



**GOVERNMENT OF PUNJAB  
ENVIRONMENTAL PROTECTION AGENCY**



**Environmental Assessment Checklists and Guidelines**

**Sanitation Schemes**

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## **1. Introduction**

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### **1.1 Background**

Sanitation schemes are projects developed to collect, convey, treat, and safely dispose of or reuse wastewater and human waste in order to protect public health, improve environmental quality, and provide hygienic living conditions.

Sanitation schemes in Punjab are implemented by various government departments and agencies depending on the location and nature of the project. Major implementing agencies include the Housing, Urban Development and Public Health Engineering Department (HUD&PHED), Public Health Engineering Department (PHED), Local Government and Community Development Department (LG&CD), Punjab Water and Sanitation Authority (Punjab WASA), Water and Sanitation Agencies (WASAs) in major cities, Punjab Rural Municipal Services Company (PRMSC), and local governments including Metropolitan Corporations, Municipal Corporations, Municipal Committees, and Tehsil Councils. Sanitation schemes of following types are being implemented and require assessment environmental impacts to minimize by implementing mitigation measures.

Currently, major sanitation initiatives in Punjab include the Punjab Rural Sustainable Water Supply and Sanitation Project (PRSWSSP), which provides integrated water supply, sewerage, drainage, and wastewater treatment facilities in rural areas; the Punjab Water and Sanitation Authority (Punjab WASA) Development Programme, which focuses on strengthening urban sewerage and wastewater management infrastructure; and the Suthra Punjab Programme, which aims to improve municipal sanitation, drainage, and solid waste management services across the province.

### **1.2 Purpose of the Guidelines**

These guidelines have been prepared to assist project proponents, environmental consultants, and regulatory authorities in identifying and addressing the potential environmental impacts associated with the planning, design, construction, operation, and maintenance of sanitation schemes to facilitate compliance with the applicable environmental laws, regulations, and standards of Punjab. Their purpose is to promote environmentally sound planning and sustainable development while minimizing adverse impacts on the environment and public health.

## **13 Scope of the Guidelines**

These guidelines are applicable to sanitation projects costing less than Rupees ten million. It includes the following type of projects:

### **i. Rural Sewerage Schemes**

These schemes are designed to provide underground sewerage systems in rural areas and peri-urban settlements. They generally include household sewer connections, sewer pipelines,

manholes, inspection chambers, and outfall sewers to safely collect and convey domestic wastewater for treatment or disposal.

ii. Wastewater Treatment Plants (WWTPs)

Wastewater treatment plants are constructed to treat collected sewage before its discharge into natural water bodies or reuse for irrigation. Depending on the project size, treatment systems may include waste stabilization ponds, oxidation ponds, constructed wetlands, package treatment plants, or conventional mechanical treatment facilities.

iii. Village Drainage Schemes

Village drainage schemes involve the construction or rehabilitation of lined surface drains to safely convey stormwater and domestic wastewater. These schemes help reduce waterlogging, improve sanitation conditions, and protect public health in rural communities.

iv. Combined Water Supply and Sanitation Schemes

These integrated schemes provide both safe drinking water and sanitation facilities under a single development project. Typical components include water supply systems, underground sewerage networks, household sanitation facilities, drainage infrastructure, and wastewater treatment systems.

v. Rehabilitation and Expansion of Existing Sewerage Systems

These projects focus on improving existing sewerage infrastructure by replacing deteriorated sewer pipelines, rehabilitating damaged manholes, increasing sewer carrying capacity, and extending sewerage services to newly developed residential and commercial areas.

vi. Sewer Pumping Stations

Sewer pumping stations are constructed where gravity flow is not feasible due to topographic conditions. These facilities pump sewage through rising mains to wastewater treatment plants or designated disposal points, ensuring efficient operation of the sewerage system.

vii. Decentralized Rural Sanitation Systems

In remote villages and low-density settlements, decentralized sanitation systems are implemented where centralized sewerage systems are not economically feasible. These systems typically include septic tanks, soak pits, small sewer networks, and localized wastewater treatment facilities.

viii. Elimination of Open Sewage Ponds

Several sanitation projects aim to replace open sewage ponds with properly designed sewerage systems and wastewater treatment facilities. These schemes help reduce environmental pollution, eliminate foul odors, and minimize public health risks.

