjab Environmental Protection (Review of Initial Environmental Examination and Environmental Impact Assessment) Regulations, 2022*. Projects in this category are required to undergo a detailed **Environmental Impact Assessment (EIA)** due to the potentially significant environmental interactions associated with their operations, particularly in relation to water, soil, and chemical handling.

1.3 Project Proponent

The proponent of the project is **Mr. Muhammad Iqbal S/o Abdul Rasheed**, who intends to establish the Raw to Wet Blue Processing Unit along with a Chrome Recovery Plant and Wastewater Treatment Plant. The business is being established as a partnership, and Mr. Muhammad Iqbal is the proponent and responsible entity for the implementation and operation of the project.

Detail	Information
Name of Proponent	Mr. Muhammad Iqbal
Father's Name	Abdul Rasheed
CNIC No.	35102-0572092-7
Business Ownership	Partnership
Residential Address	Mohalla Defence Colony, near WAPDA Office, Kasur

Mr. Muhammad Iqbal will be responsible for ensuring that the project complies with all applicable environmental regulations and for implementing the mitigation and monitoring measures proposed in this Environmental Impact Assessment report.

1.4 Detail of the Consultant

The Environmental Impact Assessment (EIA) study for the project has been conducted by Pak Green Enviro-Engineering (Pvt.) Ltd, an independent environmental consultancy firm that specializes in conducting Initial Environmental Examinations (IEE), Environmental Impact Assessments (EIA), Environmental Management Plans (EMP), and other environmental investigations. The company employs a panel of qualified environmental consultants and environmental managers, and is equipped with its own recommended instruments to monitor baseline environmental data in accordance with Punjab Environmental Quality Standards (PEQS). The firm also provides laboratory analysis facilities for water and wastewater priority parameters.

Contact Information:

Pak Green Enviro-Engineering (Pvt.) Ltd

Office No. 46-M, Gulberg III, Lahore

Tel: 042-35441444, 0303-4442335

Email: info@pakgreen.pk; eia@pakgreen.pk

Sr. No.	Designation	Name	Qualification	Experience
1	Chief Environmentalist / Lead Environmental Professional	Abdul Hafeez Nasir	PhD Scholar in Environmental Management	Ten Years' Experience as Environmentalist
2	Senior Environmentalist / Environmental Professional	Iftikhar Ahmed	M.Phil in Environmental Sciences	Seven Years' Experience as Environmentalist
3	Associate Environmental Professional	Muhammad Ahmad	BS in Environmental Science	One Year Experience
4	Associate Environmental Professional	Akhtar Ali	BS in Environmental Science	One Year Experience

1.5 Brief Description of Nature, Size, and Location of the Project

The project involves the establishment of a Raw to Wet Blue Processing Unit, integrated with a Chrome Recovery Plant and a Wastewater Treatment Plant (WWTP). The primary objective of the project is to process raw leather into wet blue in an environmentally sustainable manner, ensuring effective management of chrome and wastewater generated during the process.

Nature of the Project:

The project is industrial in nature and pertains to the leather processing sector. It will carry out the conversion of raw hides into wet blue, a key intermediate in leather processing, with in-built pollution control components such as chrome recovery and wastewater treatment facilities.

Size of the project:

Component	Detail
Production Capacity	80 tons/day of raw leather
Chrome Recovery Plant (CRP)	20 m ³ /day capacity (for chromium recovery and recycling)
Wastewater Treatment Plant (WWTP)	300 m ³ /day capacity (to meet PEQS compliance)
Total Project Area	31500 Sq ft (7 Kanal)
Estimated Project Cost	PKR 450 million (Approx.)

Key Requirements of the project:

Requirement	Construction Phase (Estimated)	Operation Phase (Estimated)
Water Requirement	~10 m ³ /day (for curing, masonry, and material mixing)	~250–300 m ³ /day (for soaking, liming, tanning, and washing)
Power Supply	Temporary 15–20 kVA connection from WAPDA or generator	~100–120 kVA continuous load (WAPDA grid)
Labor Requirement	25–30 workers (civil, electrical, mechanical)	40–50 workers (operators, technicians, supervisors)
Raw Material	Cement, bricks, steel, pipes, fixtures	~80 tons/day raw hides from local markets
Chemical Inputs	N/A during construction	Chrome salts, lime, acids, enzymes, and standard tanning chemicals
Construction Material	Steel (~20 tons), Cement (~600 bags), Sand/Gravel (~1000 ft ³)	N/A
Machinery/Equipment	Excavators, mixers	Processing drums, chrome recovery tanks, pumps, WWTP modules

1.6 Location of the project:

The project site is situated in Niaz Nagar, a locality within District Kasur, Punjab. The area is well known for its concentration of leather and tannery-related industrial activities, providing a suitable environment for the establishment of a Raw to Wet Blue Processing Unit

- **Geographical Coordinates:**

31°06'14.2"N, 74°27'35.0"E

- **Access Roads:**

The project site is easily accessible via the Depalpur–Kasur Road and Leather Pak Road, Depalpur–Kasur Road is well-connected to regional and national transportation networks, facilitating the movement of raw materials and finished goods.

- **Surrounding Land Use and Industries:**

The project is located in an area already accommodating various leather processing industries, contributing to its suitability and minimized risk of land-use conflict. Major surrounding industrial units include:

- **Akram Tannery**
- **W.F Tannery**
- **Leather Pak Tannery**
- **Yousaf Tanneries**

The immediate surroundings of the project consist of:

East Side	Access Road
West Side	Bulleh Shah Tannery
North Side	Shafqat Leather
South Side	Leather Pak Tannery

This concentration of similar industrial units demonstrates the area's established role in the leather sector and ensures the availability of supportive infrastructure and skilled labor.

Screening

1.7 Environmental Screening and Regulatory Context

Environmental screening serves as an essential initial step in the environmental review process. It determines the level of environmental analysis required based on the potential scale and severity of a project's environmental impacts. In accordance with the Pakistan Environmental Protection Act (PEPA), 1997 (Amended 2022) and the Pakistan Environmental Protection Agency's (Review of IEE and EIA) Regulations, 2000 (Amended 2022), screening helps classify projects either under:

- **Schedule I:** Projects requiring a **preliminary Initial Environmental Examination (IEE)**.
- **Schedule II:** Projects demanding a **comprehensive Environmental Impact Assessment (EIA)**.

This classification framework considers multiple parameters such as the type of industrial activity, the extent of resource use, potential emissions or discharges, and the location's environmental sensitivity.

1.8 Screening Outcome for the Project

The project under consideration—"Establishment of a Raw to Wet Blue Processing Unit with Chrome Recovery Plant and Wastewater Treatment Facility"—is to be established by Mr. Muhammad Iqbal (Proponent-Bismillah Tannery) and is to be established at Niaz Nagar, District Kasur.

A detailed review of the project scope reveals that it involves:

- **Leather processing capacity of 80 tons/day.**
- **Use of chromium-based tanning processes.**
- **Installation of a Chrome Recovery Plant (20 m³/day).**
- **Construction and operation of a Wastewater Treatment Plant (300 m³/day).**
- **Significant daily resource consumption including water, chemicals, and energy.**

Given the scale and environmental sensitivity of these components, the project falls within Schedule II of the Punjab Environmental Protection Agency's Environmental Assessment Regulations, specifically: Category B – Sub-category 10: "Tannery and Leather Units" Thus, the project qualifies for a full Environmental Impact Assessment (EIA) rather than a limited IEE.

1.9 Rationale for Requiring an EIA

Several project-specific characteristics substantiate the requirement for an EIA:

- **Nature and Scale of Industrial Operations**

Leather tanning is known for being resource-intensive and chemically driven. The daily processing of 80 tons of raw hides will generate considerable effluent, odor, and solid waste, making detailed environmental evaluation essential.

- **Chemical Handling and Chrome Recovery**

The tanning process involves chromium salts, which are categorized as hazardous substances. The inclusion of a chrome recovery system demands strict environmental oversight due to potential risks of contamination.

- **Effluent Treatment Load**

With an expected effluent generation of 300 m³/day, the Wastewater Treatment Plant must consistently meet Punjab Environmental Quality Standards (PEQS). Evaluating its performance and resilience under an EIA is critical.

- **Cumulative Industrial Impact**

The facility is situated in an industrial cluster surrounded by other tanneries such as Akram Tannery, W.F Tannery, Yousaf Tanneries, Leather Pak Tannery, Bulleh Shah Tannery, and Shafqat Leather. This necessitates an assessment of cumulative environmental burdens—particularly on water resources, air quality, and public health.

- **Human Health and Occupational Safety**

The anticipated workforce and exposure to chemicals imply occupational health risks. Additionally, communities in the area may be exposed to airborne emissions or contaminated water sources if adequate controls are not ensured.

1.10 Regulatory Alignment and Screening Confirmation

Based on the above considerations, and in accordance with relevant environmental laws and standards, the project has been screened as a Schedule II activity. It therefore requires the preparation and submission of a detailed Environmental Impact Assessment (EIA) report.

This screening determination aligns with:

- **Section 12** of the Pakistan Environmental Protection Act, 1997 (Amended 2022)
- **Regulations 4** of the Review of IEE and EIA Regulations, 2000 (Amended 2022)

The EIA has been initiated in full compliance with these legal requirements and shall address key components including environmental baseline studies, anticipated hazards, mitigation measures, stakeholder input, and environmental management planning.

1.11 Summary of Screening Determination

Screening Parameter	Details
Project Name	Establishment of Raw to Wet Blue Processing Unit
Proponent	Mr. Muhammad Iqbal (Bismillah Tannery)
Industry Type	Tannery and Leather Processing
Schedule Classification	Schedule II
Regulatory Clause	Category B, Sub-category 10 – Tannery and Leather Units
Screening Outcome	Full Environmental Impact Assessment (EIA) Required
Basis for Classification	High water usage, chemical-intensive process, and environmental sensitivity
Regulatory Framework	PEPA 1997 (Amended 2022), EIA/IEE Regulations 2000 (Amended 2022)

Scoping

Scoping is a critical phase of the Environmental Impact Assessment (EIA) process. It sets the boundaries and scope of the study by identifying key environmental and social aspects likely to be affected by the proposed project. The scoping process ensures that the assessment is focused, relevant, and comprehensive in addressing the most significant issues. This section outlines the spatial and temporal boundaries, key concerns raised during consultations, and the anticipated significant impacts to be studied in detail.

