PLEASE Project
Plastic Free Rivers and Seas for South Asia

South Asia Co-operative Environment Programme (SACEP) Plastic free Rivers and Seas for South Asia (P171269)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) OF RECYCLING FACILITY - LAHORE

GRANTEE: ISP - PAKISTAN

Implemented by: SACEP
Supported by: UNOPS
Supported by: WORLD BANK GROUP

Environmental and Social Management Plan (ESMP)
Recycling Facility - Environmental and Social Management Plan (ESMP)
Recycling Facility - Lahore - ISP

1. Subproject Information

Subproject Title:	Trash has Value – Recycling plastic waste to Eco green Tiles/Bricks
Estimated Cost:	870,000 USD
Start/Completion Date:	20 Jan 2025 – 31 May 2025

2. Site/Location Description

Proposed Location Overview:

The Eco Bricks Production Facility is near Gate No. 02 of Sundar Industrial Estate, along Main Sundar Raiwind Road, Lahore. This location has been carefully selected to ensure operational efficiency, minimal environmental and social impact, and proximity to critical infrastructure.

The site has been secured through a rental/lease agreement with the original owners, enabling the establishment and operation of the ECO Bricks Production Facility. The agreement is provided in **Annex A**. The premises include pre-existing infrastructure comprising office space, a production hall, and a storage area, totaling approximately 12,000 square feet. These facilities have been evaluated and deemed suitable for operations, as verified by the stability certificate attached in **Annex B**. The land has been fully vacated by the previous occupants and is now under the possession of ISP Environmental Solutions for immediate setup and commencement of activities.

Site Climate Condition:
The project site, located near Sundar Industrial Estate in Lahore, experiences a semi-arid climate with the following characteristics:

- Summer (May–August): Hot and dry, with temperatures ranging from 40°C to 45°C (104°F to 113°F).
- Monsoon (July–August): Brief rainfall providing temporary relief from the heat.
- Winter (December–February): Mild and foggy, with temperatures between 5°C and 12°C (41°F to 54°F).
- Spring and Autumn: Pleasant transitional periods with moderate temperatures.
- Smog: A recurring issue during late autumn and winter due to industrial and vehicular emissions.

The precise coordinates of the site are 31° 17' 11.69"N latitude and 74° 11' 31.69"E longitude.

Geographic Context:

The proposed Eco Bricks Production Facility is situated on a 22-kanal plot (approximately 2.75 acres) near Sundar Industrial Estate Gate No. 2. Out of this area, approximately 7500 square feet would be allocated for the construction of the Eco Bricks facility.

The site is strategically located near Raiwind Road, a major arterial route approximately 8 meters wide, ensuring seamless vehicular access with minimal risk of traffic congestion. Its proximity to major transportation networks, such as the Lahore Ring Road and Multan Road, ensures efficient logistics for the movement of raw materials and the distribution of finished products.

Map 1 Location of the proposed site, Coordinates: 31.286581, 74.192134.

Surrounding Area

The proposed Eco Bricks Production Facility is located within the Sundar Industrial Estate, a well-planned industrial zone situated on Raiwind Road, Lahore. The estate is known for its diverse range of industries, modern infrastructure, and accessibility to major transportation networks.

- North:

  To the north of the site, there are several operational factories and warehouses that are part of the industrial estate. The area is characterized by paved roads and utility infrastructure, facilitating smooth movement of goods and services. Approximately 2 kilometers further north lies the Lahore Ring Road, providing excellent connectivity to the rest of Lahore and nearby cities.

- South:

  The southern boundary of the site features additional industrial units, as well as open spaces designated for future industrial development. The Sundar Industrial Estate management office and support facilities are located in this direction, ensuring administrative support for businesses operating in the area.

- East:

  Towards the east, the site is bordered by more industrial units and green belts that act as buffers between different zones within the estate. Beyond the estate, residential colonies such as Bahria Orchard and Lake City are located approximately 5–7 kilometers away, ensuring that the industrial activities do not interfere with residential life.
- West:

  The western side of the site is adjacent to internal roads of the industrial estate, providing direct access to Raiwind Road, which connects the estate to central Lahore. Approximately 3 kilometers west of the site lies the Canal Road, another key arterial route that supports transportation and logistics.

Social Context:

The site is located within an industrial zone, eliminating the risk of displacement or adverse social impacts. The land was previously vacant, with no existing livelihoods or activities disrupted by the project. The facility will create employment opportunities for local industrial workers, contributing positively to the local economy.

Landmarks and Communities

- Landmarks:
  - Sundar Industrial Estate Main Gate (1 km from the site).
  - Raiwind Road (adjacent to the estate).
  - University of Lahore (approximately 12 km away).
- Communities:
  - Small settlements are located approximately 5 km from the site.
  - Commercial areas, including shops and small businesses, are present along Raiwind Road.

Ecological Context:

The proposed project site has no significant flora or fauna, apart from occasional small bushes and weeds. However, green belts along the roadside host native species such as Shisham (*Dalbergia sissoo*), Neem (*Azadirachta indica*), and Kikar (*Acacia nilotica*). Faunal species observed in the vicinity include the Indian Peafowl (*Pavo cristatus*) and House Sparrows (*Passer domesticus*).

The **soil** at the proposed project site is predominantly alluvial, consisting of silt, sand, and clay. The area has a safe allowable bearing capacity of approximately 1.5 tons per square foot (Tsf), making it suitable for industrial construction. The soil is moderately permeable, ensuring effective drainage during heavy rainfall. The groundwater table is located at a depth of 8–10 feet, which is typical for the region.