ix. Urban Sewerage and Drainage Improvement Projects

Urban sanitation projects include the construction of new sewer lines, rehabilitation of trunk sewers, improvement of stormwater drainage systems, desilting of drains, flood mitigation measures, and modernization of sewerage infrastructure through advanced monitoring technologies.

x. Faecal Sludge Management (FSM) Systems

In areas without centralized sewerage systems, faecal sludge management schemes are implemented to ensure the safe collection, transportation, treatment, and disposal of sludge from septic tanks. These systems help prevent contamination of soil, groundwater, and surface water.

xi. Community and Institutional Sanitation Schemes

These schemes provide sanitation facilities in public institutions such as schools, healthcare facilities, markets, and community buildings. They typically include toilets, sewer connections, septic tanks, drainage systems, and wastewater disposal facilities to improve hygiene and public health.

xii. Integrated Solid Waste and Sanitation Improvement Programmes

Some provincial programmes combine sanitation services with municipal solid waste management. These projects include door-to-door waste collection, street sweeping, drain cleaning and desilting, removal of illegal waste dumps, and improvement of overall urban cleanliness.

**1.4 How to use these Guidelines**

The project proponent (the local government, municipal government, city government, the cantonment board, NGO, or private organization) is obliged to use these guidelines. The project proponent has to fill in an environmental assessment form. The following steps are to be taken in this regard:

**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**]

Completed form is to be submitted to the Environmental Protection Agency, Punjab for evaluation. EPA Punjab may request for additional information or decide to undertake visit to the proposed project site in order to assess the environmental impact of the proposed project.

## 1.5 Glossary

**Act:** means The Punjab Environmental Protection Act 1997 (Amended 2017).

**Biological Oxygen Demand (BOD):** BOD is a measurement of oxygen required by bacteria to oxidize (stabilize) the organic matter in the wastewater.

**Black water:** is wastewater from toilets and latrines containing feces or body fluids and water from sinks used for food preparation or disposal of chemical or biological ingredients.

**Contamination:** introduction of impurities in the environment.

**Drain:** A channel or pipe along which liquid drains away; esp. (a) a pipe for leading away rainwater etc.; (b) an open channel made to drain an area of land; an artificial river.

**Disease Vectors:** insects or small mammals carrying disease-causing germs.

**Environment:** means (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors in sub-clause (a) to (f).

**Environmental Assessment:** a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.

**Ecosystem:** a biological community plus the surrounding physical environment.

**Endangered Species:** a species in danger of becoming extinct.

**Grey water:** is the water that has been used once in a house or building for washing clothes, shower, bathing, hand washing, or dishwashing and can therefore be used again in toilets or to water gardens and landscaping.

**Impact on Environment:** means any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

**Infiltration** seepage of water into ground.

**Invasive Non-native Species** a species that is introduced into an area or region from outside.

**Mitigation Measure** means a measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure.

**Pathogens** the microorganisms that are capable of producing disease.

**Potable water** is water that is safe for drinking and cooking.

**Regulations** means The Punjab Environmental Protection (Review of IEE and EIA) Regulations, 2022.

**Sanitation** treatment and disposal of sewage.

**Sewer:** A sewer is a pipe or underground conduit used to collect and transport wastewater (sewage) and, in some systems, stormwater from homes, commercial buildings, industries, and other facilities to a wastewater treatment plant or disposal point.

**Sewerage System:** A sewerage system is an interconnected system of sewers, pumping stations, manholes, and wastewater treatment facilities designed to collect, transport, treat, and safely dispose of sewage and wastewater to protect public health and the environment.

**Sewage:** Wastewater containing human waste, domestic wastewater, and sometimes industrial wastewater.

**Soakway:** A pit into which wastewater flows in order to drain slowly out into the surrounding soil.

**Septic Tank:** A tank (associated either with a sewage works or with a residence not connected to a sewer) in which the solid content of sewage is allowed to settle and accumulate and is purified by the action of anaerobic bacteria.