1.12 Spatial and Temporal Boundaries of Environmental Assessment

Spatial Boundaries

The spatial extent of the EIA has been defined based on the potential influence area of the proposed tannery operations. These include:

- **Core Zone:** The project site itself (31500 Sq ft (7 Kanal), in Niaz Nagar, District Kasur).
- **Impact Zone:** Immediate surroundings within a **1-kilometer radius**, which include adjacent tannery operations (e.g., Leather Pak Tannery, Yousaf Tanneries, Akram Tannery), residential pockets, and infrastructure (e.g., Depalpur–Kasur Road, Leather Pak Road).
- **Extended Zone of Influence:** Up to **5 kilometers**, to capture downstream impacts such as wastewater discharge into drains, traffic flow patterns, and ambient air quality dispersion.

Temporal Boundaries

The assessment covers all project phases:

- **Construction Phase:** Approximately **6 to 8 months**, involving civil works, installation of machinery, and utility connections.
- **Operational Phase:** Long-term (anticipated life span of 25–30 years), considering full-scale production and continuous waste management operations.
- **Decommissioning Phase:** Though not immediate, potential end-of-life environmental implications are also briefly considered.

1.13 Important Issues and Concerns Raised During Consultation

As part of the scoping exercise, preliminary stakeholder consultations were carried out with local residents, nearby tannery operators, workers, and relevant district-level environmental officers. The following key concerns were recorded:

Stakeholder Group	Key Concerns Raised
Local Residents	Odor from processing and wastewater Noise during construction and operation
Nearby Tanneries	Resource competition (especially water) Shared infrastructure pressure
Workers	Occupational health and safety risks Training for handling chemicals
Environmental Officials	Compliance with PEQS Adequacy of WWTP and CRP Solid waste disposal practices

Mitigation measures will be developed in response to these concerns and will be integrated into the Environmental Management Plan (EMP).

1.14 Significant Impacts and Factors to be Determined

Based on the nature and location of the proposed leather processing facility, the following environmental and social parameters have been identified for detailed assessment during the EIA:

Environmental/Social Factor	Potential Impact Area
Air Quality	Emissions from boilers, fugitive dust, and chemical odors
Water Quality and Usage	High freshwater demand and wastewater discharge into local drains
Soil and Groundwater Contamination	Potential spills or leakage of chemicals/chrome-laden wastewater
Solid and Hazardous Waste	Generation and disposal of sludge, hair, and chromium-based residues
Noise Pollution	Construction equipment, mechanical operations, and transport
Occupational Health & Safety	Exposure to chemicals, machinery hazards, and ergonomics
Public Health and Nuisance	Odors, pests, and traffic congestion affecting nearby communities
Ecological Impact	Potential indirect effects on local flora/fauna due to pollution
Traffic and Transport	Increased vehicle movement for raw material and product transport

These impacts will be quantified, evaluated, and addressed with mitigation strategies and compliance mechanisms in subsequent chapters of the EIA report.

1.15 Consideration of Alternatives

The evaluation of project alternatives is an essential component of the Environmental Impact Assessment (EIA) process. It allows decision-makers to explore different options that can reduce adverse environmental and social impacts while achieving the project's core objectives. The following alternatives were considered during project planning:

1. Site Alternatives:

Several potential sites were considered for the establishment of the tannery. The selection and rejection were based on environmental compatibility, access to utilities, legal compliance, and proximity to raw material sources.

Alternative Site Location	Selection/Rejection Criteria	Outcome
Near Niaz Nagar, Kasur	Proximity to other tanneries Existing infrastructure Access to skilled labor	Selected
Residential/Peri-urban Area	Incompatible with land use planning Risk of public health nuisance High social resistance	Rejected
Remote Area (Outskirts of District Kasur)	High logistics cost Limited access to skilled labor and utilities Lack of supportive infrastructure	Rejected

Justification:

The selected site in **Niaz Nagar, District Kasur** is part of an established tannery cluster, which ensures industrial compatibility, access to raw materials, utilities, and workforce, while minimizing conflict with residential areas.

2. Design/Technology Alternatives

Various processing technologies and waste treatment systems were evaluated for feasibility, environmental performance, and operational cost.

Design/Technology Option	Selection/Rejection Criteria	Outcome
Conventional Chrome Tanning	Widely used and cost-effective Compatible with CRP system High product yield	Selected
Vegetable Tanning	Eco-friendly but less efficient for bulk production Higher operational cost	Rejected
Chrome Recovery Plant (CRP)	Reduces chromium discharge Enables chromium reuse Cost-effective in long term	Selected
Advanced Oxidation Processes (AOPs) for WWTP	High cost and technical complexity Not suitable for small-scale tannery units	Rejected

Justification:

The chosen design incorporates industry-standard **chrome tanning**, supported by **Chrome Recovery** and a **conventional WWTP** to manage waste. These systems offer an effective balance of environmental compliance and operational feasibility.

3. Environmental Alternatives:

Environmental safeguards were reviewed in terms of waste management, resource optimization, and emission control.

Environmental Management Option	Selection/Rejection Criteria	Outcome
In-House Wastewater Treatment	Ensures compliance with PEQS On-site monitoring and control	Selected
Off-Site Waste Disposal	Risk of illegal dumping Lack of monitoring High transportation cost	Rejected

Justification:

The project opted for on-site environmental controls (WWTP, scrubbers, and solid waste segregation) to reduce external dependency and enhance regulatory compliance.

4. Economic Alternatives:

Various financial models and investment scenarios were analyzed for long-term sustainability and return on investment.

Economic Model	Selection/Rejection Criteria	Outcome
Partnership	Full ownership and control Streamlined decision-making	Selected
Staggered Investment	Delays in project completion Inconsistent quality control	Rejected

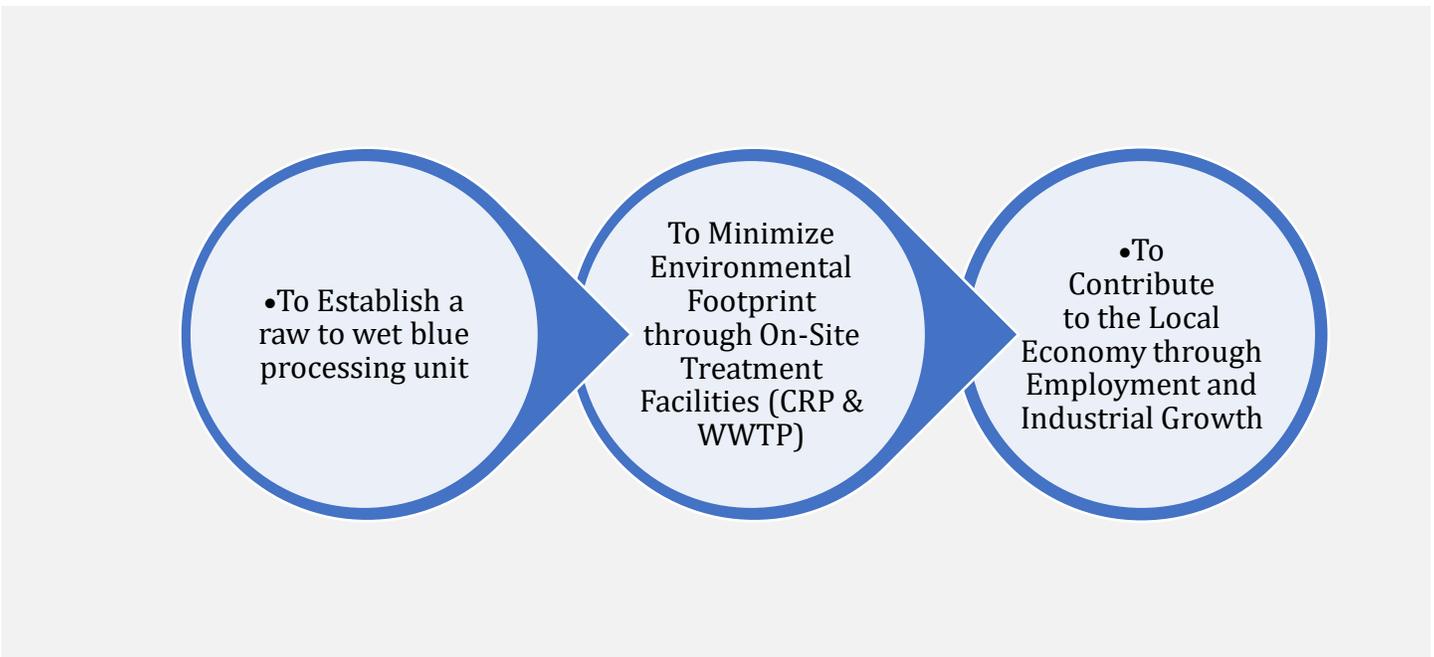
Justification:

The partnership model, fully financed by the proponent, was chosen to ensure control over project execution, operational efficiency, and investment recovery.