The topography of the proposed site is a flat terrain with an elevation of 213 meters (699 feet) above sea level. The land's flat topography is ideal for construction, requiring minimal grading. The

area is free from flooding risks, due to the well-designed and efficient drainage system within the industrial estate.

The surrounding environment demonstrates no significant ecological sensitivity, with no forests, biodiversity hotspots, fisheries, or critical habitats for endangered species identified in the vicinity. The land use in the area is predominantly industrial, aligning with the character of Sundar Industrial Estate, where the site is located. Vegetation consists primarily of drought-tolerant and resilient native species, with overall biodiversity remaining low due to the industrial nature of the region.

Moreover, the site has obtained the necessary Environmental Approval from the EPA Punjab Lahore which is enclosed in **Annex.**

Current Land Use and Land Ownership

The site, secured through a rental/lease agreement with the original owners **(Annex A)**, includes 12,000 square feet of pre-existing infrastructure comprising office space, a production hall, and a storage area. The facilities, verified as suitable for operations **(Annex B)**, have been vacated and are now under ISP Environmental Solutions' possession for immediate setup and operations.

Electric Supply: WAPDA (Pakistan Water & Power Development Authority) provides power to the area, ensuring an uninterrupted electricity supply

Impact on Livelihood: The land was vacant before the execution of Rental/ Lease agreement therefore there is no impact on the existing livelihood.

Timeline:

The proposed timeline for the project should take into account potential seasonal impact. From May to September, it is hot, with temperatures often exceeding 40°C (104°F), while monsoon rains provide brief relief in July and August. Winters, from December to February, are mild and foggy, with temperatures dropping as low as 5°C (41°F). Spring and autumn are brief transitional periods with pleasant weather. The area also experiences Smog, which is a recurring issue during late autumn and winter due to pollution.

3. Subproject Description and Activities

3.1 The objectives of the project are as follows:

1. Advocacy, mobilization, and capacity building for preserving life below water.

2. Installing a reverse vending machine linked to a reward app (Sustainable Savings- Trash to Cash) and effectively collecting plastic waste adjacent to the Ravi River in order to establish a circular economy approach.
3. Responsible consumption and production by redesigning plastic waste for innovative infrastructure.
4. Creation of partnerships for actions on plastic-free rivers and seas.

3.2 The project aims to target the above objectives through the following major activities:

1.1.1 Creation and Utilization of Digital Platforms for Advocacy
1.1.2 Implementing Outreach Campaigns using traditional platforms.
1.1.3 Building Partnerships and Networks through Collaborations and Networking Events
1.2.1 Empowering Communities through Education and On ground Training
1.2.2 Enhancing Environmental Awareness through Community Partnerships
1.3.1: Developing Specialized Training Programs and Leadership Workshops with stakeholders.
1.3.2: Fostering Collaborative Partnerships and Engagements with Diverse Community Groups
2.1.1: Land Rental / Production Facility
2.1.2: Installation and Setup of Eco-Bricks Production Equipment and Collection of waste
2.2.1 Quality Assurance and Market Expansion
2.2.2: Innovation, Research, and Industry Engagement
3.1.1: Implementation of Reverse Vending Machine for Sustainable Waste Management
3.1.2: Development and Launch of Mobile Application for Enhanced User Experience
3.2.1 Stakeholder Engagement and Coordination for Plastic Waste Collection
3.2.2: Empowering Waste Pickers and Establishing Sustainable Collection Practices
4.1.1: Plastic waste reduction by proposing policy reforms.
4.1.2: Advocating finding and bottlenecks with academia for continuous research and solutions.
4.2.1 Facilitating Knowledge Exchange and Professional Networking
4.2.2: Enhancing Engagement and Collaboration Through Expert-Led Initiative