**Stabilization Ponds:** Shallow ponds or lagoons constructed to treat domestic wastewater.

**Sludge:** Any muddy or slimy matter or deposit; a thick suspension of fine particles or gel in a liquid, esp. one formed as waste in any of various industrial and mechanical processes.

**Soil Erosion:** Physical removal of soil, either by wind or by running water.

**Sedimentation:** Deposition of material in the form of sediment, as a geological process, or in a liquid in a tank, centrifuge, etc.

**Suspended Solids (SS) :** Organic and inorganic particles, which do not dissolve in the wastewater but remain suspended.

## **2. Project Profile**

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### **2.1 Project Description**

The proponent, after consulting Annexures 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 or expansion)
- Government's designate nature of proposed area
- Total project area.
- Estimated water demand during construction and operation phases

- Covered and open areas
- Land ownership status
- Estimated project cost
- Detail of different categories of houses and others structures
- Number of employees during construction phase.

### **3. Environmental Aspects**

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Sanitation schemes generally have significant positive impacts on public health and environmental quality by improving wastewater collection, treatment, and disposal. However, like other infrastructure projects, they may also cause temporary adverse environmental impacts during construction and operation if appropriate mitigation measures are not implemented.

#### **3.1 Land Acquisition and Resettlement**

Construction of sewerage networks, pumping stations, and wastewater treatment plants may require acquisition of land. In some cases, this may result in the loss of agricultural land, temporary disruption of livelihoods, or relocation of structures where private land is affected.

#### **3.2 Soil Erosion and Land Disturbance**

Excavation for sewer pipelines, pumping stations, and treatment facilities may disturb the soil surface and increase the risk of soil erosion, particularly during the rainy season. Improper disposal of excavated material may also degrade nearby land.

#### **3.3 Dust and Air Pollution**

Construction activities such as excavation, transportation of materials, and operation of construction machinery may generate dust and exhaust emissions. During the operational phase, unpleasant odors may be produced from pumping stations and wastewater treatment plants if not properly managed.

#### **3.4 Noise and Vibration**

The use of heavy construction equipment, excavation machinery, and transport vehicles may generate noise and vibration, causing temporary disturbance to nearby residents, schools, hospitals, and commercial establishments.

### **3.5 Surface Water Pollution**

Improper handling of construction materials, accidental fuel spills, or discharge of untreated wastewater during construction may contaminate nearby streams, canals, ponds, and drainage channels. During operation, leakage or overflow from sewerage systems may also affect surface water quality.

### **3.6 Groundwater Contamination**

Leakage from damaged sewer pipelines, septic tanks, pumping stations, or untreated wastewater disposal may contaminate groundwater resources, particularly in areas where groundwater is used for drinking purposes.

### **3.7 Wastewater and Sludge Management**

Wastewater treatment plants generate sludge that requires proper treatment, handling, and disposal. Inadequate sludge management may result in soil, surface water, and groundwater pollution, as well as odor nuisance.

### **3.8 Solid Waste Generation**

Construction activities generate excavated material, concrete debris, packaging waste, and scrap materials. During operation, screenings, grit, and other solid wastes generated at wastewater treatment facilities require proper disposal.

### **3.9 Traffic Disruption**

Installation of underground sewer pipelines often requires excavation along roads and streets, which may temporarily disrupt traffic movement, restrict access to residential and commercial properties, and increase the risk of road accidents.

### **3.10 Occupational Health and Safety**

Construction workers may be exposed to hazards such as deep excavations, heavy machinery, electrical equipment, confined spaces, and handling of construction materials. During operation, workers at wastewater treatment plants may be exposed to biological hazards, toxic gases, and chemicals.

### **3.11 Community Health and Safety**

Open trenches, construction equipment, and temporary road diversions may pose safety risks to nearby residents. During operation, exposure to untreated sewage or poorly maintained sanitation facilities may increase public health risks.

### **3.12 Odor and Vector Breeding**

Improperly maintained sewerage systems, pumping stations, wastewater treatment plants, and sludge storage facilities may generate unpleasant odors and create breeding habitats for mosquitoes, flies, and rodents, resulting in nuisance and potential health concerns.

### **3.13 Biodiversity Impacts**

Construction near rivers, wetlands, or natural habitats may temporarily disturb vegetation and wildlife. Improper discharge of untreated wastewater may adversely affect aquatic ecosystems and reduce water quality.