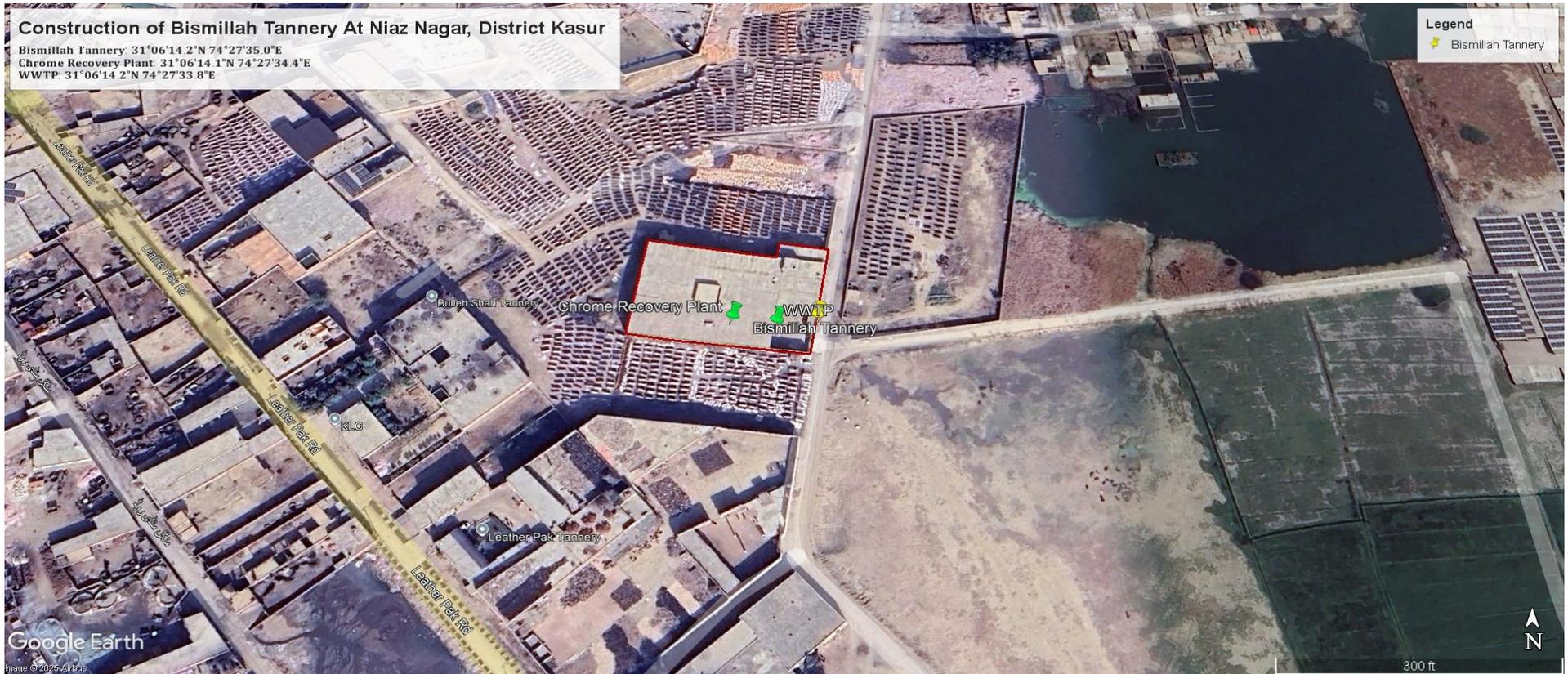
Chapter 02: Description of the Project

2.1 Objective of Project

The objective of the proposed project is to establish a modern and environmentally compliant leather processing unit that converts raw hides into wet blue leather through efficient and controlled industrial processes. The project seeks to incorporate sustainable practices by integrating a Chrome Recovery Plant (CRP) and a Wastewater Treatment Plant (WWTP), thereby ensuring compliance with environmental standards and reducing the ecological footprint of tannery operations. Additionally, the project is designed to contribute to the economic uplift of the region by generating employment opportunities, encouraging ancillary industrial development, and strengthening the leather industry base in District Kasur. Through these objectives, the project aims to balance industrial productivity with environmental responsibility and socioeconomic growth.



Location and Google Earth Map of the Project



The Project site is located at **Niaz Nagar, District Kasur**. The geographical coordinates of the proposed project site are approximately:

Entity	Latitude	Longitude
Bismillah Tannery	31°06'14.2"N	74°27'35.0"E
CRP	31°06'14.1"N	74°27'34.4"E
WWTP	31°06'14.2"N	74°27'33.8"E

Surrounding of the project site is as follows:

North	Shafqat Leather	South	Leather Pak Tannery
East	Access Road	West	Bulleh Shah Tannery

2.2 Road Access:

The proposed project site is well connected through an established road network, facilitating smooth transportation of raw materials, finished goods, and labor movement. The site is located near Depalpur-Kasur Road, a major regional route that provides direct access to the Leather Park Road, which leads to the entrance of the project area in Niaz Nagar, District Kasur.

This strategic location ensures efficient logistical support and easy access for suppliers and customers. The surrounding road infrastructure is capable of supporting light to medium industrial traffic, which is suitable for the expected volume of transportation associated with the project's operations. The proximity to existing tanneries and industrial units also contributes to improved connectivity and reduced transportation costs.

2.3 Vegetation Features of the Site

The proposed project site is situated in Niaz Nagar, District Kasur, within an already industrialized and semi-urban zone characterized by the presence of similar leather processing units. As such, the natural vegetation of the area has been largely replaced with industrial infrastructure and managed open lands. There is minimal presence of natural flora at the site, and the surrounding environment is not considered ecologically sensitive. The construction and development of the processing unit will therefore cause negligible disruption to local vegetation. Any minor impacts will be mitigated through the implementation of a greenbelt development plan, which includes the plantation of native and dust-resistant species around the facility to improve microclimatic conditions and enhance visual aesthetics.

2.4 Cost and Magnitude of Operation

Cost Estimation

Component	Estimated Cost (PKR)
Land Acquisition	50,000,000
Civil and Infrastructure Development	150,000,000
Chrome Recovery & WWTP Installation	100,000,000
Machinery and Equipment	120,000,000
Miscellaneous and Utilities	30,000,000
Total Estimated Cost	450,000,000

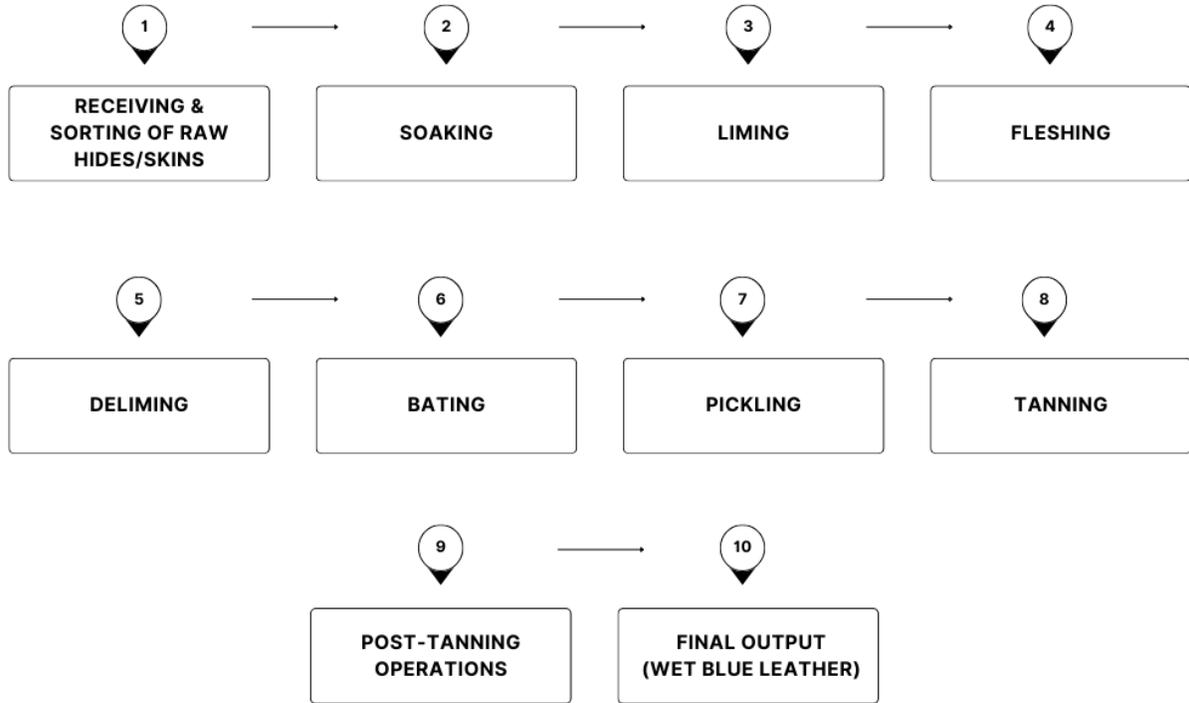
Magnitude of Operation

Component	Details
Project Area	31500 Sq ft (7 Kanal)
Production Capacity	80 tons/day (raw leather)
CRP Capacity	20 m ³ /day
WWTP Capacity	300 m ³ /day
Labor Requirement	25–30 workers during operation

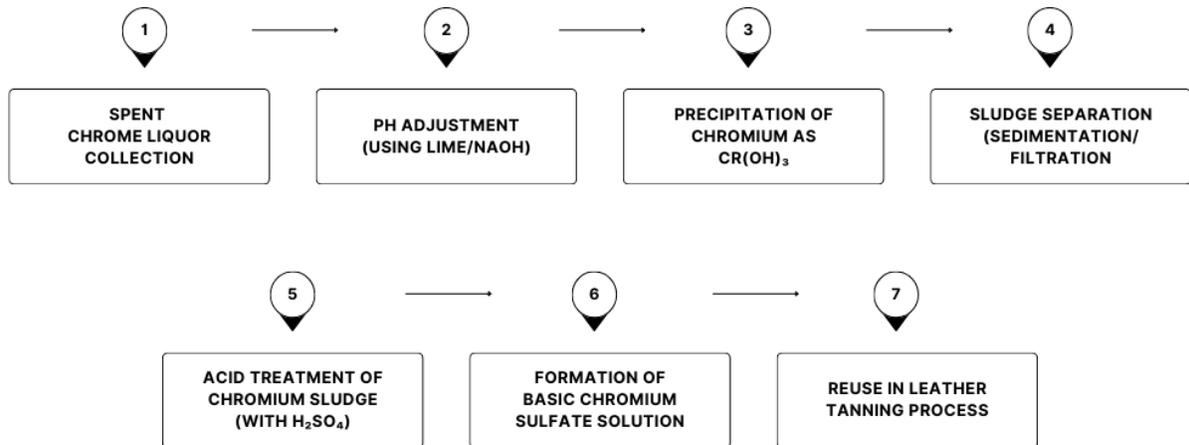
Schedule of Implementation

Activity	Estimated Timeline
Site Clearance and Preparation	1 Month
Civil Construction Work	6 Months
Installation of Equipment	2 Months
Utility Setup and Plant Testing	2 Months
Commissioning and Operations	1 Month
Total Implementation Period	12 Months