3.3 Production Facility:

3.3.1 Activities related to the Construction of the Production facility:

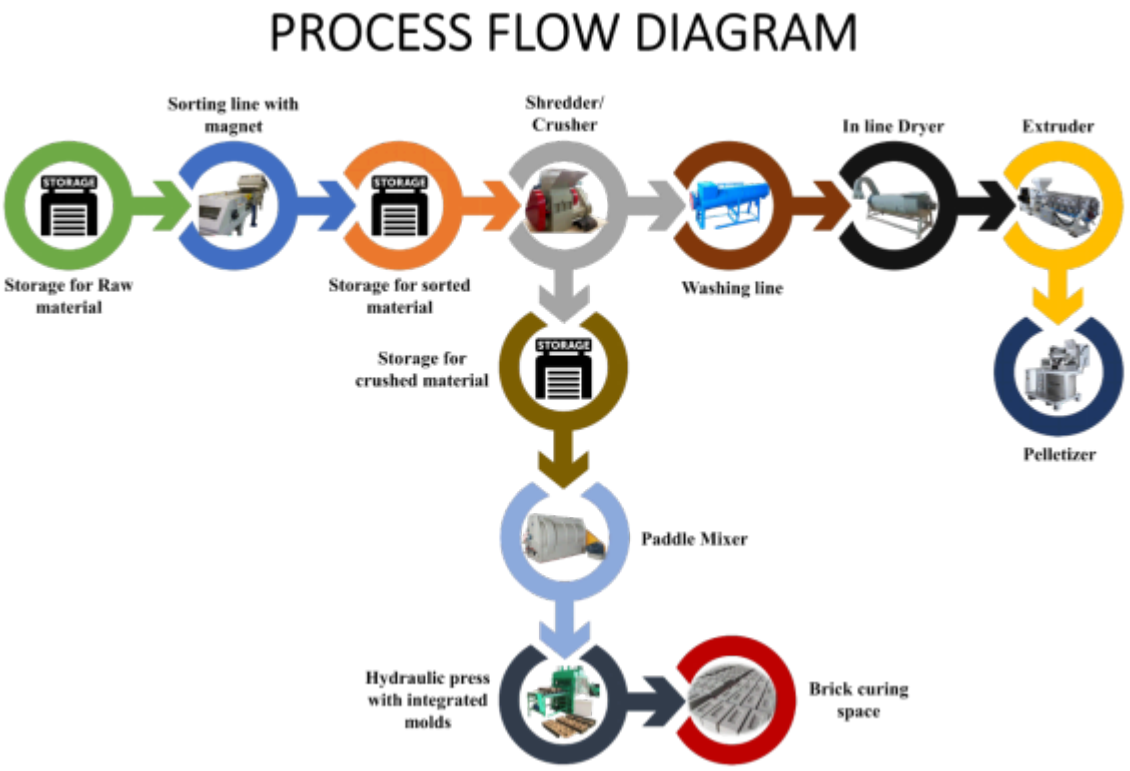
- **Excavation and Land Grading:** This involves clearing the site of debris and unwanted vegetation (wild bushes and grass), excavating soil, and leveling the land to create a stable, even surface for the foundation. It ensures proper water drainage and stability for construction.
- **Operation of Heavy Machinery:** Heavy machinery like bulldozers, excavators, and loaders is used for land leveling, trenching, and transporting materials. It accelerates site preparation and construction by reducing manual labor.
- **Concrete Pouring and Tool Use:** Concrete is mixed, poured, and leveled using tools like vibrators and trowels to ensure even distribution and proper curing. This step is essential for the foundation and structural components.

- **Foundation Laying:** Involves digging trenches and pouring concrete with reinforcements to create a stable base for the building. It provides the necessary structural stability and prevents settling.
- **Bricklaying and Masonry:** Bricks are laid in mortar to construct walls, ensuring alignment and durability. Reinforcements like lintels and arches may be added for additional support.
- **Roof Installation:** Roof trusses are assembled, and roofing materials like metal sheets or concrete are applied, ensuring the building is weatherproof and energy-efficient.
- **Electrical and Plumbing Installations:**This includes setting up water pipelines, drainage systems, and electrical wiring to ensure operational functionality and compliance with safety standards.
- **Painting and Surface Finishing:** Paint, plaster, or other finishing materials are applied to walls and ceilings, enhancing the building's aesthetics and providing protective coatings.

3.3.2 Operation of the Production facility

The proposed production facility will serve as a processing unit for the production of Eco Bricks and the recycling of plastic into Plastic Pallets. The production of eco-friendly bricks involves several key steps: collecting, sorting, and cleaning plastic waste, shredding the plastic into small pieces, and mixing it with materials like river sand, fly ash, pumice stone, crushed stone etc. using a high-shear mixer and shredded low-grade plastic waste. The blended mixture is then directly molded into brick shapes using hydraulic presses. Once molded, the bricks are cooled and cured, either in open air or controlled curing chambers, to ensure strength and durability. These bricks offer a sustainable alternative to traditional materials by repurposing waste plastic and reducing environmental impact. Essential equipment for the facility includes a sorting table, plastic shredders, washer, dryer, paddle mixers, extruder, and hydraulic presses, each designed to optimize the process for efficiency and quality.

Other than the production of ECO Bricks the process of Plastic Palletization will also take place within the facility to ensure the sustainability of the business in the longer run.This process involves washing the shredded plastic, drying it using a dryer, and then extruding it to form plastic pellets (Layout Plan of the facility has been attached as an (**Annexure C)**. The following figure shows a description of the process flow.



3.3.3 Energy Requirement

The project necessitates upgrading the existing transformer of 50 kV to 200 kV to adequately meet the energy requirements of the plant without any change to the existing transmission lines.To facilitate this upgrade, the Water and Power Development Authority (WAPDA) will be engaged to process a load extension request by the contractor. However, this activity does not pose any environmental or social impacts.

This load enhancement shall be the responsibility of the contractor who shall be made liable for the same in the contract to envision safe handling and transportation of the equipment and ensure policy guidelines and adherence to local laws within 2 weeks of the award of the contract. Additionally, this upgrade will contribute to energy efficiency and savings by reducing energy losses associated with outdated transformers present at site and shall ensure optimal power distribution to the plant, thereby supporting sustainable energy management practices.

Furthermore, the contractor will be required to implement energy-saving measures during the construction and operation phase of the project. This includes using energy-efficient equipment, minimizing idle times, and adopting renewable energy sources where applicable. Preventive maintenance of machinery will be ensured to optimize performance, while automation systems and energy-efficient motors will be utilized during operations.

3.4 Communication

As part of stakeholder engagement and transparency efforts, a project site board will be installed at the location to provide key information about the project, including its purpose, responsible entities, timelines, and the Grievance Redress Mechanism (GRM) for addressing concerns. Additionally, banners will be placed along nearby roads to enhance visibility and ensure effective communication with the local community and stakeholders about the ongoing development and available channels for submitting feedback or grievances. These measures aim to foster awareness, facilitate smooth project implementation, and ensure community concerns are addressed promptly.

