



**GOVERNMENT OF PUNJAB
ENVIRONMENTAL PROTECTION AGENCY**



Environmental Assessment Checklists and Guidelines

Brick Kilns

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1. Introduction

1.1 Background

The brick manufacturing industry is one of the oldest construction-related industries in the world and has played a vital role in infrastructure development for thousands of years. In Pakistan, particularly in the Province of Punjab, the industry is an important contributor to the construction sector and provides employment opportunities to a large workforce. Thousands of brick kilns operate throughout the province to meet the increasing demand for bricks used in residential, commercial, industrial, and public infrastructure projects.

Despite its socio-economic importance, brick manufacturing is associated with a number of environmental and social issues. Conventional brick kilns consume significant quantities of fuel and emit particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide, black carbon, greenhouse gases, and other air pollutants. These emissions contribute to deteriorating ambient air quality, winter smog, climate change, and adverse impacts on public health. In addition, clay excavation, improper waste management, excessive fuel consumption, and inadequate occupational health and safety practices may adversely affect land resources, water quality, agriculture, biodiversity, and surrounding communities.

Recognizing these environmental concerns, the Government of the Punjab has introduced various legal and regulatory measures to promote cleaner brick manufacturing technologies and ensure environmentally sustainable industrial development.

1.2 Purpose of the Guidelines

These Guidelines have been prepared to assist project proponents in the preparation of Initial Environmental Examination (IEE) reports for proposed brick manufacturing projects. The Guidelines provide a systematic framework for collecting and presenting information required for environmental assessment, identifying potential environmental and social impacts, proposing appropriate mitigation measures, and preparing an Environmental Management Plan (EMP).

The Guidelines are intended to improve the quality, consistency, and completeness of IEE reports submitted to the Punjab Environmental Protection Agency (EPA Punjab), thereby facilitating an efficient environmental review process and promoting compliance with applicable environmental legislation.

1.3 Scope of the Guidelines

These Guidelines apply to proposed brick manufacturing projects in the Province of Punjab that require environmental assessment under the applicable environmental laws and regulations. They are intended to assist proponents in preparing IEE reports for both permanent and temporary brick kiln units, including projects involving the establishment, expansion, or modernization of brick manufacturing facilities.

The Guidelines primarily address environmental aspects associated with project planning, construction, operation, environmental management, pollution prevention, occupational health and safety, and regulatory compliance. They do not replace the statutory requirements prescribed under the applicable environmental legislation or the need to obtain other approvals from relevant government agencies.

1.4 How to Use these Guidelines

Project proponents should use these Guidelines while preparing the IEE report for submission to EPA Punjab. The document provides guidance on the information required to describe the proposed project, characterize the baseline environmental conditions, identify potential environmental impacts, propose suitable mitigation measures, and prepare an Environmental Management Plan.

The recommended sequence for preparing the IEE report is as follows:

- Step 1:** Provide information on project [use **Section I**]
- Step 2:** Determine Applicability (*Are you sure that IEE or EIA is not required?*)
[use **Section II**]
- Step 3:** Describe the physical, biological and social environment [use **Section III**]
- Step 4:** Assess potential impacts and applicable mitigation measures [use **Section IV**]
- Step 5:** Provide undertaking to the EPA on mitigation measures and compliance
[use **Section V**]
- Step 6:** Prepare an Environmental Management Plan (EMP) and environmental monitoring programme. (Use **Tables 1-4**)
- Step 7:** Prepare an Environmental Monitoring record keeping Plan (Use **Tables 5-6**)
- Step 8:** Submit the completed IEE report, together with all supporting documents, to EPA Punjab for environmental review and decision.

EPA Punjab may seek additional information, conduct site inspections, or require revisions to the submitted IEE report where considered necessary.

1.5 Applicable Environmental Legislation

Preparation and review of IEE reports for brick manufacturing projects shall be carried out in accordance with the applicable environmental laws, regulations, rules, and standards in force in Punjab. These include, but are not limited to:

- Punjab Environmental Protection Act, 1997 (as amended);
- Punjab Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2022;
- Punjab Environmental Protection (Smog Prevention and Control) Rules;

- Punjab Environmental Quality Standards (PEQS);
- Any other applicable federal or provincial environmental legislation, policies, guidelines, or standards issued from time to time.