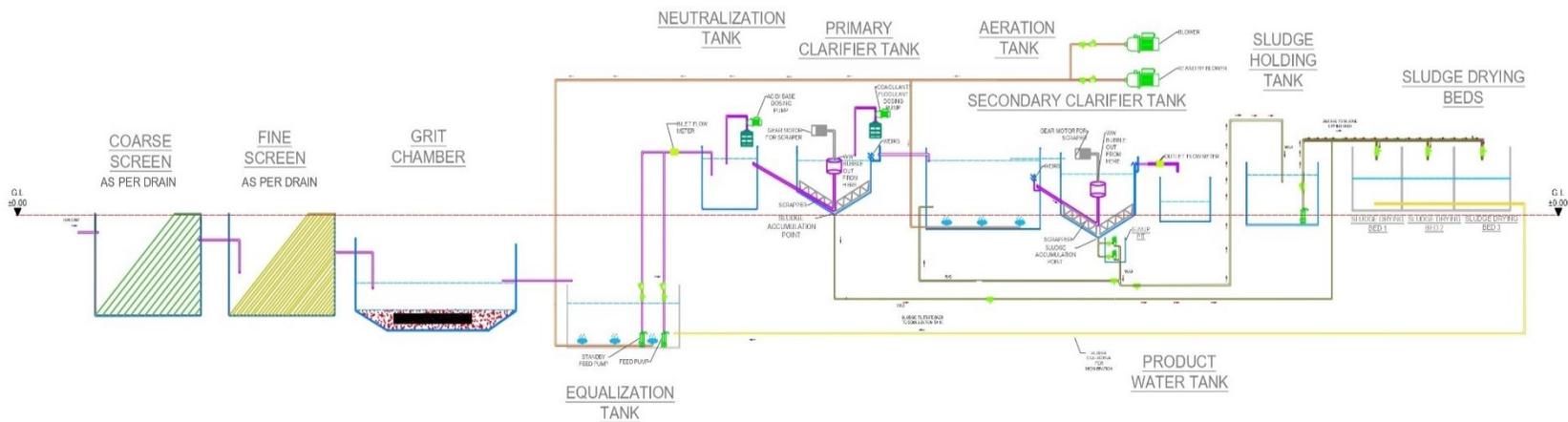
Process Flow of Tannery



Function of Chrome Recovery Plant



Waste Water Treatment Plant



2.5 Water and Power Requirement

Utility	Construction Phase	Operation Phase	Current Source	Future Plans
Power	10–15 kW	60–80 kW	WAPDA	Solar power integration under consideration
Water	1,000–1,200 liters/day (for civil works & domestic use)	250–300 m ³ /day (mainly for processing & sanitation)	Groundwater extraction through borewell	Installation of water recycling units and rainwater harvesting system

2.6 Waste Generation and Air Emissions

Phase	Type	Source	Estimated Quantity
Construction	Solid Waste	Construction debris (cement bags, tiles, wood, metal scraps)	~200–300 kg/day
	Liquid Waste	Domestic sewage from laborers	~300 liters/day
	Air Emissions	Dust from excavation, vehicular movement, material handling	Moderate particulate emissions
Operation	Solid Waste	Raw leather trimmings, sludge from WWTP, chrome sludge	~150–200 kg/day
		Packaging waste (plastic drums, bags, cartons)	~20–30 kg/day
	Liquid Waste	Wastewater from tanning, washing, domestic sewage	~250–300 m ³ /day (treated via WWTP)
	Air Emissions	Odors from leather processing, emissions from CRP and WWTP	Light to moderate particulate and gaseous emissions
		Generator exhaust (if used)	Minor CO ₂ , NO _x emissions
		Transportation vehicles	Minor vehicular emissions

2.7 Restoration and Rehabilitation Plan

To minimize the long-term environmental footprint of the seed processing facility, a restoration and rehabilitation plan will be implemented both during and after construction. The plan focuses on restoring any disturbed areas, maintaining soil quality, and enhancing the site's ecological value, especially given its location in an agricultural zone.



Phase	Restoration Activity	Action Plan/Description	Targeted SDGs
Construction Phase	Topsoil Management	Topsoil from the cleared area will be stripped, preserved, and later reused for landscaping and plantation around the facility.	
	Dismantling of Temporary Facilities	Temporary construction areas, material storage zones, and worker camps will be dismantled after completion, and the land will be leveled and restored to its original condition.	
	Waste Disposal	Debris and construction waste will be removed and safely disposed of at approved locations.	
Post-Construction	Greenbelt and Landscaping	A greenbelt will be developed around the facility using native and fast-growing tree species to enhance aesthetics, provide shade, and reduce dust emissions. Landscaping will include grassing and planting ornamental shrubs in buffer areas.	
	Windbreak and Dust Barrier	The boundary of the facility will be lined with vegetation to act as a natural windbreak and dust barrier.	
Soil and Water Management	Soil Restoration	Any compacted soil will be loosened and restored using organic matter to preserve fertility.	
	Rainwater Harvesting	Rainwater harvesting through surface drains will be considered to support plantation and reduce groundwater dependence.	
Monitoring and Maintenance	Plantation Care and Monitoring	The plantation and greenbelt areas will be maintained regularly, including watering, weeding, and replacement of dead plants. Environmental performance will be monitored periodically to ensure compliance with restoration goals.	

2.8 Rainwater Harvesting System Design and Integration

Introduction

Rainwater harvesting (RWH) is a sustainable water management strategy that collects and stores rainwater from rooftops and paved surfaces for later use. In light of increasing water scarcity and declining groundwater levels in Punjab, M/s Bismillah Tanneries has committed to integrating a rainwater harvesting system into the project's infrastructure. This initiative is part of the proponent's environmental stewardship strategy and aligns with the principles of resource conservation, stormwater management, and long-term sustainability. Given the substantial roof area of the production units and administrative buildings, and the presence of open paved surfaces, the site is well-suited for efficient rainwater capture and storage.

System Components and Technical Design

The rainwater harvesting system is designed to collect runoff from built structures, filter it to remove impurities, and store it in tanks for non-potable use. It consists of the following components:

- **Catchment Areas:** The roofs of the production halls, storage sheds, and office blocks serve as the primary rainwater collection zones.
- **Conveyance System:** Rainwater is channeled through a network of PVC gutters and downpipes to filtration chambers. These are designed with appropriate slopes to avoid stagnation.
- **Filtration Chambers:** Each downpipe is connected to a multi-layer filtration unit consisting of coarse gravel, sand, and activated charcoal. This setup effectively removes debris, dust, and suspended particles before storage.
- **Storage Tanks:** Filtered rainwater is stored in underground reinforced concrete tanks with a cumulative capacity of approximately 60,000–70,000 liters. These tanks are sealed to prevent contamination and mosquito breeding.
- **Overflow System and Recharge Wells:** Excess water from the storage tanks during peak rainfall will be diverted to percolation pits or recharge wells to facilitate natural groundwater replenishment. These recharge structures are lined with gravel and sand filters to prevent sedimentation.

The system is designed to collect and utilize up to 80% of annual rainfall runoff generated on-site, based on average annual precipitation for Kasur.

Usage and Environmental Benefits

The primary uses of the harvested rainwater are non-potable, ensuring safe and efficient water reuse within the industrial facility. These include:

- Irrigation of green belts, landscaped areas, and buffer zones
- Floor washing and non-critical cleaning activities within the plant
- Cooling tower top-up or machinery cleaning, where appropriate

These uses help offset freshwater demand and contribute to cost savings and water conservation.

Environmentally, the rainwater harvesting system offers several benefits:

- Reduces pressure on groundwater resources, which are under increasing stress in the region
- Mitigates localized flooding and erosion by controlling stormwater runoff
- Enhances groundwater recharge through controlled percolation
- Improves microclimatic conditions and supports plantation efforts on-site

Utilization Plan

The harvested rainwater will be distributed through a gravity-fed pipeline system from storage tanks to designated usage points. A basic water balance model has been developed to ensure optimum use and routing of excess water for aquifer recharge.

Application Area	Daily Requirement (Liters)	Water Source
Landscaping & Plantation	12,000	Rainwater Harvesting
Floor & Machinery Washing	8,000	Rainwater Harvesting
Recharge/Overflow	Variable	Rainwater Overflow
Total Use	~20,000	Stored Rainwater

This utilization ensures that stored rainwater is fully consumed during the dry months and that excess water during the monsoon is sustainably managed.

Environmental Impact

The integration of rainwater harvesting into the facility's infrastructure is expected to have positive environmental impacts with no associated adverse effects. The reduction in groundwater abstraction supports aquifer sustainability, while controlled drainage minimizes the risk of soil erosion and sedimentation. By enhancing stormwater retention, the system also reduces the potential for downstream waterlogging and infrastructure stress during heavy rainfall events.

Furthermore, the use of rainwater in landscaping and non-process operations reduces the dependency on piped or pumped water supplies, aligning with water-use efficiency goals under the Sustainable Development Goals (SDG 6 – Clean Water and Sanitation).

Maintenance and Monitoring

To ensure reliable system performance, a scheduled maintenance plan will be followed. Key actions include:

- Quarterly inspection and cleaning of catchment surfaces, gutters, and downpipes
- Biannual replacement of filter media in filtration chambers
- Monthly tank inspections to check for sediment accumulation and water quality
- Pre-monsoon inspection of recharge pits and overflow mechanisms

A maintenance log will be maintained on-site as part of the broader Environmental Monitoring Plan (EMP). Visual inspections during and after rain events will be conducted to ensure proper functioning.

Compliance and Best Practice Alignment

The design and operational model of the rainwater harvesting system comply with:

- Pakistan Building Code provisions for stormwater management
- Punjab Local Government environmental guidelines
- EPA Punjab's directives on sustainable water use in industrial zones

It also aligns with international best practices for green industrial development and Integrated Water Resource Management (IWRM) as promoted by UNEP and the World Bank. The system demonstrates the project proponent's proactive approach to sustainable infrastructure and environmental leadership.

Chapter 04: Description of the Environment

Understanding the existing environmental conditions is essential for assessing the potential impacts of the proposed leather processing project and developing mitigation strategies. This chapter presents the baseline description of the physical, ecological, and socioeconomic environment of the project site located in **Niaz Nagar, District Kasur**. The information is based on field surveys, secondary data sources, stakeholder consultations, and laboratory testing of environmental parameters. The environmental setting has been described to establish a reference for evaluating changes due to project activities.

3.1 Baseline Physical Environment

The project site lies within the alluvial plains of Punjab, a region characterized by flat topography, moderately fertile soil, and arid to semi-arid climatic conditions. The climate is typical of the Punjab region, with hot summers (May–July), mild winters (December–February), and a monsoon season from July to September. The average annual temperature ranges between 10°C in winter to 45°C in summer, and annual rainfall averages 400–500 mm, primarily during monsoon months.

The air quality in the project area was assessed through monitoring of PM_{2.5}, PM₁₀, SO₂, NO_x, and CO levels. Ambient air quality is moderately affected due to existing industrial activities and traffic emissions but remains within NEQS (National Environmental Quality Standards) limits in the project's immediate vicinity. Noise levels at daytime ranged between 55–62 dB(A), which complies with NEQS for industrial areas.

Soil samples collected from various points at the site indicated sandy-loam texture, moderate fertility, and neutral pH levels. No heavy metal contamination was detected, indicating that the land is suitable for industrial use.

Groundwater analysis showed the water table at a depth of 25–30 feet. Laboratory testing of bore samples revealed Total Dissolved Solids (TDS) levels of approximately 900 mg/L, and pH levels ranging from 6.8 to 7.2. The quality of groundwater is acceptable for industrial processes with minor treatment and suitable for irrigation purposes post-treatment.