### **3.14 Energy Consumption and Greenhouse Gas Emissions**

Operation of pumping stations and wastewater treatment plants requires electricity and, in some cases, diesel-powered generators. Wastewater treatment processes may also produce greenhouse gases such as methane and nitrous oxide if not properly managed.

### **3.15 Positive Environmental Impacts**

Sanitation schemes provide numerous environmental and social benefits, including improved public health, reduced incidence of water-borne diseases, improved surface and groundwater quality, enhanced environmental hygiene, protection of natural water resources, improved living conditions, and opportunities for safe reuse of treated wastewater for agriculture and landscaping.

## **4. Environmental Mitigation Measures**

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### **4.1 Land Acquisition and Loss of Vegetation**

The project proponent shall:

- Minimize land acquisition by optimizing the project layout and routing of sewer pipelines.
- Prefer government land for construction of pumping stations and wastewater treatment facilities where feasible.
- Avoid environmentally sensitive areas, forests, wetlands, and protected habitats.
- Restrict vegetation clearing to the minimum area required for construction.

- Preserve mature trees wherever practicable.
- Restore disturbed areas through landscaping and plantation of indigenous tree species after construction.
- Compensate for tree removal in accordance with applicable government regulations.

#### **4.2 Soil Erosion and Land Disturbance**

The project proponent shall:

- Restrict excavation activities to designated work areas.
- Minimize the duration for which excavated areas remain exposed.
- Install temporary erosion and sediment control measures where required.
- Stockpile excavated soil away from drainage channels and watercourses.
- Reuse excavated material for backfilling wherever suitable.
- Restore disturbed surfaces immediately after completion of construction.

#### **4.3 Dust, Air Emissions and Noise**

The project proponent shall:

- Sprinkle water on construction sites and unpaved roads to suppress dust.
- Cover vehicles transporting construction materials and excavated soil.
- Maintain construction machinery in good operating condition to minimize exhaust emissions.
- Restrict construction activities to daytime hours in residential areas.
- Use equipment fitted with effective silencers.
- Provide personal protective equipment (PPE) to workers exposed to dust and excessive noise.
- Monitor compliance with applicable ambient air quality and noise standards.

#### **4.4 Surface Water Pollution**

The project proponent shall:

- Prevent discharge of untreated wastewater into natural drains and water bodies during construction.
- Protect nearby streams and canals from construction runoff through appropriate erosion control measures.
- Store fuels, oils, and chemicals away from watercourses.
- Immediately clean up accidental spills.

- Ensure wastewater treatment facilities operate efficiently before effluent discharge.
- Comply with the applicable Punjab Environmental Quality Standards (PEQS) for wastewater discharge.

#### **4.5 Groundwater Contamination**

The project proponent shall:

- Design and construct sewer pipelines, pumping stations, and treatment facilities to prevent leakage.
- Regularly inspect sewerage infrastructure for leakage and structural damage.
- Properly line sludge drying beds and wastewater treatment units where required.
- Avoid locating treatment facilities near drinking water wells where feasible.
- Monitor groundwater quality in areas where contamination risks exist.

#### **4.6 Wastewater and Sludge Management**

The project proponent shall:

- Ensure all collected wastewater is treated before final disposal or reuse.
- Operate wastewater treatment plants according to approved operational procedures.
- Regularly remove and safely dispose of sludge at approved disposal facilities.
- Promote beneficial reuse of treated sludge where permitted and environmentally acceptable.
- Maintain records of wastewater treatment performance and sludge disposal.

#### **4.7 Solid Waste Generation**

The project proponent shall:

- Segregate construction and operational waste at the source.
- Reuse or recycle construction materials wherever practicable.
- Dispose of non-recyclable waste at approved disposal sites.
- Store hazardous waste separately in properly labeled containers.
- Maintain good housekeeping practices at construction sites and operational facilities.

#### **4.8 Traffic Disruption and Access Restrictions**

The project proponent shall:

- Prepare and implement a Traffic Management Plan prior to construction.
- Schedule excavation activities to minimize disruption to traffic and local businesses.