Project proponents are responsible for ensuring compliance with all applicable legal and regulatory requirements throughout the planning, construction, operation, and decommissioning phases of the project.

2. Industry Profile

2.1 Overview of the Brick Manufacturing Industry

Brick manufacturing is one of the oldest and most important construction industries, with fired bricks having been used for more than 3,000 years. In Pakistan, particularly in the Province of Punjab, the brick manufacturing industry plays a significant role in supporting the construction sector and provides employment to a large number of skilled and unskilled workers. Brick kilns are generally located in rural and peri-urban areas where suitable clay deposits are available.

The industry contributes substantially to the supply of construction materials required for residential, commercial, industrial, and public infrastructure projects. However, brick manufacturing is also recognized as a resource-intensive industry due to its consumption of clay, water, and fuel, and its potential to generate air emissions and other environmental impacts. Therefore, environmentally sound planning, operation, and pollution control measures are essential for sustainable brick production.

2.2 Types of Brick Kilns

Various types of brick kilns are used for brick manufacturing. The proponent should identify the type of kiln proposed for the project and briefly describe its operational characteristics.

Typical kiln technologies include:

- Conventional Bull's Trench Kiln (BTK)
- Fixed Chimney Bull's Trench Kiln (FCBTK)
- Zig-Zag Brick Kiln
- Vertical Shaft Brick Kiln (VSBK), where applicable
- Other approved energy-efficient brick kiln technologies

The proposed kiln technology should comply with the applicable environmental laws, regulations, and directions issued by the Government of the Punjab and EPA Punjab.

2.3 Brick Manufacturing Process

The proponent should provide a brief description of the manufacturing process, including the major operational stages from receipt of raw materials to dispatch of finished bricks. A process flow diagram should also be included in the IEE report.

The description should cover, as applicable:

- Procurement and transportation of clay
- Clay preparation and mixing
- Brick moulding
- Drying of green bricks
- Loading of bricks into the kiln
- Firing and combustion process
- Cooling and unloading
- Sorting, storage, and transportation of finished bricks

The proponent should identify the activities that may generate emissions, wastewater, solid waste, dust, or noise.

2.4 Project Description

After careful review of the sections, the proponent should provide a concise description of the proposed project, including:

- Name of the project
- Project location (district, tehsil, mouza, and coordinates)
- Nature of the project (new, expansion, modernization, or relocation)
- Total project area
- Covered and open areas
- Land ownership status
- Estimated project cost
- Production capacity (bricks per day or per annum)
- Expected project life
- Number of employees during construction and operation

2.5 Raw Materials and Utilities

The proponent should identify all raw materials, fuels, and utilities required for the proposed project.

The description should include:

- Source and quantity of clay
- Fuel type(s) and estimated daily consumption
- Water requirement and source
- Electricity requirement and source
- Diesel generators, if any
- Storage arrangements for raw materials and fuel

Only fuels permitted under the applicable environmental laws and regulations should be proposed.

2.6 Plant Layout and Supporting Infrastructure

The proponent should provide a layout plan showing the principal project components.

The layout should indicate, where applicable:

- Kiln location
- Chimney
- Clay storage area
- Coal/fuel storage area
- Brick drying area
- Finished product storage
- Internal roads
- Office and worker facilities
- Water supply system
- Drainage system
- Waste storage area
- Green belt
- Nearby roads, canals, villages, schools, hospitals, and other sensitive receptors

2.7 Resource Requirements

The proponent should describe the resources required during construction and operation of the project, including:

- Land
- Clay
- Water

- Fuel
- Electricity
- Labour
- Construction materials

The quantities of major resources should be provided wherever possible.

2.8 Pollution Sources

The proponent should briefly identify the principal sources of environmental pollution associated with the proposed project.

These may include:

- Stack emissions
- Fugitive dust emissions
- Combustion gases
- Wastewater generation
- Solid waste and ash
- Noise from machinery and transportation
- Vehicular emissions

The pollution sources identified in this section should be addressed in the subsequent environmental impact assessment.