Parameter	Observed Value Range	NEQS/Standard	Compliance Status
Temperature	10°C – 45°C	30°C – 45°C	Within Limit
Rainfall	400–500 mm/year	300–500 mm/year	Within Limit
PM _{2.5}	35 µg/m ³	35 µg/m ³ (24h avg.)	Within Limit
PM ₁₀	60 µg/m ³	150 µg/m ³ (24h avg.)	Within Limit
SO ₂	16 ppb	80 ppb	Within Limit
Noise Level (Day)	55–62 dB(A)	75 dB(A) (industrial)	Within Limit
Soil pH	6.9–7.2	6.5–8.5 (ideal)	Suitable
Groundwater TDS	850–950 mg/L	<1,000 mg/L (industrial)	Suitable (with treatment)

3.2 Baseline Ecological Environment

The ecological assessment of the project site and its surroundings reveals that the area falls within the semi-arid plains of central Punjab, which have experienced considerable anthropogenic modification. Due to historical and ongoing industrial activity in Kasur—especially in leather tanning—the natural ecosystems in this region have been significantly altered. The site itself is currently devoid of any

sensitive or protected ecosystems and is mostly characterized by degraded natural vegetation, open land, and sparse tree cover.

During field surveys, no rare, endangered, or threatened species were identified. The flora consists primarily of xerophytic and ruderal plant species that have adapted to the arid environment and periodic disturbance. The fauna is relatively limited in diversity, consisting mostly of common species of birds, rodents, and domesticated animals. No migratory bird routes, nesting habitats, or ecologically critical sites such as wetlands or forest reserves were recorded within a 5-kilometer buffer zone around the project site.

Despite the degraded status of the ecology, the proposed project includes plans for developing green belts and buffer plantations that will improve local habitat conditions over time and provide refuge for small wildlife species. The introduction of native tree and shrub species will serve to offset ecological losses and enhance biodiversity potential in the long term.

Summary of Existing Flora at the Project Site

Common Name	Scientific Name	Type	Conservation Status
Doob Grass	<i>Cynodon dactylon</i>	Ground Cover	Least Concern
Aak	<i>Calotropis procera</i>	Shrub	Least Concern
Kikar	<i>Acacia nilotica</i>	Tree	Least Concern
Amaltas	<i>Cassia fistula</i>	Tree	Least Concern
Mesquite (Prosopis)	<i>Prosopis juliflora</i>	Invasive Shrub	Invasive (non-native)

Summary of Observed Fauna in and around the Project Site

Common Name	Scientific Name	Type	Observed Frequency
House Sparrow	<i>Passer domesticus</i>	Bird	Common
Common Myna	<i>Acridotheres tristis</i>	Bird	Common
Indian Kite	<i>Milvus migrans</i>	Bird of Prey	Occasionally Observed
Field Rat	<i>Rattus rattus</i>	Rodent	Frequent
Indian Hare	<i>Lepus nigricollis</i>	Mammal	Occasionally Observed
Domestic Goat	<i>Capra aegagrus hircus</i>	Livestock	Very Common

The project does not intersect with any protected ecological zones, wildlife habitats, or natural water bodies, thereby ensuring minimal ecological disruption. Furthermore, the establishment of a plantation management plan will support ecological restoration of the disturbed area, including stormwater detention ponds, shaded corridors, and biodiversity-supportive landscaping.

3.3 Baseline Socioeconomic Environment

The proposed project is situated in Niaz Nagar, District Kasur, which has a mixed rural-industrial character. Kasur is a key leather production hub of Pakistan and is home to hundreds of small and medium-sized tanning units. The baseline socioeconomic profile is characterized by moderate literacy, agrarian livelihoods, and a growing dependence on industrial employment.

According to local surveys and secondary data, the majority of households in the surrounding villages rely on daily wage labor, tanning-related employment, agriculture, and livestock farming. Basic

infrastructure such as paved roads, electricity, and water supply is present in the area, although access to education, sanitation, and healthcare services remains limited in peripheral settlements.

The local community views the proposed project with cautious optimism. During public consultations, residents expressed concerns related to past experiences with pollution from tanneries, particularly water contamination. However, they also acknowledged the need for job creation and appreciated the commitment of M/s Bismillah Tannery to install state-of-the-art pollution control systems, including a wastewater treatment plant (WWTP) and chrome recovery plant (CRP).

Socioeconomic Profile of the Project Area

Parameter	Value/Description
Population Density	Moderate (approx. 400–500 persons/km ²)
Primary Occupations	Tanning labor, agriculture, livestock, daily wages
Literacy Rate	Approximately 55%
Nearest Health Facility	Basic Health Unit (within 2 km), District Hospital (10 km)
Access to Education	Government primary schools and one private academy
Sanitation and Drinking Water	Underground water supply available, no sewerage system
Availability of Electricity	Yes, but with occasional outages
Local Industries	Leather tanneries, agriculture-related businesses
Public Perception of the Project	Supportive, conditional on environmental safeguards

Bismillah Tannery has committed to generating local employment opportunities during both the construction and operational phases. The project will employ approximately 150–200 workers during construction and 100–120 during routine operations, with preference given to local labor. Additionally, vocational training and worker safety programs will be implemented, enhancing community capacity and technical skills in the region.

The project is expected to contribute significantly to local economic development, infrastructure improvement, and regional industrial growth, provided that environmental safeguards are strictly observed and community engagement remains a core operational value.

3.4 Laboratory Reports

Laboratory tests were conducted to establish baseline levels for key environmental parameters. These tests were carried out by an **EPA-certified laboratory** and covered:

- **Air Quality** (PM_{2.5}, PM₁₀, SO₂, NO_x, CO)
- **Noise Levels**
- **Soil Properties** (pH, texture, heavy metals)
- **Groundwater Quality** (pH, TDS, hardness, biological contamination)

All samples were within NEQS limits for industrial development zones, indicating that the site is suitable for the planned activities. Complete laboratory reports, sampling locations, and test certificates are attached in **Annexure** of this EIA report.

3.5 Site Suitability

Based on topographical, environmental, and socio-economic assessments, the site is deemed highly suitable for industrial development. The absence of environmentally sensitive receptors, availability of flat and developable land, and accessibility to transportation and utility infrastructure make it an ideal location for the project.

Furthermore, the site falls within area, where land use is consistent with the proposed leather processing operations. Ground conditions are stable, and water and electricity supply lines are either present or can be extended without significant environmental disruption.

The location also minimizes potential conflict with local residents and complies with EPA Punjab's siting criteria for Schedule II (EIA) projects.

3.6 Conclusion

The environmental baseline study indicates that the project site is free from critical environmental constraints such as endangered habitats, groundwater vulnerability, or protected land uses. The air and water quality, ecological profile, and socio-economic indicators support the feasibility of the project from an environmental and social standpoint. Anticipated impacts can be managed through strict implementation of the proposed Environmental Management Plan (EMP).

Chapter 04: Impact Assessment

4.1 Methodologies for Impact Identification

Baseline Data Collection

Baseline data collection is critical to understanding the existing environmental conditions before project implementation. This ensures accurate impact prediction and helps design appropriate mitigation measures. The following key parameters were studied:

Meteorological Data

Meteorological conditions influence pollutant dispersion and water usage. Data was collected for:

- Temperature: Average, seasonal variations.
- Rainfall: Annual precipitation, monsoon patterns.
- Wind speed and direction: To assess air pollutant dispersal.

Ambient Air Quality

Air quality monitoring was conducted at three locations near the project site:

- Particulate Matter (PM₁₀, PM_{2.5}): From vehicular and industrial sources.
- Gaseous Pollutants (SO₂, NO_x): Emissions from fuel combustion.
- Hydrogen Sulfide (H₂S): Expected from tannery operations.

4.2 Baseline Air Quality Data

Parameter	Location 1 ($\mu\text{g}/\text{m}^3$)	Location 2 ($\mu\text{g}/\text{m}^3$)	Location 3 ($\mu\text{g}/\text{m}^3$)	Permissible Limit (NEQS)
PM ₁₀	85	92	78	150 $\mu\text{g}/\text{m}^3$
SO ₂	12	15	10	120 $\mu\text{g}/\text{m}^3$
NO _x	25	30	22	80 $\mu\text{g}/\text{m}^3$

Groundwater Quality

Samples were collected from bore wells within a 2 km radius to assess:

- pH, Total Dissolved Solids (TDS)
- Heavy Metals (Cr, Pb, Cd)
- Chlorides & Sulfates (indicators of contamination).

4.3 Groundwater Quality Baseline

Parameter	Sample 1	Sample 2	Sample 3	WHO Standard
pH	7.2	7.5	6.9	6.5–8.5
TDS (mg/L)	850	920	780	1000 mg/L
Chromium (Cr) (mg/L)	0.05	0.08	0.03	0.05 mg/L

4.4 Predictive Tools for Impact Assessment

To systematically evaluate impacts, the following methodologies were applied:

Leopold Matrix

A cross-matrix was developed to correlate project activities with potential impacts.

4.5 Leopold Matrix for Key Activities

Project Activity	Impact on Air	Impact on Water	Impact on Soil	Mitigation Measure
Effluent Discharge	–	High (BOD, Cr)	Medium (Leaching)	WWTP, Chrome Recovery
Chemical Storage	Low (VOCs)	–	High (Spills)	Spill containment
Machinery Operation	Medium (Dust)	–	–	Dust suppression

Checklist Method

Used to ensure compliance with Schedule I & II of environmental regulations. Key findings:

- Schedule I: Applies due to industrial wastewater discharge.
- Schedule II: Requires an EIA (not just IEE) for large-scale tanneries.

Stakeholder Consultations

- Local Communities: Expressed concerns about water scarcity.
- Regulatory Bodies: Emphasized zero liquid discharge (ZLD) compliance.

Life Cycle Assessment (LCA)

The project's impacts were analyzed across three phases:

Construction Phase

- Land Disturbance: 10 Kanal site preparation.
- Dust Emissions: Controlled via water sprinkling.
- Labor Influx: Temporary (~50 workers).

4.6 Construction Phase Impacts

Impact	Magnitude	Duration	Mitigation
Dust Generation	Moderate	Short-term	Water spraying, windbreaks
Noise Pollution	Low	Temporary	Restricted work timings

Operational Phase

- Water Use: 1000 m³/day (recycled where possible).
- Waste Generation: 100 tons/day leather scraps (sold to recycling units).

Decommissioning Phase

- Site Restoration: Soil remediation if contaminated.

- Waste Disposal: Safe disposal of chromium sludge.

Checklists

Checklists were developed to ensure comprehensive coverage of potential environmental impacts. These lists prompted consideration of various environmental parameters related to construction, operation, and decommissioning phases.