3.5 Land-Related Impacts.

The land for the project is rented by **ISP Environmental Solutions** under a formal rental agreement for a **22 Kanal** plot located at **Sundar Raiwind Road**, near **Sundar Industrial Estate Gate No. 2, Lahore**.
The rental arrangement grants ISP Environmental Solutions the right to use the land for the duration of **15-09-2024 to 15-09-2027**, while the ownership remains with the landlord. The location, within an industrial zone away from residential areas, ensures there will be no disruption to surrounding access. The agreement includes provisions for proper maintenance, security, and responsible land use throughout the project. Detailed Rental/ Lease Agreement is attached at **Annex A.**

3.6 Labor Requirements:

The total skilled and unskilled labor required for the construction and operational phases are presented below.

Skilled and unskilled labor for the Construction Phase.

ACTIVITIES	SKILLED	TOTAL	NON-SKILLED	TOTAL
Site Clearance and excavation	Excavator Operator	2	Helpers	4
	Shovel/loader Operator	1		
	Dumper Operator	4		

Construction of Prefabricated Shed	Civil Engineer	1	Helpers	10
	Welder	2		
	Steel Fixer	2		
	Supervisor	1		
	Painter (Anti-rust painting)	2		
	Welder	2		
Renovation of Structure (admin block, storage room, Washroom	Mason	3	Helpers	5
	Paint Job Labor	5		
	Electrician	2		
Installation Of Machinery	Engineers (Electrical & Mechanical)	2	Helpers	8
	Supervisor	2		
	Foreman	3		
TOTAL SKILLED AND UNSKILLED LABOR			34	27

Skilled and unskilled labor for the Operational Phase

ACTIVITIES	SKILLED	TOTAL	NON-SKILLED	TOTAL
Sorting of mixed plastic waste at conveyor belt	N/A	N/A	Informal Sector Men, Women	10
Waste Handler	N/A	N/A	Waste Handler	1
For Overall Plant Operations	General Manager	1	N/A	N/A
Health Safety Officer	Manager HSE	1		
Quality Assurance and Quality Control	QAQC Officer	1		
Machinery Operations	Machinery Operators	3		
Safety Guards	N/A	N/A	Guards	2
Office Boy			Office Boy	1
Supporting Staff			Supporting Staff	3
Storekeeper			Store Keeper/ Loading Incharge	1
Electrical Engineer	Electrical Engineer	1	N/A	N/A

Supervisor	Supervisor	1	N/A	N/A
Weighbridge Operator	Weighbridge Operation	1	N/A	N/A
Sweeper	Sweeper(1 Men, 1 Women)	2	N/A	N/A
Total skilled and unskilled workers			11	18

The unskilled labor will be hired from nearby communities within the Lahore district to support local livelihood. The local workers will commute on a daily basis. If required during the construction phase; the accommodation will be provided at or near the Eco Bricks Facility in the form of portable container units which include basic facilities (residence, kitchen and toilet).

3.7 Implementation and institutional arrangements:

The project has been divided into two phases, the Construction phase and the Operations Phase. As the implementing partner for this PLEASE project, ISP Environmental Solutions will hire the contractors and subcontractors for the construction of the facility. Overall responsibility during the construction phase will be that of a contractor while the construction activities shall be monitored by the ISP Environmental Solutions to effectively implement E&S standards and local laws.
The contractor will be selected through a competitive procurement process based on the evaluation criteria outlined in procurement policy .

During the operation phase, the responsibility to implement E&S standards and local laws pertaining to environmental and social safeguards shall be of General Manager Production (ISP Environmental Solutions). However constant monitoring shall be carried out by HSE Manager (ISP Environmental Solutions). Detailed responsibilities can be viewed at (Annex J).

Operational Institutional Flow:

- Operations Manager (ISP Environmental Solutions)
- Project Coordinator (ISP Environmental Solutions)
- Environment Expert (ISP Environmental Solutions)
- Monitoring and Evaluation (M&E) Officer (ISP Environmental Solutions)
- Technical Team Lead (ISP Environmental Solutions)
- Manager HSE (ISP Environmental Solutions) (ISP Environmental Solutions)
- Production Officer (ISP Environmental Solutions)
- Supervisor (ISP Environmental Solutions)

4. ESMP Matrix: Risk and Impacts, Mitigation, Monitoring

4.1 Construction Phase

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Dust Pollution or Particulate Matter can be generated from construction activities and handling of construction material at site. (Expected PM10 is envisioned to be less than 150 µg/m3 for 24 hours and PM 2.5 are less than 35 µg/m3 for 24 hours -Poor ambient air quality can lead to coughs and allergies for workers and nearby residents and contribute to stunted growth, chlorosis in nearby flora.	Use water sprinklers to control dust pollution (Use of PPEs i.e Dust Masks with PM filters) PEQS standards to be followed. Introducing GRM in aligned with PLEASE project GRM	Construction site/ Daily	Contractor	Air quality Use of PPE by the Workers Particulate Matter PM10 (120 µg/m3 Annual and 150 µg/m3 for 24 hours) PM2.5 (15 µg/m3 Annual and 35 µg/m3 for 24 hours)	Air quality monitoring/ monthly	Environment expert Site Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Noise Pollution: Construction activities and machinery operation can produce noise. **Expected Noise Level**: **65-75** dB during peak activity Elevated noise levels > 80 dB can result in hearing loss, stress, and disturbance to the surrounding community.	use of Duct Silencers on equipment Use of PPEs Especially Ear Muffs (3M™ with NRR which would sufficiently control noise levels up to 85 dB) PEQS standards to be followed. The standards limit for PEQS are 65-75 dB Use of machinery with good conditions and regular maintenance	Construction site/ Daily	Contractor	Noise levels Use of PPEs by workers	Noise level monitoring and Monthly site visit Day time: 75 dB Night time: 65 dB	Environment expert Site Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	300