2.9 Applicable Environmental Requirements

The proponent should briefly describe how the proposed project will comply with applicable environmental requirements, including:

- Approved kiln technology
- Fuel restrictions
- Chimney specifications
- Punjab Environmental Quality Standards (PEQS)
- Punjab Environmental Protection (Smog Prevention and Control) Rules
- Other applicable environmental regulations and EPA Punjab requirements

3. Environmental Impacts

3.1 Air Pollution (Major Impact)

Conventional BTKs are among the largest sources of air pollution in Punjab. The combustion of coal mixed with prohibited fuels releases high concentrations of particulate matter (PM_{2.5} and PM₁₀), sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), black carbon, and toxic substances such as dioxins, furans, and heavy metals. These emissions significantly deteriorate ambient air quality, contribute to winter smog, reduce visibility, and adversely affect public health.

3.2 Human Health Impacts

Emissions from conventional brick kilns expose workers and nearby communities to hazardous air pollutants. Long-term exposure may cause respiratory diseases such as asthma, bronchitis, chronic obstructive pulmonary disease (COPD), eye and throat irritation, cardiovascular disorders, and an increased risk of cancer due to toxic emissions from burning hazardous waste.

3.3 Soil Pollution

Fly ash, soot, and toxic particulates emitted from brick kilns settle on surrounding land and agricultural fields. Continuous deposition of heavy metals and other contaminants reduces soil fertility, affects microbial activity, and may result in contamination of crops.

3.4 Water Pollution

Airborne pollutants and improperly disposed ash may enter canals, ponds, and groundwater through rainfall and surface runoff. Leakage of fuel, lubricants, and improper waste disposal may further contaminate nearby water resources.

3.5 Climate Change

Traditional BTKs have high fuel consumption and emit substantial quantities of carbon dioxide (CO₂), black carbon, and other greenhouse gases. The use of waste fuels further increases emissions, contributing to climate change and regional air pollution.

3.6 Impacts on Agriculture and Vegetation

Dust and gaseous pollutants deposited on crops reduce photosynthesis, damage plant tissues, and lower agricultural productivity. Prolonged exposure to kiln emissions can adversely affect fruit orchards, vegetables, and other vegetation located near brick kiln clusters.

3.7 Ecological Impacts

Air pollutants adversely affect terrestrial ecosystems by degrading vegetation and reducing habitat quality. Toxic emissions may also impact birds, insects, and other wildlife inhabiting surrounding areas.

3.8 Solid Waste Generation

Burning prohibited fuels produces ash, clinker, and other combustion residues that require proper handling and disposal. Improper disposal may contaminate soil and nearby water bodies.

3.9 Noise Pollution

Operation of machinery, blowers, generators, and transportation vehicles generates noise that may disturb nearby residents and workers. Although generally localized, prolonged exposure

may cause discomfort and occupational health issues.

3.10 Occupational Health and Safety

Brick kiln workers are exposed to excessive heat, dust, smoke, hazardous gases, and manual handling risks. Inadequate occupational safety measures increase the likelihood of heat stress, respiratory illnesses, injuries, and other work-related health problems.

3.11 Social Impacts

Brick kiln emissions reduce the quality of life for nearby communities by causing poor air quality, dust deposition, unpleasant odors, and increased incidence of respiratory diseases. Transportation of raw materials and finished bricks also contributes to traffic congestion, road deterioration, and public safety concerns.

4. Environmental Mitigations Measures

4.1 Air Pollution (Major Impact)

- Install less air pollution causing brick kilns e.g, Zig-Zag Brick Kilns, which significantly reduce particulate matter and gaseous emissions through improved combustion efficiency.
- Convert all conventional Bull's Trench Brick Kilns (BTKs) to Zig-Zag Brick Kilns.
- Strictly prohibit the use of tyres, rubber, plastics, waste oil, shoe soles, oily sludge, and other hazardous fuels in accordance with the Punjab Environmental Protection (Smog Prevention and Control) Rules.
- Use only approved fuels such as quality coal or other environmentally acceptable fuels.
- Ensure proper kiln design, operation, and maintenance to achieve complete combustion.
- Maintain adequate chimney height and ensure regular chimney cleaning.
- Regularly monitor stack emissions to ensure compliance with the Punjab Environmental Quality Standards (PEQS).
- Develop and implement a preventive maintenance program for kilns and associated equipment.
- Establish green belts around brick kiln premises to reduce dust dispersion.