- Install warning signs, barricades, and diversion routes around excavation sites.
- Provide safe pedestrian access throughout construction.
- Restore roads and footpaths promptly after pipeline installation.

#### **4.9 Occupational Health and Safety**

The project proponent shall:

- Develop and implement an Occupational Health and Safety Plan.
- Provide workers with appropriate PPE.
- Conduct regular safety training and toolbox talks.
- Fence hazardous work areas and install warning signs.
- Maintain first-aid facilities and emergency response equipment at all work sites.
- Ensure safe entry procedures for confined spaces such as manholes and pumping stations.

#### **4.10 Community Health and Safety**

The project proponent shall:

- Restrict public access to active construction areas.
- Install adequate lighting, fencing, and warning signage around excavations.
- Minimize construction-related dust and noise affecting nearby residents.
- Maintain emergency access to residences, schools, hospitals, and commercial establishments.
- Establish a grievance redress mechanism for affected communities.

#### **4.11 Odor and Vector Breeding**

The project proponent shall:

- Properly operate and maintain wastewater treatment facilities and pumping stations.
- Regularly remove sludge and accumulated solid waste.
- Prevent stagnant wastewater in drains and treatment units.
- Implement routine cleaning and maintenance of sewerage infrastructure.
- Undertake vector control measures where necessary.
- Develop green buffer zones around wastewater treatment facilities where feasible.

#### **4.12 Biodiversity Impacts**

The project proponent shall:

- Avoid construction activities in environmentally sensitive areas wherever feasible.
- Minimize disturbance to natural vegetation during construction.
- Restore disturbed habitats after project completion.
- Prevent discharge of untreated wastewater into natural ecosystems.
- Plant indigenous tree and shrub species during site restoration.
- Comply with all applicable environmental protection requirements.

#### **4.13 Energy Consumption and Greenhouse Gas Emissions**

The project proponent shall:

- Install energy-efficient pumps and mechanical equipment.
- Conduct regular maintenance to improve energy efficiency.
- Optimize pumping schedules to reduce electricity consumption.
- Promote renewable energy sources such as solar power where technically and economically feasible.
- Minimize vehicle idling and maintain construction machinery to reduce fuel consumption and emissions.
- Monitor energy consumption of wastewater treatment facilities periodically.

#### **4.14 Positive Environmental Impacts**

To maximize environmental and social benefits, the project proponent shall:

- Ensure continuous operation and maintenance of sanitation infrastructure.
- Promote safe disposal and treatment of wastewater.
- Encourage reuse of treated wastewater for irrigation where permitted.
- Conduct public awareness campaigns on sanitation and hygiene.
- Improve environmental monitoring of wastewater quality.
- Promote water conservation and efficient resource use.
- Maintain sanitation facilities to ensure long-term environmental and public health benefits.

#### **4.16 Wastewater Use in Agriculture and Aquaculture**

- i. Use of treated wastewater for Agriculture and Aquaculture needs strict compliance of WHO guidelines. Recommendations of WHO are given as below:
  - Treat wastewater to reduce pathogen concentrations,
  - Restrict use of treated wastewater to crops that will be cooked,

- Use application methods that reduce contact with edible crops, and
- Minimize the exposure of workers, crop handlers, field workers and consumers to waste.

ii. Use of treated wastewater Aquaculture

Use of treated wastewater for aquaculture also needs strict compliance of WHO guidelines. Recommendations of WHO are given as below:

- Wastewater used in aquaculture should have <103 fecal coliforms per 100 ml to minimize risk to public health.

*Ref:* Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture: Measure for Public Health Protection, 1989, WHO, Geneva.

## **Environmental Assessment Checklist**

### **Section I: Project Description**

File No \_\_\_\_\_ (To be filled by EPA) Date \_\_\_\_\_

#### **General Information**

1. Project Name or Title \_\_\_\_\_

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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 \_\_\_\_\_

### **Project Information**

12. Project Location \_\_\_\_\_
13. Cost of the Project \_\_\_\_\_
14. Period of construction (start and end dates) \_\_\_\_\_

### **Proposed Activity**

15. Number and type of major construction equipment that will be used \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
16. The total construction material that will be utilized? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
17. Will any new land be acquired? \_\_\_\_\_ If  
yes, please specify