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Improper Disposal of Solid Waste: Inefficient waste management practices can lead to the accumulation of Solid waste at site during Construction such as Debris. **300-400 kg/day** of solid waste is envisioned to be produced, including debris from demolition, leftover construction materials (e.g., wood, metal, concrete), and packaging waste (Debris generated from demolition work; Leftover construction materials (e.g., wood, metal, concrete); Packaging waste from construction supplies.) Improper disposal of solid waste during construction can cause some environmental and health issues such as Groundwater contamination	Regularly/ daily segregate and manage waste streams on-site. Conduct waste audits. Hire certified waste disposal services. Surrounding areas will be cleaned daily to remove potential mosquito/vector/pest breeding sites. Inspection of drainage system.	Construction site/ During Construction Daily	Contractor	Waste segregation records Disposal Report from service Provider Blockage reported in drainage systems	Waste audits, inspection of disposal practices/ Weekly	Environment expert Site Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	500

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
which may result from leachate, while blocked drainage systems moreover accumulated waste creates breeding grounds for pests, increasing the risk of diseases like malaria and dengue.							
Occupational Health and Safety (OHS): Inadequate safety measures, lack of PPE ; lack of usage of PPE Risks of operation of heavy machinery and equipment; Handling different types of liquid materials (e.g., varnishes,sealants and cement); Working at heights;Exposure to dust and noise from construction activities. OHS risks can lead to accidents, injuries, and Short term health issues such as Illnesses, Fatigue and Stress	Provide all workers with appropriate PPE (gloves, masks, helmets, shoes) Conduct regular safety training. Ensure sufficient ventilation in work areas to reduce respiratory risks and regulate comfort.	Construction site/ Daily	Contractor	Use of PPE, safety incidents (Gloves, Mask, Safety helmets, Shoes, etc) OSHA standards of General PPE Requirements (29 CFR 1926.95) under code of federal	Safety inspections, incident reports/ weekly	Environment expert Site Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for	1500

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
etc, impacting overall workforce well-being and productivity.	Train workers in machinery handling. Installation of guardrails with mid-rails and toe boards at the edge of any fall hazard Proper use of ladders and scaffolds by trained workers Use of fall prevention devices (safety belt and lanyard travel limiting devices to prevent access to fall hazard area..)			regulations is used for use of PPEs.) Availability of guardrails Use of fall prevention devices Availability of rescue or recovery plan Training records		PLEASE project	

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	Inclusion of rescue or recovery plans and equipment to respond to workers after an arrested fall. Controlling site-specific factors which may contribute to excavation slope instability Providing safe means of access and regress from excavations, such as graded sloped, graded access route or stairs and ladders			Number of incident reported			

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	Maintaining Accident registry						
Usage of Water: Construction activities, like mixing concrete, cooling machinery, and cleaning tools, can lead to significant water use, with an estimated 150-300 liters per day. Additionally, each worker may use around 8 gallons/day for domestic purposes. **Pollution of groundwater** is also a concern: 1. Oil and Grease from equipment leaks can contaminate nearby water sources. 2. Cement and Mortar Runoff may increase water turbidity and alter pH levels. 3. Fuel Leaks from machinery can	Limit the use of water during construction work Using nozzles reduces water flow by increasing the pressure. Regularly inspect and maintain equipment to prevent leaks, and use absorbent materials to clean	Construction site/ Weekly	Contractor	Usage of nozzles is in place Record of inspections is available Protective coverings during mixing are in place Water quality testing as per PEQS including	Monthly site visit	Environment expert Site Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	1000

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
introduce harmful chemicals into the soil and water.	up spills immediately. Use protective coverings during mixing and pouring, and divert runoff to containment areas to prevent entry into water bodies. Store fuels in double-walled tanks and use spill kits; conduct regular inspections for leaks. Conduct regular testing of water			BOD (Biological Oxygen Demand): 250 mg/l , COD (Chemical Oxygen Demand): 400 mg/l , Ph: 6-9 & Grease & Oil: 10 mg/l etc (32 Parameters)			

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Community Disturbance: Construction activities and facility operations can cause disturbances to local communities, including noise, dust, and disruption of daily life and routine due to: Traffic-related risks Heavy equipment operations near residential areas. - Road blockages and detours. - Increase in dust, noise, and vibrations from construction.	Inform local communities about construction schedules; Limit construction to daytime Develop and introduced grievance redress mechanism (GRM) inaligned with PLEASE project GRM Implement Traffic Management Plan	Contractor/ Monthly	Contractor	Community awareness creation events Availability of GRM and greivanced recorded Availability of traffic management plan	Monthly Site visit	Community Outreach Specialist (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	1000