4.2 Human Health Impacts

- Convert existing BTKs to Zig-Zag technology to reduce worker and community exposure to air pollutants.
- Provide workers with appropriate Personal Protective Equipment (PPE), including respirators, gloves, goggles, and safety shoes.
- Conduct periodic medical examinations for kiln workers.
- Install washing and sanitation facilities for workers.
- Restrict exposure of workers to excessive smoke and dust through job rotation where practicable.

- Conduct regular awareness and safety training on occupational hazards.
- Maintain adequate buffer distances between brick kilns and residential areas.

4.3 Soil Pollution

- Eliminate the use of hazardous fuels that generate toxic ash.
- Store coal and ash on impervious surfaces with proper containment.
- Collect and dispose of ash at approved disposal facilities.
- Prevent uncontrolled deposition of ash on agricultural land.
- Develop vegetative buffer zones around kiln sites to reduce dust fallout.
- Periodically monitor soil quality in surrounding agricultural areas.

4.4 Water Pollution

- Construct drainage channels to prevent contaminated runoff from entering nearby water bodies.
- Store fuels, lubricants, and chemicals in designated, bunded areas.
- Immediately clean up accidental fuel and oil spills.
- Dispose of ash and other wastes at approved locations away from canals and drainage channels.
- Prohibit discharge of wastewater and waste materials into surface water bodies.
- Regularly inspect fuel storage areas for leaks.

4.5 Climate Change

- Replace conventional BTKs with fuel-efficient Zig-Zag kilns to reduce coal consumption and greenhouse gas emissions.
- Optimize firing practices to improve combustion efficiency.
- Use high-quality fuel with lower ash and sulfur content.
- Regularly maintain kilns to minimize fuel wastage.
- Promote energy conservation measures throughout kiln operations.
- Encourage plantation activities around kiln premises to enhance carbon sequestration.

4.6 Impacts on Agriculture and Vegetation

- Establish green belts around kiln boundaries using native tree species.
- Convert to Zig-Zag technology to substantially reduce dust and gaseous emissions.
- Maintain sufficient separation distances between kilns and agricultural land where feasible.
- Control fugitive dust through good housekeeping practices.
- Regularly inspect surrounding vegetation for signs of pollution damage.
- Prevent ash from being dispersed onto cultivated fields.

4.7 Ecological Impacts

- Minimize emissions by adopting Zig-Zag kiln technology.
- Develop green buffer zones to provide habitat protection.
- Avoid establishing kilns near ecologically sensitive areas, forests, wetlands, and wildlife habitats.
- Properly manage solid wastes to prevent contamination of natural habitats.
- Restrict unnecessary vegetation clearing around kiln sites.

4.8 Solid Waste Generation

- Segregate ash, clinker, and other solid wastes.
- Reuse ash where technically feasible (e.g., in construction materials) following applicable standards.
- Dispose of non-reusable waste through approved waste management facilities.
- Maintain clean storage areas for solid waste.
- Prohibit open dumping and open burning of waste materials.
- Maintain records of waste generation and disposal.

4.9 Noise Pollution

- Maintain machinery and generators to minimize noise.
- Install silencers or acoustic enclosures on noisy equipment where practicable.
- Restrict high-noise activities to daytime hours.
- Provide hearing protection to workers exposed to elevated noise levels.
- Develop vegetative barriers around kiln sites to reduce noise propagation.
- Monitor workplace noise periodically.

4.10 Occupational Health and Safety

- Implement a comprehensive Occupational Health and Safety (OHS) Management Plan.
- Provide appropriate PPE to all workers and ensure its proper use.
- Conduct regular safety training and emergency response drills.
- Install first-aid facilities and maintain emergency contact procedures.
- Ensure safe manual handling practices and mechanical aids where feasible.
- Provide adequate drinking water, sanitation, shaded rest areas, and heat stress management measures.
- Display safety signage throughout the workplace.
- Conduct periodic health surveillance of workers.

4.11 Social Impacts

- Convert conventional BTKs to Zig-Zag kilns to improve ambient air quality and reduce impacts on nearby communities.
- Maintain adequate setback distances from residential areas, schools, and hospitals.
- Develop and implement a community grievance redress mechanism.
- Control traffic through designated haul routes and speed limits.
- Cover trucks transporting coal, ash, and bricks to prevent dust emissions.
- Maintain access roads to minimize dust generation and road deterioration.
- Engage with local communities regarding kiln operations and environmental performance.
- Conduct periodic environmental monitoring and publicly disclose compliance where required.