The total area: \_\_\_\_\_

Present ownership of land \_\_\_\_\_

What is the present use of the land? \_\_\_\_\_

How the land will be acquired (Through Land Acquisition Act or direct purchase)? \_\_\_\_\_

When the compensation will be paid? \_\_\_\_\_

18. In case of state land, are there any squatter settlements on the land? \_\_\_\_\_

If yes, please specify

## ***Environmental Assessment Checklists and Guidelines – Sanitation Schemes***

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Number of settlements \_\_\_\_\_

Will any compensation be paid? \_\_\_\_\_

When the compensation will be paid? \_\_\_\_\_

19. Is construction work during the night planned? \_\_\_\_\_

20. How many trees are likely to be removed? \_\_\_\_\_

21. Sanitation scheme type \_\_\_\_\_

22. Number of households that will be served \_\_\_\_\_

23. Brief Project Description \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Please attach a map of the proposed scheme

24. Type, size, capacity and length of sewers \_\_\_\_\_

25. Proposed wastewater disposal \_\_\_\_\_

### **Section II: Screening**

1. Is the proposed scheme or part of the scheme in an ecologically sensitive area?

☐

Yes

☐

No

2. Is the proposed scheme going to cost Rupees five million or more?

☐

Yes

☐

No

If the answer to any of 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, 2022 for appropriate category.

### **Section III: Environmental Profile**

1. Describe the terrain of the project area:

☐

Flat or Level (Slope < 3%)

☐

3%-30%)

Level to moderately steep (Slope

☐

(Slope > 30%)

Moderately steep to mountainous

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(In case the proposed scheme will pass through terrain in which the slope varies, indicate the maximum slope)

2. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 100 m of the proposed scheme?

☐

Yes

☐

No

If yes, please describe? \_\_\_\_\_

3. How many sensitive receptors (schools, colleges, hospitals, and clinics) are within 100 m of the proposed scheme? \_\_\_\_\_

Please describe? \_\_\_\_\_

4. Are there signs of soil erosion or landslide anywhere in the project area?

☐

Yes

☐

No

If yes, please describe (where, nature)? \_\_\_\_\_

5. Is there any surface water body (river, canal, stream, lake, wetland) within 250 m of the proposed scheme?

☐

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) |
|---------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                   |            |                                                                                                                                                                |
|                                                   |            |                                                                                                                                                                |
|                                                   |            |                                                                                                                                                                |
|                                                   |            |                                                                                                                                                                |

6. Is there any groundwater well within 250 m of the proposed scheme?

☐

Yes

☐

No

If yes, describe each well:

| Type (Dug well, tube well, hand pump) | Location (Village and distance from the scheme) | Depth and Yield | Uses (Drinking, agriculture, domestic, industrial, washing, livestock) |
|---------------------------------------|-------------------------------------------------|-----------------|------------------------------------------------------------------------|
|                                       |                                                 |                 |                                                                        |
|                                       |                                                 |                 |                                                                        |