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Risk of Chance Finds	Implement Chance Find Protocol	Through out the construction period	Contractor	Chance Find Protocol followed	Monthly Site visit	HSE Manager (ISP Environmental Solutions)	100
Exclusion of beneficiaries/training recipients, especially from vulnerable groups	Implement stakeholder engagement activities as per Project SEP Adopt and implement GRM Map and specifically target local vulnerable groups	Through out the construction period	Contractor	Number of stakeholder engagement sessions Availability of GRM and recorded grievances Availability of map of	Prior to the commencement of activities	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for	300

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
				vulnerable groups		PLEASE project	
Downstream E&S impacts from research/Technical Assistance	Ensure that all technical assistance and research products acknowledge downstream E&S risks and propose mitigation measures	Throughout the project cycle	Contractor	All deliverables are reviewed against E&S downstream risks and impacts	Throughout implementation of activities	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	300

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Risks of Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) between Project workers; and between Project workers and local community members	Appoint a PSEA Focal Point at the site. Provide awareness training on recognizing, and preventing SEA/SH for a) Project workers, and b) affected communities Provide training on the GRM, including for SEA/SH-related grievances to a) Project workers,	Training and awareness will be conducted prior to the commencement of work Implementation of Focal Points and singing of CoC at the site during the construction period	Contractor	Number of training sessions provided to workers Number of awareness sessions provided to communities Number of SEA/SH Focal Points appointed Complaint box	Monthly Site visit	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
	and b) affected communities Request all Project workers to sign a Code of Conduct (CoC) including instructions for SEA/SH prevention Provide specific SEA/SH response mechanism as part of the Project GRM			Actions taken in response to complaints			

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Lack of compliance with labor laws and conditions	Wages will be paid in accordance with the LMP of the project developed in alignment with the PLEASE project LMP Prevent all forms of forced labour and child labour Keep records of age of all workers	Throughout implementation of works	Contractor	Availability of workers' GRM Availability of records of workers	Monthly Site visit	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Lack of responsiveness of GRM	Create awareness of Project GRM among local community	Throughout implementation of works and other activities	Contractor	Number of awareness sessions held	Monthly Site visit	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	200

Anticipated E&S Risks & Impacts	Risk Mitigation & Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Estimated Cost (USD)
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location & Frequency	Responsibility	
Lack of stakeholder engagement, especially among vulnerable groups	Implement Project Stakeholder Engagement Plan (SEP)	Throughout implementation of works and other activities	Contractor	Number of consultations held Number of consultations held with vulnerable groups	Monthly	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	200

4.2 Operational Phase - Eco– Bricks Facility

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
Air Emissions Generation of air pollutants such as Particulate Matter from production activities such as heating, melting, or shredding of plastic. Potential short-term issues for workers like minor respiratory irritation or coughing for workers and nearby communities.	Install a Ventilation System such as local exhaust ventilation (LEV) in the facility Monitor air quality at the facility Mechanically Cover the source of Fumes/Emissions Use of proper PPEs like masks, to protect against any particulate exposure.	At the Facility/ Throughout the operation	General Manager Production (ISP Environmental Solutions)	Air quality such as SO_2 120µg/m3 NO: 40µg/m3, NO_2 80 µg/m3, PM_{10} 150 µg/m3, $PM_{2.5}$, 45 µg/m3, CO 10 mg/m3 (1 hours)	Air quality monitoring/ Monthly	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	2000

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	PEQS standards to be followed.						
Noise Pollution Machinery like shredders, crushers, and extruders may generate some noise, with levels expected to range between 65-75 dB. While generally not harmful, this noise could cause minor short-term effects for workers, such as temporary discomfort or reduced concentration.	Installation of Noise barriers Provide hearing protection to workers. Regularly monitor noise levels and ensure compliance with local regulations to protect both workers and nearby residents	At the Facility/ Throughout the operation	General Manager Production (ISP Environmental Solutions)	Noise levels Of Near residential areas, commercial areas, etc <75dB Use of PPEs by workers Grievance reported related to the noise	Noise level monitoring/ Monthly	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	2000

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	Ear Muffs (3M™ with NRR which would sufficiently control noise levels up to 85 dB) PEQS should be followed (Day: 75 dB Night: 65 dB) Introduction of a GRM alignment with the PLEASE project GRM						
Water Pollution Industrial processes, like washing, may generate some wastewater, with around 500 liters per day from production activities and 8 gallons per capita per day from	Installing a **wastewater treatment plant** with microfilters will effectively reduce negligible quantities of microplastic	At the Facility/ Throughout the operation	General Manager Production (ISP Environmental Solutions)	Wastewater treatment plant installed Water usage, quality such as pH: 6-9, BOD:	Water usage records, water quality	HSE Manager (ISP Environmental Solutions) Environmental specialist -	55,000

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
domestic use. This wastewater could lead to minor contamination of nearby water bodies if not managed properly, potentially affecting local water quality. Short-term effects on water quality, possibly leading to mild health issues like skin irritation or digestive discomfort for nearby communities.	contamination, ensuring cleaner discharge. By adhering to **PEQS standards**, the impact on water quality will be minimal and well-controlled. Monitor water quality Introduction of a GRM alignment with the PLEASE project GRM			250 mg/l, COD: 400 mg/l, heavy metals: 2 mg/l , TDS: 3500 mg/l, TSS: 400 mg/l, etc (32 Parameter) Grievance reported related to the water quality	tests/ Monthly	UNOPS country team for PLEASE project	
Dust generation The shredding process can produce dust,airborne particles, and negligible quantities of Micro Plastics which may contaminate	Install appropriate ventilation systems equipped to capture airborne particles during shredding.	At the Facility/ Throughout the operation	General Manager Production (ISP Environmental Solutions)	Amount of particulate matter concentration in the air. PM10	Air quality tests/ Monthly	HSE Manager (ISP Environmental Solutions)	