4.12 Cross-Cutting Measures

In addition to the above, the following overarching measures should be implemented:

- Mandatory conversion of all conventional BTKs to Zig-Zag Brick Kiln technology in accordance with the Punjab Environmental Protection (Smog Prevention and Control) Rules.
- Strict enforcement of the prohibition on burning hazardous and waste-derived fuels.
- Regular environmental monitoring of ambient air quality, stack emissions, noise, and waste management practices.
- Compliance with the Punjab Environmental Protection Act, 1997 (amended 2012), the Punjab Environmental Protection (Smog Prevention and Control) Rules, and applicable Punjab Environmental Quality Standards (PEQS).
- Regular inspections by the EPA, Punjab to ensure continued compliance.
- Continuous environmental awareness and capacity-building programs for kiln owners, managers, and workers.

Environmental Assessment Checklist

Section I: Project Description

File No _____ (To be filled by EPA)

Date _____

General Information

1. Project Name or Title _____
2. Project Proponent (Department or Organization) _____
3. Address _____
4. Telephone _____
5. Fax _____
6. E-mail _____
7. Representative of the Proponent _____
8. Designation _____
9. Name of the person who conducted this assessment _____
10. Designation _____
11. Qualification _____

Permanent Brick Kilns

Project Information

12. Project Location _____
13. Cost of the Project _____
14. Area of the proposed land for the project
Total _____ m²
Proposed covered _____ m²
Open space _____ m²
15. List key equipment of the plant _____

16. Brief Project Description _____

Please attach a plot plan of the proposed project site showing the location of the key structures, access, utilities, units, etc.

17. Design production capacity of the unit _____

18. Number and type of qualification of required staff to run the project? _____

19. What will be the expected water requirement for the project? _____ m³/d

20. What is the proposed source of water? _____

21. Where the wastewater from the unit be disposed? _____

22. Please describe any treatment system for the wastewater planned? _____

23. What is the height of the proposed stack? _____ m

24. What will be the daily consumption of various fuel? _____

25. What will be the source of clay? _____

Construction

26. Who owns the proposed land for the project? _____

27. What is the present use of the land? _____

28. Are there any squatter settlements on the land? _____

If yes, please specify

Number of settlements _____

Will any compensation be paid to them? _____

29. Are there any structures on the proposed site now? ☐ Yes ☐ No

30. If yes, will any structure be demolished? ☐ Yes ☐ No

31. If yes, where the demolition waste will be disposed? _____

32. Are there any trees on the proposed site? ☐ Yes ☐ No

33. Will any tree be removed? ☐ Yes ☐ No

If yes, how many? _____

○ Period of construction (start and end dates) _____

35. What major construction equipment (dozer, grader, crane, etc.) will be used?-----

36. Is construction work during the night planned? ☐ Yes ☐ No

Temporary Brick Kilns

Project Information

37. Project Location _____

38. Brief Project Description _____

Please attach a plot plan of the proposed project site showing the location of the key structures, access, utilities, units, etc.

39. Design production capacity of the unit _____

40. Number and type of qualification of required staff to run the project? _____

41. What will be the expected water requirement for the project? _____ m³/d

42. What is the proposed source of water? _____

43. Where the wastewater from the unit will be disposed? _____

44. Please describe any treatment system planned for the wastewater? _____

45. What is the height of the proposed stack? _____ m

46. What will be the daily consumption of various fuel? _____

47. What will be the source of clay? _____

48. Who owns the proposed land for the project? _____

49. Total period of lease _____

50. Total area of the proposed land for the project _____ m²

51. To what depth the clay will be removed? _____ m

52. What is the present use of the land? _____

53. Are there any structures on the proposed site now? ☐ Yes ☐ No

54. If yes, will any structure be demolished? ☐ Yes ☐ No

55. If yes, where the demolition waste will be disposed? _____

56. Are there any trees on the proposed site? ☐ Yes ☐ No

57. Will any tree be removed? ☐ Yes ☐ No

If yes, how many? _____

58. Period of operation (start and end dates) _____

59. Is operations work during the night planned? ☐ Yes ☐ No

Section II: Screening

Is the proposed project located in an ecologically sensitive area?	☐ Yes	☐ No
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If the answer to the above questions is yes, then the project would require an initial environmental examination or an environment impact assessment. Refer to the Punjab Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000 for appropriate category.