Environmental Impact Checklist for M/s Bismillah Tannery Limited's Project

Environmental Aspect	Considerations	Potential Impact (Yes/No)
Air Quality	Emissions from construction equipment	Yes
	Emissions from extraction processes	Yes
	Dust generation during construction	Yes
Water Resources	Water usage for extraction processes	Yes
	Potential contamination of local water bodies	Yes
Soil Quality	Soil disturbance during construction	Yes
	Potential contamination from waste disposal	Yes
Biodiversity	Impact on local flora and fauna	Yes
	Habitat disruption during construction	Yes
Noise Pollution	Noise from construction activities	Yes
	Operational noise from machinery	Yes
Socioeconomic Factors	Job creation in local communities	Yes
	Changes in local economic conditions	Yes

4.7 Characteristics of Impacts

The proposed leather processing unit will have a range of environmental and socio-economic impacts, varying in magnitude, duration, and reversibility. Understanding these characteristics is essential for designing effective mitigation strategies and ensuring sustainable project implementation.

Key Environmental Impacts

Water Pollution

The discharge of tannery effluents—containing chromium, sulfides, and organic pollutants—poses a significant risk to local water bodies. Without proper treatment, these contaminants could degrade groundwater quality and harm aquatic ecosystems. The proposed Wastewater Treatment Plant (WWTP) (1000 m³/day capacity) and chrome recovery system (100 m³/day) are critical mitigation

measures. However, long-term monitoring will be necessary to ensure compliance with National Environmental Quality Standards (NEQS).

Air Emissions

The tanning process releases volatile organic compounds (VOCs), hydrogen sulfide (H₂S), and particulate matter (PM). While scrubbers and enclosed processing units will reduce emissions, seasonal variations in wind patterns may influence local air quality. Baseline data indicates that current pollutant levels are below NEQS limits, but operational emissions must be strictly controlled to prevent exceedances.

Soil Contamination

Improper handling of chemicals (e.g., chromium salts, acids) could lead to soil contamination through spills or leaching. The project includes impermeable flooring, spill containment systems, and regular soil testing to minimize risks. Contaminated soil, if detected, will undergo remediation before decommissioning.

Noise Pollution

Machinery operations during construction and production will generate noise, particularly in the project's initial phases. While the impact is temporary, acoustic barriers and restricted work timings will mitigate disturbances to nearby settlements.

Summary of Key Environmental Impacts

Impact Category	Source	Magnitude	Duration	Mitigation Measures
Water Pollution	Effluent discharge (Cr, BOD)	High	Long-term	WWTP, chrome recovery, zero liquid discharge (ZLD)
Air Emissions	VOCs, H ₂ S, PM	Moderate	Continuous	Scrubbers, enclosed units, stack monitoring
Soil Contamination	Chemical spills, leaching	Low-Moderate	Reversible	Impermeable flooring, spill containment
Noise Pollution	Machinery operations	Low	Short-term (construction)	Acoustic barriers, restricted hours

Socio-Economic Impacts

Positive Impacts

The project is expected to generate ~200 direct and indirect jobs, boosting local employment and skill development. Additionally, the tannery's integration into the leather supply chain will stimulate ancillary businesses (e.g., transport, packaging), contributing to regional economic growth.

Negative Impacts

- **Temporary Displacement:** Construction may disrupt nearby residents, though no permanent relocation is required.

- **Increased Traffic:** Raw material transport could strain local roads, necessitating traffic management plans.
- **Resource Competition:** Water demand (1000 m³/day) may stress local supplies, requiring sustainable sourcing agreements.

Socio-Economic Impact Assessment

Impact Type	Description	Significance	Management Strategy
Employment	200 jobs (skilled/unskilled)	High (+)	Priority hiring for locals, training
Traffic	Increased vehicle movement	Moderate (-)	Dedicated transport routes, off-peak hours
Water Use	Groundwater extraction (1000 m ³ /day)	High (-)	Rainwater harvesting, recycling

4.8 Cumulative Impacts

The project's interaction with existing tanneries in Kasur could exacerbate regional environmental stresses:

- **Groundwater Depletion:** Multiple industries extracting water may lower aquifer levels.
- **Pollution Load:** Combined effluent discharge risks overwhelming natural degradation capacity.
- **Land Use Changes:** Industrial clustering may reduce agricultural land availability.

Mitigation Strategies:

- **Collective Effluent Treatment:** Advocate for a shared industrial WWTP.
- **Water Audits:** Mandate periodic assessments for sustainable usage.
- **Stakeholder Collaboration:** Engage with other industries to align sustainability goals.

Conclusion

The impact assessment reveals that while the project poses environmental risks (notably water and air pollution), proposed mitigation measures—such as the WWTP, chrome recovery, and emission controls—can effectively manage these impacts. Socio-economic benefits, particularly job creation, outweigh short-term disruptions, provided robust monitoring and community engagement are maintained. Cumulative impacts require regional cooperation to ensure long-term sustainability.

Chapter 05: Environmental Management and Monitoring Program

5.1 Introduction

Purpose of the EMMP

The Environmental Management and Monitoring Program (EMMP) is designed to systematically minimize, mitigate, and monitor the environmental and social impacts of the proposed leather processing unit. It ensures compliance with national regulations (e.g., NEQS, Pakistan Environmental Protection Act) and international best practices.

Key Objectives

1. Mitigate adverse impacts (air, water, soil, noise).
2. Monitor compliance with regulatory standards.
3. Enhance sustainability through adaptive management.
4. Engage stakeholders (communities, regulators) for transparency.

5.2 Phases of the EMMP

Different Phases of EMP

Phase	Activities
Pre-construction	Baseline monitoring, EMP finalization, contractor training.
Construction	Dust/noise control, spill prevention, labor camp management.
Operation	Effluent treatment, air emission monitoring, waste recycling.
Decommissioning	Site restoration, hazardous waste disposal, post-closure monitoring.

Dynamic and Adaptive Approach

The EMMP will be reviewed quarterly to incorporate new data, stakeholder feedback, and technological advancements. Corrective actions will be implemented if monitoring identifies deviations.

5.3 Description of Proposed Mitigation Actions

Mitigation for Air Quality Impacts

Sources: VOC emissions (tanning), PM (machinery), H₂S (chemical processing).

Measures:

- Scrubbers & Filters: Installed on exhaust stacks to capture particulate matter and gases.
- Enclosed Processing Units: Minimize fugitive emissions.
- Real-Time Air Quality Sensors: Monitor PM_{2.5}, PM₁₀, SO₂, NO_x at facility boundaries.

Air Quality Mitigation Plan

Parameter	Control Technology	Monitoring Frequency	Performance Target
PM~10~	Baghouse filters	Continuous	< 150 µg/m ³ (NEQS)
H ₂ S	Chemical scrubbers	Weekly	< 5 ppm (OSHA)
VOCs	Activated carbon adsorption	Monthly	< 20 mg/m ³ (EPA standards)

5.4 Schedule for Implementation

EMMP Implementation Timeline

Activity	Responsible Party	Start	Completion
Install WWTP	Bismillah Tannery	Month 1	Month 6
Air quality sensors setup	Environmental Consultant	Month 2	Month 3
First stakeholder workshop	Project Manager	Month 4	Month 4
Baseline groundwater testing	Third-party lab	Month 1	Month 2

5.5 Environmental Management Team (EMT) and Responsibilities

Core Team:

1. Environmental Manager (Overall EMP compliance).
2. EHS Officer (Daily monitoring, incident reporting).
3. Process Engineer (Optimize resource use).
4. Community Liaison Officer (Stakeholder engagement).

Environmental Management Team (EMT) Roles and Responsibilities

Role	Key Responsibilities	Authority	Reporting Frequency	Key Performance Indicators (KPIs)
Environmental Manager	- Oversee EMP implementation and compliance with regulations.	- Approve mitigation measures. - Halt non-compliant activities.	Monthly	- 100% EMP adherence. - Timely submission of audit reports.
	- Review monitoring data and audit reports.			
	- Liaise with regulatory bodies (e.g., EPA).			

EHS Officer	- Conduct daily site inspections (spills, emissions, waste handling).	- Issue corrective action notices. - Conduct worker training.	Weekly	- Zero unresolved violations. - 100% worker training completion.
	- Maintain incident logs and emergency response plans.			
Process Engineer	- Optimize water/chemical use to reduce waste.	- Modify processes to meet environmental targets.	Bi-weekly	- 10% annual reduction in resource use. - Zero process deviations.
	- Ensure chrome recovery plant operates at >90% efficiency.			
Community Liaison Officer	- Address grievances from local communities.	-Organize stakeholder consultations.	Monthly	- 100% grievance resolution within 30 days. - Quarterly public meetings held.
	- Disseminate EMP updates in local languages.			
Third-Party Auditor	- Verify EMP effectiveness through independent audits.	- Recommend EMP upgrades. - Validate monitoring data.	Quarterly	- 100% audit completion on schedule. - No major non-conformities.

5.6 Proposed Monitoring Program

Monitoring Parameters

- Air: PM, SO₂, NO_x, H₂S.
- Water: pH, BOD, Cr levels, TDS.
- Noise: dB levels at facility boundary.

5.7 Performance Indicators

Key Performance Indicators (KPIs)

KPI	Target	Measurement Method
Effluent Cr < 1 mg/L	100% compliance	Lab analysis (daily)
Air emissions within NEQS	95% of readings	Continuous sensors
Zero chemical spills	100% prevention	Incident logs

5.8 EMP Reporting and Review Procedures

1. Monthly Reports: Summarize monitoring data, incidents, corrective actions.
2. Quarterly Audits: Independent review by third-party consultants.
3. Annual Review: Update EMP based on performance, new regulations.

The EMMP provides a structured, enforceable framework to ensure environmental sustainability. With clear mitigation measures, monitoring protocols, and accountability mechanisms, the project aims to balance industrial growth with ecological protection.

Environmental Management and Monitoring Plan (EMMP)

Environmental Aspect	Mitigation Measure/Management Action	Monitoring Parameter	Monitoring Frequency	Responsible Party	Reporting
Air Quality	Use recycled tannery water for dust suppression. Install scrubbers for chemical fume control.	PM10, PM2.5 (PEQS: $\leq 150 \mu\text{g}/\text{m}^3$). Chromium (Cr) aerosols in worker zones.	Construction: Weekly. Operation: Monthly (bi-monthly near communities).	Environmental Officer CETP Operator	Internal monthly report. Annual audit shared with Punjab EPA.
Water Quality	Install CETP with chromium recovery. Recycle 60%+ process water via reverse osmosis.	BOD, COD, TSS, pH (PEQS). Total chromium ($\leq 0.05 \text{ mg}/\text{L}$) in discharge.	Construction: Monthly. Operation: Weekly (effluent); Monthly (groundwater).	Water Treatment Operator Third-party Lab	Monthly effluent reports to EPA. Public disclosure of groundwater data.
Noise Pollution	Install noise barriers around machinery. Ban nighttime construction near residential zones.	Noise levels ($\leq 75 \text{ dB}$ daytime; $\leq 65 \text{ dB}$ nighttime, PEQS).	Construction: Weekly. Operation: Monthly.	Site Supervisor Environmental Consultant	Internal monthly report. Community grievance logs.