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
air, leading to cough, nausea, and irritation.	Moreover provide appropriate PPE for workers			Should not exceed 120µg/m3 (annual average for ambient air) as per PEQs Use of PPE by workers		Environmental specialist - UNOPS country team for PLEASE project	
Occupational Health and Safety (OHS): **Increased air quality, dust, and noise for workers** Ergonomics: Working with machinery and manual handling of materials can pose some risks, such as minor physical injuries, back strain, and ergonomic issues	Provide ongoing safety training on proper machinery use, manual handling techniques, and ergonomics. Regularly monitor workplace conditions, including air quality and noise, and adjust safety protocols based on	Facility/ weekly	General Manager Production (ISP Environmental Solutions)	Number of safety training sessions per month Number of monitoring reports of	Safety inspections, incident reports/ weekly	HSE Manager (ISP Environmental Solutions) Environmental specialist	1250

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
from repetitive motions or poor posture. Weather conditions, like water stagnation during monsoons or heat during summer, may also create slips, trips, and falls or increase the risk of heatstroke.	weather. Inspect such as machinery risks, sharp objects, and slip or trip dangers. Ensure adequate ventilation and cooling through industrial-grade fans. Provide Personal Protective Equipment (PPE), including Hard hats, safety goggles, masks, hearing protection, gloves, safety footwear, and high-visibility clothing.			workplace conditions Percentage of workers that wear appropriate PPE Number of lose electrical cords posing slip and fall obstacles		- UNOPS country team for PLEASE project	

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	Keep a first aid kit and fire extinguishers readily available for quick response to any incidents. Implement good housekeeping practices, such as the sorting and placing of loose materials Cleaning up excessive waste debris and liquid spills regularly Locating electrical cords and ropes in			Number of workers using anti-slip footwear Number of temporary shelters available for workers			

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	common areas and marked corridors Use of slip retarded footwear Adjustment of work and rest periods according to temperature stress management procedures Providing temporary shelters to protect against the elements during working activities or for use as rest areas						
Energy Consumption High energy demand for machinery and equipment used in eco-brick production.	Use energy-efficient machinery to reduce power consumption.	Facility/ Monthly	General Manager Production (ISP Environmental Solutions)	Availability of energy-efficient machinery	Energy consumption audits/ Monthly	HSE Manager (ISP Environmental Solutions)	500

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
Increased operational costs and potential for power outages or energy supply issues.	Regularly monitor energy usage to identify areas for optimization and efficiency improvements			Monitoring results of energy usage		Environmental specialist - UNOPS country team for PLEASE project	
Community Health and Safety impacts Generation of dust, particulate matter, and noise from machinery	**Establish the facility site** at a reasonable distance from residential areas to minimize any environmental impact. **Maintain open communication** with the local community, keeping them	Local community/ Monthly	General Manager Production(ISP Environmental Solutions)	Facility is established at a reasonable distance from communities Availability of GRM for community members	Community meetings, grievance records/ Monthly	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team	500

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	informed and addressing any concerns promptly through a GRM **Provide employment opportunities** to local residents, fostering positive economic growth and support. The introduction of GRM is aligned with PLEASE project GRM.			Number of local workers employed in the facility		for PLEASE project	

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
Lack of appropriate labor and working conditions among workers	Adopt and implement LMP Provide workers' GRM	Throughout operational phase	General Manager Production (ISP Environmental Solutions)	Availability of workers' GRM and grievance reported	Monthly	HSE Manager (ISP Environmental Solutions) Environmental specialist - UNOPS country team for PLEASE project	4100
Risk of SEA/SH incidents among workers	Prepare CoC with references to zero tolerance of SEA/SH Ensure all workers sign the CoC	Throughout operational phase	General Manager Production(ISP Environmental Solutions)	Availability of CoC Percentage of workers that have signed CoC	Monthly	Gender Specialist ISP (Environmental Solutions) Environmental specialist - UNOPS	500

Anticipated E&S Risks and Impacts	Risk Mitigation and Management Measures	Impact Mitigation		Impact/Mitigation Monitoring			Cost Estimates USD
		Location/Timing/ Frequency	Responsibility	Parameter to be monitored	Methodology, including Location and Frequency	Responsibility	
	Conduct awareness sessions on CoC among workers			Number of awareness sessions		country team for PLEASE project	

5. Capacity Development & Training

Our project, ''Trash has Value – Recycling Plastic Waste to Eco green Tiles/Bricks" has made significant strides in engaging various educational institutions and organizations to foster a collaborative approach towards environmental sustainability.