Section III: Environmental Profile

- Describe the terrain of the project area:

Flat or Level (Slope < 3%)
 Level to moderately steep (Slope 3%-30%)
 Moderately steep to mountainous (Slope > 30%)

- Are there signs of soil erosion or landslide anywhere within 500 m of the proposed site?

☐ **Yes** ☐ **No**

If yes, please describe (where, nature)_____

- Is there any surface water body (river, canal, stream, lake, wetland) within 1,000 m of the proposed site?

☐ **Yes** ☐ **No**

If yes, describe each water body:

Name (including type, ie, river, canal or stream)	Dimensions	Status and Uses (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, eg, agriculture, domestic, industrial, washing, fishery)

- Is there any groundwater well on the proposed site or within 500 m of the proposed site?

☐ **Yes**

☐ **No**

If yes, describe each well:

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Type (Dug well, tube well, hand pump) and Energy Source (Electricity, diesel engine, animal driven, manual)	Location (Village, road, mohalla, etc. and distance from the site)	Depth and Yield	Uses (Drinking, agriculture, domestic, industrial, washing, livestock)

5. Based on the interview of the surrounding population or a wildlife expert, is any form of wildlife found on, or around the proposed site of the project?

☐ Yes

☐ No

If yes, please describe _____

6. Are there any existing trees or vegetation on the proposed site?

☐ Yes

☐ No

If yes, how many? _____

7. Are there any reserved forest or protected area within 1,000 m of the proposed site?

☐ Yes

☐ No

If yes, please describe? _____

8. What is the present land use in the vicinity (roughly a radius of 500 m) of the proposed site?

Description	Residential (Thick, Moderate, Sparse)	Commercial (Office, Shops, Fuel Stations)	Open Land (Parks, Farmlands, unutilized plots, barren land)	Sensitive Receptors and Sites of Cultural Importance	Other

(Please attach a map of the proposed project site and indicate roughly the area that you have considered for this evaluation)

9. For any agricultural farmland on the proposed site and a radius of 500 m around it, provide the following information:

Main crop(s) and average yield _____

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Source of irrigation water _____

Area affected by salinity or water logging _____

10. Please describe all the sensitive receptors within 500 m of the proposed site:

Type (schools, colleges, hospitals, and clinics)	Name	Size (Number of students or number of beds)	Location (Village, road, mohalla, etc.)	Distance from Site

11. Roughly, how many houses are within a radius of 500 m of the proposed site?

12. What proportion of the houses in the area are *pukka*, *semi-pukka*, and *kutchha*? _____

13. How are the general hygienic conditions of the project area?

☐ Generally clean

☐ Fair

☐ Poor

14. Is there any bad odor in the project area?

☐ Yes

☐ No

What is the source of the odor? _____

15. What are the main sources of income of the surrounding community? _____

16. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 1,000 m of the proposed scheme?

☐ Yes

☐ No

If yes, please describe? _____

17. What other main sources of pollution exist within a radius of 500 m of the proposed site:

Name of the Source	Type of Pollution (Noise, air water)	Location (Village, road, mohalla, etc.)	Distance from Site

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Environmental Assessment Checklist and Guidelines Brick Kilns Industry