**Environmental Assessment Checklists and Guidelines – Sanitation Schemes**

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |

7. What are the present sources of potable water? \_\_\_\_\_  
\_\_\_\_\_

8. How is the wastewater presently disposed? \_\_\_\_\_  
\_\_\_\_\_

9. Are water-borne diseases common in the area?

☐

Yes

☐

No

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

☐

Generally clean

☐

Fair

☐

Poor

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

☐

Yes

☐

No

What is the source of the odor? \_\_\_\_\_

12. What is the total population of the area? \_\_\_\_\_

13. What are the main sources of income of the community? \_\_\_\_\_  
\_\_\_\_\_

14. What is the average income per household? \_\_\_\_\_

15. What is the average household size? \_\_\_\_\_

16. What proportion of the houses in the area are pukka, semi-pukka, and  
kutcha? \_\_\_\_\_

## Section IV: Impact Assessment

| Potential Negative Environmental Impacts       | Tick, if relevant        | Mitigation Measures                                                                                                                                                                                                                                                                                                                                           | Tick, if proposed                                                                | Monitoring |
|------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------|
| Erosion and sedimentation                      | <input type="checkbox"/> | Silt screens, straw bales or similar erosion control measures will be used. Damage to vegetation will be avoided. Areas damaged during construction will be revegetated.                                                                                                                                                                                      | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> |            |
| Alteration in natural flow of rainwater runoff | <input type="checkbox"/> | Riprap (cobbled stone), gravel or concrete will be used as needed to prevent erosion of drainage structures                                                                                                                                                                                                                                                   | <input type="checkbox"/>                                                         |            |
| Creation of stagnant water pools               | <input type="checkbox"/> | Contouring will be undertaken to ensure proper flow                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/>                                                         |            |
| Creation of stagnant water pools (Soakways)    | <input type="checkbox"/> | Ensure that spilled water and rainwater drain to a soakway or equivalent structure and do not accumulate and create stagnant standing water                                                                                                                                                                                                                   | <input type="checkbox"/>                                                         |            |
| Increase transmission of vector born diseases  | <input type="checkbox"/> | Ventilated improved pit latrine design will be used that traps insect vectors (Pit latrine)<br>Humidity of composting material will be maintained above 60% and excreta will be supplemented with generous quantities of carboniferous material (dry leaves, straw, etc.). The pile should then remain aerobic, odor-free and insect-free (Composting toilet) | <input type="checkbox"/><br><input type="checkbox"/>                             |            |

**Environmental Assessment Checklists and Guidelines – Sanitation Schemes**

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| Potential Negative Environmental Impacts | Tick, if relevant        | Mitigation Measures                                                                                                                                                                                             | Tick, if proposed        | Monitoring |
|------------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------|
|                                          |                          | Humidity of composting material will be maintained below 20% and excreta will be supplemented with alkaline material (ashes or lime). The pile should then remain both odor free and insect free. (Dry toilets) | <input type="checkbox"/> |            |
|                                          |                          | Generous applications of ashes will help ensure that pathogens are destroyed. pH is the most important factor for sterilization (Dry toilets)                                                                   | <input type="checkbox"/> |            |
| Ground water contamination               | <input type="checkbox"/> | Pit latrines will not be installed where the water table is shallow or where the composition of the overlying deposits makes groundwater or an aquifer vulnerable to contamination                              | <input type="checkbox"/> |            |
|                                          |                          | Generous applications of ashes will help ensure that pathogens are destroyed. pH is the most important factor for sterilization (Dry toilets)                                                                   | <input type="checkbox"/> |            |
|                                          |                          | If water table is too high, tank will be lined with clay, plastic sheeting or some other impermeable material to prevent leakage (Septic tank, red bed filter, subsurface wetland)                              | <input type="checkbox"/> |            |
|                                          |                          | Slow-rate overland flow and slow-rate subsurface flow will be used where groundwater is >3 ft. below surface                                                                                                    | <input type="checkbox"/> |            |
| Surface water contamination              | <input type="checkbox"/> | Generous applications of ashes will help ensure that pathogens are destroyed. pH is the most important factor for sterilization (Dry toilets)                                                                   | <input type="checkbox"/> |            |
|                                          | <input type="checkbox"/> | If water table is too high, tank will be lined with clay, plastic sheeting or some other impermeable material to prevent leakage (Septic tank, red bed filter, subsurface wetland)                              |                          |            |

***Environmental Assessment Checklists and Guidelines – Sanitation Schemes***

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|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--|
|  |  | Direct discharge of effluent to waterways will be avoided if possible. Direct discharge to waterways with sufficient volume and flow to assimilate the waste may be acceptable. It is better to add a secondary treatment, such as passing effluent through an anaerobic filter, followed by discharge to an absorption field, or better yet, a constructed wetland (Septic tank) | <input type="checkbox"/> |  |
|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--|