Waste Management	Segregate chromium sludge; store in lined landfills. Sell biodegradable waste to farmers.	Chromium sludge volume. Waste recycling rate.	Construction: Weekly. Operation: Daily (hazardous waste).	Waste Management Team Hazardous Waste Contractor	Quarterly hazardous waste disposal certificates. Annual audit.
Soil Quality	Use impermeable liners under chemical storage. Remediate chromium-contaminated soil.	Soil Cr levels (≤ 40 mg/kg, WHO). pH, organic matter.	Construction: Monthly. Operation: Annually.	Soil Scientist Environmental Officer	Annual soil quality report shared with communities.
Ecosystem & Biodiversity	Preserve existing trees (e.g., Sheesham). Plant Neem trees as green buffers.	Flora/fauna diversity in 1km radius. Tree survival rate.	Pre-construction: Baseline survey. Post-construction: Annually.	Environmental Consultant NGO Partner	- Biodiversity impact assessment report.
Health & Safety	Mandate PPE (gloves, masks, boots). Quarterly health screenings for chromium exposure.	Worker blood chromium levels. Accident frequency.	Construction: Daily (safety checks). Operation: Monthly.	Health Officer Occupational Safety Advisor	Monthly health reports. Incident logs shared with labor department.

Energy Consumption	Shift to biogas from tannery waste. Install solar panels for non-process energy.	Energy use (kWh/ton leather). % renewable energy.	Construction: Monthly. Operation: Quarterly.	Energy Manager Sustainability Officer	Annual carbon footprint report.
Chemical Handling	Label chromium chemicals per GHS. Train workers in spill response.	Chemical spill incidents. Inventory of Cr-based chemicals.	Construction: Monthly. Operation: Weekly.	Safety Officer CETP Supervisor	Spill incident reports to EPA within 24 hours.
Traffic & Transportation	Designate truck routes away from schools. Enforce speed limits (20 km/h near communities).	Traffic congestion. Vehicle emission levels (PEQS).	Construction: Monthly. Operation: Quarterly.	Traffic Manager Local Police Liaison	Quarterly traffic impact report.
Community Engagement	Monthly grievance meetings. Fund mobile health camps for skin/respiratory ailments.	Number of complaints. Community participation in meetings.	Construction: Weekly. Operation: Monthly.	Community Liaison Officer CSR Manager	Publicly accessible grievance redressal logs.

<p>Sustainability & CSR</p>	<p>Train locals in eco-friendly tanning.</p> <p>Support community water filtration projects.</p>	<p>% of local workforce employed.</p> <p>Number of community clean water initiatives.</p>	<p>Construction: Quarterly.</p> <p>Operation: Annually.</p>	<p>CSR Manager NGO Partner</p>	<p>Annual CSR report published on website.</p>
<p>Regulatory Compliance</p>	<p>Align with Punjab EPA, NEQS, and WHO chromium standards.</p> <p>Third-party audits.</p>	<p>Non-compliance incidents.</p> <p>Audit results.</p>	<p>Construction: Quarterly.</p> <p>Operation: Bi-annually.</p>	<p>ENV Manager Legal Advisor</p>	<p>Compliance certificates submitted to Punjab EPA.</p>

5.9 Key Notes for Bismillah Tannery

Chromium-Centric:

- Priority on chromium monitoring in waters and soil.
- CETPs with chromium recovery systems mandatory for all tanneries.

Community Health:

Mobile health camps and public disclosure of groundwater/soil data to rebuild trust.

Local Ecology:

Use native trees (Sheesham, Neem) for erosion control and pollution absorption.

Reporting Transparency:

Share critical data (effluent quality, soil tests) with communities via town halls.

Enforcement:

- Penalties for non-compliance with PEQS, especially chromium discharge limits.
- This plan addresses Kasur's unique environmental and social challenges while aligning with Pakistan's regulatory framework.

Chapter 06: Stakeholders Consultation

Stakeholder consultation is a critical part of the Environmental Impact Assessment (EIA) process for any project. For the proposed project by M/S Bismillah Tannery, a series of consultations were held with various stakeholders from the local community, government agencies, and other relevant groups to gather their feedback on the project's potential social, economic, and environmental impacts. The consultations aimed to provide a platform for stakeholders to voice their concerns, suggestions, and expectations regarding the project.

6.1 Methodology of Consultation

The EIA team conducted public consultations through group meetings and individual discussions. A Comprehensive questionnaire was developed in order to conduct the survey. The primary focus was to engage local communities and gather their perspectives on the establishment of the facility, its potential benefits, and any concerns related to environmental impacts. The consultations targeted stakeholders including local residents, government officials, and business owners from the surrounding area. Public discussions were held at various locations near the project site, and stakeholders from local communities, educational and health institutions, shops, and other facilities were consulted. The team also made initial visits to the project site and held reconnaissance meetings to understand the local context better.

6.2 Stakeholder Identification

A three-tier approach was adopted for stakeholder identification, which considered the various levels at which stakeholders could be impacted by the project. The stakeholders were classified at the provincial level (e.g., Environmental Protection Agency (EPA), Agriculture Department, Wildlife Department), district level (e.g., local government bodies), and village level (e.g., local residents, shopkeepers, school representatives, etc.). The consultations continued throughout the project lifecycle, ensuring that feedback was integrated into the environmental management plan. Regular engagement with these stakeholders is crucial to maintain transparency and responsiveness to their concerns.

6.3 Proponent's Environmental Management Team

M/s Bismillah Tannery management assured that all necessary mitigation measures would be implemented to minimize any potential environmental impacts during the construction and operation phases of the project. The proponent's Environmental Management Team will oversee the adoption of these measures, including maintaining the aesthetics of the area and addressing concerns related to environmental degradation.

6.4 Responsible Authority

The responsibility for overseeing the implementation of the proposed mitigation measures lies with the management of M/s Bismillah Tannery. The company is committed to adhering to all environmental regulations and ensuring that the project's impact on the surrounding community and the environment is minimized.

6.5 Other Departments and Agencies

For the impact analysis, detailed meetings were held with local community leaders, educational institutions, health facilities, and NGOs. These discussions helped identify key issues related to the project and its potential effects. All relevant concerns were incorporated into the Environmental Management Plan to ensure a holistic approach to mitigating the project's impacts.

6.6 Environmental Practitioners and Experts

The team of environmental consultants from M/s Pak Green Enviro-Engineering Pvt. Limited. conducted site visits and consultations with stakeholders from nearby villages. They gathered information on the socio-economic impacts of the project and incorporated feedback from different professionals, including local business owners, farmers, teachers, and health professionals. The consultations with women were also conducted, although some hesitated to provide personal information due to social constraints.

6.7 Affected and Wider Community

No specific community was found to be directly affected by the project within the study area. The consultations with the local population revealed a general positive response toward the project. Stakeholders emphasized that the project could bring tangible benefits, such as job creation and local development, while ensuring that mitigation measures were taken to preserve the environment.

6.8 Consultation Findings

The results from the consultation meetings with stakeholders indicate a strong overall support for the project. The local community members expressed positive feedback regarding the project's potential to bring socio-economic benefits to the area, particularly in terms of employment opportunities and business growth. Many respondents felt that the construction of the project would improve the local infrastructure, contribute to social mobility, and increase the importance of the area.

However, there were also concerns raised regarding the potential environmental impacts, especially in relation to the potential effects on the area's aesthetic value and the environment. Some participants were worried about the impact on the scenic beauty of the area, but the project proponents assured that mitigation measures, such as land reclamation and maintaining the aesthetics of the area, would be implemented to address these concerns.

6.9 Stakeholder Feedback

The responses from stakeholders, summarized below, provide a more detailed picture of their views: Sample Size 20 sample size was selected by the Team of consultants for conducting the socioeconomic survey. Women were also consulted for the said survey; some of their names are mentioned in the above list of respondents while most of them were not willing to give personal information.

6.10 Statistical Analysis

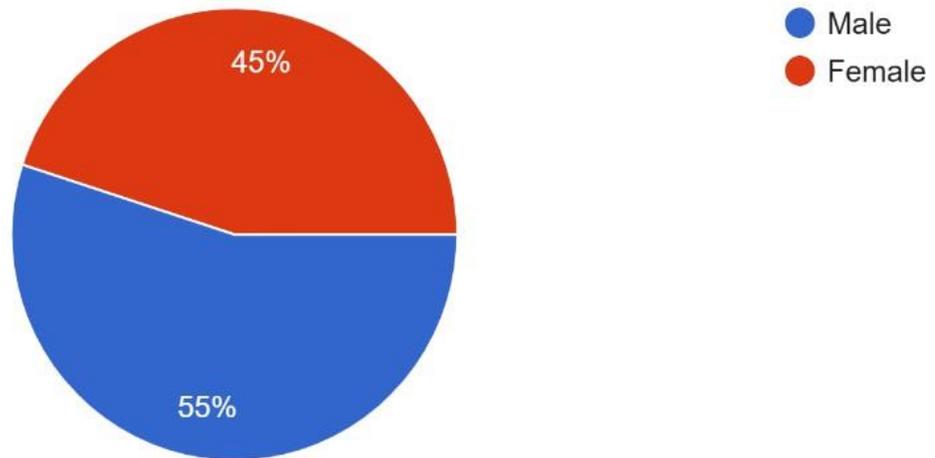
Two Different statistical software excel and SPSS have been used for the statistical analysis of the data collected during the visit of study site villages through questionnaires.

6.11 Results and Discussion

The consultations involved 20 respondents, including both 11 male and 9 female participants.