Section IV: Impact Assessment

Potential Negative Environmental Impacts	Tick, if relevant	Mitigation Measures	Tick, if proposed	Monitoring Plan
Air Pollution (Major Impact)	☐	Only approved fuels will be used. Burning of tyres, plastics, rubber, hazardous waste, used oil, or other prohibited fuels will be strictly prohibited.	☐	Review fuel purchase records and conduct site inspections.
		Zigzag kiln technology or other Punjab EPA-approved energy-efficient kiln technology will be adopted.	☐	Verify kiln design and operational efficiency.
		Chimneys will comply with Punjab EPA design and height requirements.	☐	Inspect chimney dimensions and emissions.
		Kilns will be properly operated and maintained to ensure complete combustion and minimize smoke emissions.	☐	Routine operational inspections.
		Dust suppression measures, including water sprinkling, will be implemented on haul roads and material handling areas.	☐	Daily site inspection during dry weather.
		Ambient air quality will comply with applicable Punjab Environmental Quality Standards (PEQS).	☐	Ambient air quality monitoring (PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , CO).
Human Health Impacts	☐	Workers will be provided with appropriate Personal Protective Equipment (PPE), including respirators, gloves, and safety footwear.	☐	PPE inspection and compliance records.
		Periodic medical examinations of workers will be conducted.	☐	Health surveillance records.
		Exposure of workers to excessive smoke, dust, and heat will be minimized through appropriate work practices.	☐	Workplace inspections.



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Potential Negative Environmental Impacts	Tick, if relevant	Mitigation Measures	Tick, if proposed	Monitoring Plan
		Drinking water, sanitation facilities, and first-aid arrangements will be provided.	☐	Routine inspection.
Soil Pollution	☐	Ash and combustion residues will be collected and disposed of at approved locations.	☐	Site inspection and disposal records.
		Fuel, lubricants, and chemicals will be stored on impermeable surfaces with secondary containment.	☐	Storage area inspection.
		Spill prevention and cleanup procedures will be implemented.	☐	Emergency response inspection.
Water Pollution	☐	Wastewater will not be discharged into canals, ponds, or natural watercourses without treatment.	☐	Water quality inspection.
		Surface runoff will be managed to prevent contamination of nearby water bodies.	☐	Drainage inspection.
		Fuel and chemical storage areas will be located away from watercourses.	☐	Site inspection.
Climate Change	☐	Energy-efficient kiln technologies and improved combustion practices will be adopted.	☐	Fuel consumption records.
		Fuel consumption will be optimized to reduce greenhouse gas emissions.	☐	Production and fuel efficiency records.
		Tree plantation and green belts will be developed around the kiln premises.	☐	Plantation monitoring.
Impacts on Agriculture and Vegetation	☐	Green belts will be established around the facility to reduce dust dispersion.	☐	Periodic inspection.
		Dust suppression measures will be implemented throughout the site.	☐	Visual inspection.
		Kiln emissions will be controlled to minimize impacts on surrounding crops and vegetation.	☐	Ambient air quality monitoring.
Ecological Impacts	☐	Brick kilns will not be established within environmentally sensitive areas or protected habitats.	☐	Verify site location and land use approvals.



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Potential Negative Environmental Impacts	Tick, if relevant	Mitigation Measures	Tick, if proposed	Monitoring Plan
		Existing vegetation will be retained wherever possible.	☐	Site inspection.
		Compensatory plantation using native species will be undertaken where vegetation removal is unavoidable.	☐	Plantation survival records.
Solid Waste Generation	☐	Solid waste will be segregated and disposed of through approved waste management facilities.	☐	Waste disposal records.
		Reusable bricks, ash, and construction materials will be recycled wherever feasible.	☐	Waste utilization records.
		Open dumping and open burning of waste will be prohibited.	☐	Routine site inspection.
Noise Pollution	☐	Machinery and generators will be regularly maintained to minimize noise emissions.	☐	Maintenance records.
		Workers exposed to excessive noise will be provided with hearing protection.	☐	PPE inspection.
		Noise-generating equipment will be located away from sensitive receptors where feasible.	☐	Noise monitoring at plant boundary.
Occupational Health and Safety	☐	An Occupational Health and Safety Plan will be implemented.	☐	OHS audits.
		Safe operating procedures will be followed for kiln operation and material handling.	☐	Site inspections.
		Fire extinguishers, first-aid kits, and emergency response equipment will be available.	☐	Monthly safety inspections.
		Workers will receive regular safety and environmental training.	☐	Training records.
Social Impacts	☐	Adequate buffer distances will be maintained from residential areas, schools, hospitals, and other sensitive receptors.	☐	Verify site layout and field inspection.



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Potential Negative Environmental Impacts	Tick, if relevant	Mitigation Measures	Tick, if proposed	Monitoring Plan
		Transportation routes will be planned to minimize traffic congestion and community disturbance.	☐	Traffic inspection.
		Community complaints will be recorded and addressed through a grievance redress mechanism.	☐	Complaint register review.
		Trucks transporting raw materials and bricks will be covered to prevent dust emissions.	☐	Routine transport inspection.