**Environmental Assessment Checklists and Guidelines – Sanitation Schemes**

| Potential Negative Environmental Impacts                                             | Tick, if relevant        | Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Tick, if proposed        | Monitoring |
|--------------------------------------------------------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------------|
|                                                                                      |                          | Leaks from cracked containment structures, broken pipes, faulty valves and similar structures will be monitored and repaired. (Standpipes)                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> |            |
|                                                                                      |                          | Sludge will not be disposed off near water bodies                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> |            |
|                                                                                      |                          | Two-, three- or five-pond systems will be used if possible (anaerobic, facultative, (maturation). Discharging single (facultative) pond systems directly into receiving waters will be avoided. If this is unavoidable, Hydrography-controlled release lagoons will be constructed that discharge effluent only when stream conditions are adequate. Secondary treatment such as a constructed wetland will be installed, if possible.(Wastewater stabilization ponds) | <input type="checkbox"/> |            |
|                                                                                      |                          | Slow-rate overland flow and slow-rate subsurface flow will be used where groundwater is >3 ft. below surface                                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> |            |
|                                                                                      |                          | Collected sewage will be treated, e.g., in a wastewater stabilization pond, and not simply discharged to a river or stream or used directly in agriculture or aquaculture. This is especially important for simplified sewerage, since there is no interceptor tank. (Settled and simplified sewer)                                                                                                                                                                    | <input type="checkbox"/> |            |
| Damage to ecosystem                                                                  | <input type="checkbox"/> | Collected sewage will be treated, e.g., in a wastewater stabilization pond, and not simply discharged to a river or stream or used directly in agriculture or aquaculture. This is especially important for simplified sewerage, since there is no interceptor tank. (Settled and simplified sewer)                                                                                                                                                                    | <input type="checkbox"/> |            |
| Disease transmission to workers and consumers of wastewater in agricultural products | <input type="checkbox"/> | WHO or other national or international guidelines will be followed for use of sludge in agriculture and aquaculture (Biogas reactors) (WHO guidelines recommend (1) treat to reduce pathogen concentrations, (2) restrict use to crops that will be cooked, (3) use application methods that reduce contact with edible crops, and (4) minimize                                                                                                                        | <input type="checkbox"/> |            |

***Environmental Assessment Checklists and Guidelines – Sanitation Schemes***

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|--|--|----------------------------------------------------------------------------------|--|--|
|  |  | the exposure of workers, crop handlers,<br>field workers and consumers to waste) |  |  |
|--|--|----------------------------------------------------------------------------------|--|--|

**Environmental Assessment Checklists and Guidelines – Sanitation Schemes**

| Potential Negative Environmental Impacts         | Tick, if relevant        | Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                           | Tick, if proposed                                    | Monitoring |
|--------------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------|
| Provision of feeding grounds for disease vectors | <input type="checkbox"/> | Creation of stagnant water pools will be avoided<br>Disease vectors will be monitored                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/><br><input type="checkbox"/> |            |
| Introduction of invasive non-native species      | <input type="checkbox"/> | That plant and animal species will be used, which are native to the region.(Free water surface wetland/Floating aquatic macrophytes)                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>                             |            |
| Disease in handlers and processors               | <input type="checkbox"/> | WHO or other national or international guidelines will be followed for use of sludge in wastewater in agriculture and aquaculture.<br>(WHO guidelines recommend (1) treat to reduce pathogen concentrations, (2) restrict use to crops that will be cooked, (3) use application methods that reduce contact with edible crops, and (4) minimize the exposure of workers, crop handlers, field workers and consumers to waste) | <input type="checkbox"/>                             |            |
|                                                  |                          | Workers will be provided with appropriate protective clothing, including rubber gloves, boots, long-sleeved shirts and pants, and workers will be trained to wash hands and faces frequently with soap and warm water and both will be made available (Wastewater treatment facilities)                                                                                                                                       | <input type="checkbox"/>                             |            |

## **Section V: Undertaking**

I, \_\_\_\_\_ (full name and address) as proponent for \_\_\_\_  
(name, description and location of project) do hereby solemnly affirm and declare:

1. The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge
2. I fully understand and accept the conditions contained in the Guidelines for \_\_\_\_  
(name, number and version of the guidelines)
3. I undertake to design, construct and operate the project strictly in accordance with the project described in Form I, submitted with this undertaking.
4. I undertake to implement all mitigation measures and undertake monitoring stated in Form IV, submitted with this undertaking.

Date \_\_\_\_\_

Signature

\_\_\_\_\_ Name \_\_\_\_\_

Designation \_\_\_\_\_

(with official stamp/seal)

Witnesses:

|            |         |                 |
|------------|---------|-----------------|
| Name _____ | Address | Signature _____ |
| Name _____ | Address | Signature _____ |