Gender

20 responses



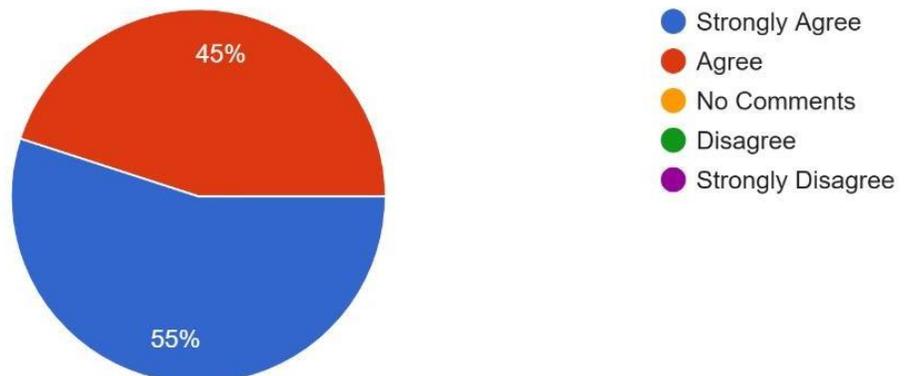
6.12 Respondents

Project Support and Importance

The majority of the respondents (11), both male and female, expressed strong support for the project. Most (9) agreed that the construction of the facility would increase the importance

Are you in favor of the proposed construction?

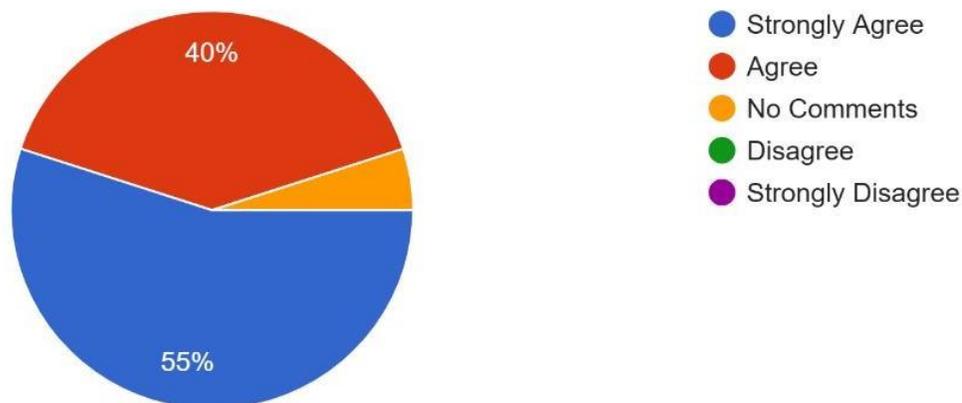
20 responses



of the area, contributing to its overall growth and development. Participants were optimistic about the project's potential to raise the profile of the local community and enhance its standing within the region. The support for the project reflected a shared belief that it would bring significant benefits to the community.

Will the project increase the importance of the area?

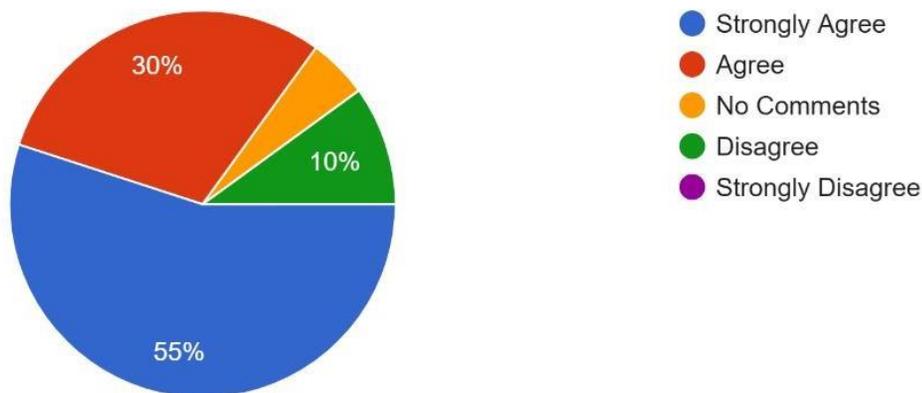
20 responses



Improvement of Living Standards

While many respondents believed that the project would improve the living standards of the area, a few raised concerns. Will the project help to improve the living standards of the area?

20 responses



Approximately, 17 respondents strongly agreed

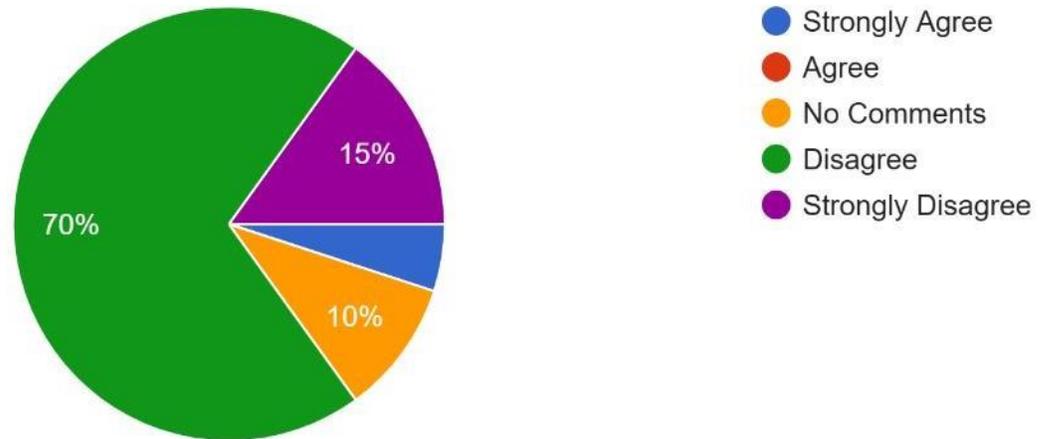
or agreed that the project would result in better infrastructure, more employment opportunities, and improved services, which could enhance the overall quality of life. However, 3 individuals disagreed, possibly due to concerns over potential negative environmental impacts or uncertainties about the project's long-term benefits. Despite these reservations, the majority of the community seemed confident that the project would lead to better economic prospects.

Environmental Impact Concerns

When asked about the environmental impact of the project, responses were varied. 14 respondents strongly disagreed and 3 disagreed that the project would have any negative effect on the environment, 1 showed concern regarding its potential to disrupt area's aesthetic value. 2 responders were neutral and given no comments.

Will the project affect the environment of the area?

20 responses

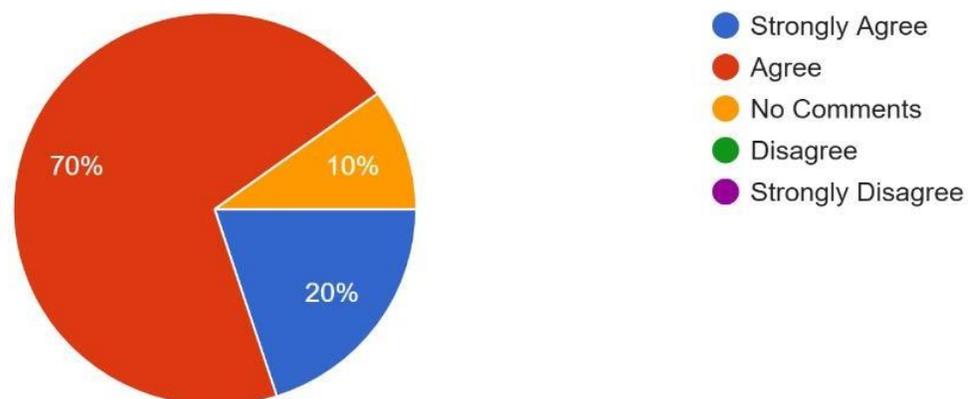


Satisfaction with the Project

In terms of satisfaction, a substantial number of participants expressed their contentment with the project and its potential benefits. 18 respondents indicated their approval, citing the job creation and economic growth the project would bring. Their positive outlook on the project reflected their anticipation of tangible improvements in their community. However, 2 individuals, were neutral regarding the project satisfaction.

Level of satisfaction?

20 responses



Conclusion

The stakeholder consultation process for the M/s Bismillah Tannery project demonstrated strong support for the initiative from the local community, with a clear recognition of its potential to boost the area's economic development. While environmental concerns were noted, the project proponents have committed to implementing mitigation measures to address these issues and maintain local aesthetic and environmental values. Continuous engagement with stakeholders throughout the project's lifecycle is crucial to ensure that any emerging concerns are promptly address

Chapter 07: Conclusion and Recommendations

7.1 Conclusion:

Bismillah plays a pivotal role in Pakistan's economy, providing employment, sustaining livelihoods, and contributing significantly to leather exports. However, this economic boon comes at a steep environmental and social cost. The unchecked discharge of toxic effluents, laden with heavy metals like chromium, has led to severe water and soil contamination, endangering ecosystems and public health. Local communities and workers face heightened risks of respiratory ailments, skin diseases, and long-term chronic conditions due to exposure to hazardous chemicals. Despite existing environmental regulations, weak enforcement, outdated infrastructure, and reliance on unsustainable practices perpetuate these challenges. The situation underscores a critical trade-off between industrial growth and environmental stewardship, demanding urgent, multi-stakeholder intervention to reconcile economic objectives with ecological and social well-being.

7.2 Recommendations

To address these challenges, the following measures are proposed:

1. Infrastructure Modernization:

- Install centralized effluent treatment plants (CETPs) and mandate tanneries to adopt chrome recovery systems to reduce chemical waste.
- Promote water recycling technologies to minimize freshwater consumption and effluent discharge.

2. Regulatory Strengthening:

- Revise and enforce stringent effluent quality standards, aligned with international norms (e.g., WHO, EPA).
- Establish real-time monitoring systems and impose penalties for non-compliance to ensure accountability.

3. Worker and Community Safeguards:

- Enforce occupational safety protocols, including PPE provision, regular health screenings, and training on chemical handling.
- Launch community awareness campaigns on pollution-related health risks and safe water practices.

4. Sustainable Practices Incentivization:

- Offer tax breaks, subsidies, or low-interest loans to tanneries adopting eco-friendly technologies (e.g., vegetable tanning, biodegradable chemicals).
- Encourage eco-certification (e.g., Leather Working Group) to enhance market access and premium pricing.

5. Research and Collaboration:

- Invest in R&D for cleaner production methods and circular economy models (e.g., waste-to-

energy, byproduct upcycling).

- Foster public-private partnerships to pool resources for infrastructure projects and skill development programs.

6. Stakeholder Engagement:

- Engage NGOs and international agencies (e.g., UNIDO, World Bank) for technical/financial support and independent monitoring.
- Facilitate dialogue between tanneries, communities, and policymakers to build trust and collaborative solutions.

Transforming Bismillah tannery into a sustainable industry requires balancing economic viability with environmental and social responsibility. By prioritizing innovation, regulation, and inclusive engagement, Kasur can emerge as a model for ethical leather production, ensuring prosperity for current and future generations.