Section-V: Undertaking

I, _____ S/O, D/O _____
as the owner/proponent/authorized representative of the project titled:
“ _____ ”

located at _____, Punjab, solemnly affirm
and undertake that:

1. The information provided in this checklist and supporting documents is true and correct.
2. The project shall be established and operated strictly in compliance with Punjab Environmental Protection Act, 1997 and Punjab IEE/EIA Regulations, 2022.
3. All mitigation measures identified in Section IV shall be implemented.
4. Spill prevention, hazardous waste management and fire safety requirements shall be strictly complied with.
5. No oily wastewater or fuel shall be discharged into drains/canals.
6. EPA Punjab may inspect the project site at any stage, and I shall provide full cooperation.
7. Any false statement or non-compliance may lead to legal action, penalties, or cancellation of approval.

Signature of Proponent: _____

Name: _____

CNIC: _____

Designation: _____

Date: _____

Stamp: _____

Witnesses:

1. Name: _____ CNIC: _____ Signature: _____

2. Name: _____ CNIC: _____ Signature: _____



Additional annexures (highly recommended)

Annex-VI: Documents to be Submitted with the IEE

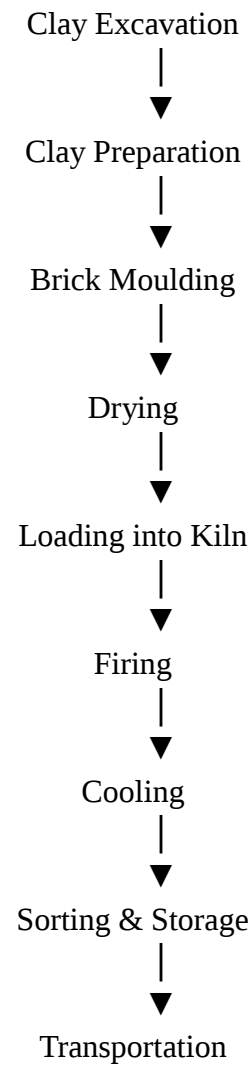
Provide a checklist such as:

- ✓ Cover letter
- ✓ IEE report
- ✓ Location map
- ✓ Google Earth image
- ✓ Site photographs
- ✓ Layout plan
- ✓ Process flow diagram
- ✓ Land ownership/lease documents
- ✓ Fuel specifications
- ✓ Water source approval (if applicable)
- ✓ EMP
- ✓ Monitoring Plan
- ✓ Any other required supporting documents

This will help proponents avoid incomplete submissions.

Annex-VII: Typical Process Flow Diagram

Illustrate the brick manufacturing process:





Annex-VIII: Typical Site Layout

Provide an example showing:

- Chimney
- Kiln
- Coal storage
- Clay storage
- Drying area
- Green belt
- Office
- Drainage
- Internal roads
- Nearby sensitive receptors



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Annex-IX: Environmental Management Plan (EMP) Format

Provide a blank template for proponents to complete.

Environmental Aspect	Potential Impact	Proposed Mitigation Measure	Monitoring Parameter	Monitoring Frequency	Responsibility for Implementation	Responsibility for Monitoring	Estimated Cost (PKR)	Remarks
Pre-Construction Phase								
Land acquisition and site preparation								
Site clearing and vegetation removal								
Transport of construction materials								
Labour camp (if applicable)								
Other								
Construction Phase								
Air quality (dust emissions)								
Noise								
Construction waste								
Fuel and oil storage								
Soil contamination								
Water consumption								
Occupational Health and Safety								
Traffic management								
Community safety								
Other								



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Environmental Aspect	Potential Impact	Proposed Mitigation Measure	Monitoring Parameter	Monitoring Frequency	Responsibility for Implementation	Responsibility for Monitoring	Estimated Cost (PKR)	Remarks
Operational Phase								
Ambient air quality								
Stack emissions								
Fuel management								
Water use								
Wastewater management								
Solid waste and ash management								
Noise from machinery								
Occupational Health and Safety								
Green belt development								
Housekeeping								
Emergency preparedness								
Community complaints								
Environmental monitoring								
Other								



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