To strengthen the professional and managerial competencies of staff, the HSE Manager will be tasked with organizing and facilitating comprehensive training programs aimed at promoting best environmental management practices, ensuring the effective implementation of the Environmental Management Plan (EMP), and ensuring compliance with applicable regulations. The training curriculum will encompass key topics, including air, noise, and water pollution monitoring, social awareness, environmental laws, the proper use of personal protective equipment, and general health and safety protocols specific to construction sites. In addition, workers and staff will receive instruction on basic sanitation, healthcare practices, and hazard awareness, with a focus on preventing malaria, HIV/AIDS, and addressing other site-specific risks. Regular monthly or quarterly sessions will be held covering health and safety, hygiene, firefighting, and first aid to maintain continuous awareness and preparedness. Furthermore, specialized training modules will be conducted for contractors and workers by external experts, including Gender Specialists, and Environmental and Social Safeguard Specialists. These training initiatives will be systematically implemented throughout the project's execution to ensure a high standard of safety, environmental stewardship, and compliance.

1. **Capacity Building for communities, contractors and workers during construction phase**

Specialized training for **construction contractors, surrounding community and workers** will be provided to ensure compliance with the **Environmental and Social Standards** (ESS) and mitigation measures in this ESMP. This training will cover the correct use of personal protective equipment (PPE); **SEA/SH prevention** and response; Code of Conducts; labor and working conditions and **project GRM** . Additionally, the training will provide guidance on managing and disposing of construction waste responsibly and operating equipment in ways that align with environmental standards. This initiative aims to promote safe practices, responsible waste management, and sustainability throughout the construction phase. Moreover the Training regarding **Gender Based Violence** and **Social Safeguarding** shall also be made part of the training program

Responsible Parties: Project Manager and Contractor

2. **Training Programs for Facility workers:**

The training will provide hands-on guidance to staff on the skilled operation and maintenance of equipment. The program will include key **Standard Operating Procedures (SOPs)** and **safety protocols** for **material handling**, covering essential practices such as safe loading, unloading, and correct storage techniques to prevent spills and accidents. Workers will also be trained in using personal protective equipment (PPE) and other **OHS** measures to maintain workers safety; workers

GRM; CoCs, etc. Moreover the Training regarding **Gender Based Violence** and **Social Safeguarding** shall also be made part of the training program

3. **Production Team Trainings:**

We will conduct regular training sessions for the production team to stay updated on best practices in plastic waste handling, processing, and Health, Safety, and Environment (HSE) standards. Additionally, technical training will be provided to enhance their skills in operating and maintaining machinery by the supplier of machinery (Align with after sale services agreement (3-4 Months) Moreover the Training regarding **Gender Based Violence** and **Social Safeguarding** shall also be made part of the training program

Responsible Parties: Production Manager, HSE Manager

6. Implementation Schedule and Cost Estimates

Project Schedule

Months					
	Jan	**Feb**	**Mar**	**Apr**	**May**
Planning (Ensure contractors comply with PEQS and international safety standards. Train workers on health and safety measures and enforce proper PPE usage etc.)					
Development (Provide PPE (N-95 masks, earmuffs, gloves, shoes), control dust with water sprays, and use pest control. Install wastewater treatment plants, tune machinery with silencers, and employ HEPA filters. Implement a Labor Management Plan (LMP) and Grievance Redress Mechanism (GRM).					
Commissioning (Monitor air and noise quality to meet PEQS. Enforce PPE use, conduct safety drills, and train workers on machinery handling and emergency response etc.)					
Operations (Regularly monitor air and noise quality and operate wastewater systems efficiently. Enforce PPE use, dispose of plastic waste responsibly, and maintain LMP and GRM to address worker concerns, etc.)					

Cost Estimates

The following is a breakdown of the cost estimate for implementing the mitigation and capacity development measures.

Item	Estimated Cost (USD)	Responsibility
Construction Phase		
Environmental Protection Measures:	$500	Contractor
Use of Personal Protective Equipment (PPEs)	$1000	Contractor
Workplace Safety Infrastructure:	$1500	Contractor
Safety & Security Items	$1500	Contractor
HSE Monitoring and Control Equipment:	$1000	Contractor
Training and Documentation Tools:	$500	Contractor
Operation Phase		
Air Emission Control Measures	$ 2000	HSE Manager ISP Environmental Solutions
Noise & Vibration Control Measures	$ 2000	HSE Manager ISP Environmental Solutions
Waste Water Treatment Plant.	$ 55000	HSE Manager ISP Environmental Solutions
Utilize energy-efficient equipment	$ 500	HSE Manager ISP Environmental Solutions

Training and Documentation Tools:	$ 500	HSE Manager ISP Environmental Solutions
Workers Health & Safety	$1250	HSE Manager ISP Environmental Solutions
Community awareness / stakeholder engagement initiatives	$500	HSE Manager ISP Environmental Solutions
HSE Manager per Annum Cost	$3600	HSE Manager ISP Environmental Solutions
GRM costs	$ 500	HSE Manager ISP Environmental Solutions
TOTAL	$ 76350	HSE Manager ISP Environmental Solutions

7. Attachments

Annex A Rental/Lease Agreement
Annex B Structure Stability Certificate
Annex C Plant Layout (Tentative)
Annex D Site Inspection Report for Environment Clearance Document
Aneex E Environmental Approval
Annex F E&S Screening
Annex G Labour Management Procedure
Annex H GRM
Annex I Chance to Find procedure
Annex J Responsibilities

IV. Review & Approval

Prepared by: Zillay Mariam **Position:** Project Lead **Date:** 11-05--2024	
Reviewed By: Nauman Zakariya  **Position:** Technical Expert - Environment **Date:** 11-05-2024	**Approved By**: Kapila Rajapaksha  **Position:** Environment and Social Development Specialist **Date:** 25-01-2025