NATIONAL ENVIRONMENTAL STANDARDS AND REGULATIONS ENFORCEMENT AGENCY

# NATIONAL GUIDELINES FOR ENVIRONMENTAL AUDIT IN NIGERIA

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# Foreword

The National Environmental Standards and Regulations Enforcement Agency (NESREA), was established by Act 25 of 2007. One of the responsibilities of NESREA is to ensure that the regulated community complies with all environmental laws and regulations in Nigeria.

It will be recalled that the National Guidelines for Environmental Audit in Nigeria was first published in 1999 by the then Federal Environmental Protection Agency (FEPA). The review of the Guidelines was done in 2011 by NESREA. However, another review has become necessary due to various emerging trends and issues bearing on the environment. The review also places NESREA in a better stead to ensure proper environmental auditing of the regulated community, as well as assist the regulated community to carryout mandatory and voluntary self-audit of their facilities.

The document is self-explanatory and easy to use. It has been expanded in scope to cover such issues/areas as infrastructure, agro-allied, land degradation and the service sector. It is intended to serve as a reference material for all stakeholders who have need for environmental audit of their establishment/organizations.

I wish to recommend this document to all stakeholders and urge them to effectively apply the Guidelines as clearly stipulated therein.

I want to also urge all environmental practitioners from both the public and private sectors to use this revised National Guidelines for Environmental Audit in Nigeria in their professional practices towards ensuring a cleaner and healthier environment for all Nigerians.

**Mallam Balarabe Abbas Lawal**
Honourable Minister of Environment

# Acknowledgement

I wish to express my profound gratitude to the Honourable Minister of Environment, Mallam Balarabe Abbas Lawal, for his support, as well as his passion to make the environment safer for all Nigerians.

My gratitude also goes to the Permanent Secretary of the Federal Ministry of Environment, the Senate Committee on Environment, and the House Committee on Environment, for their support towards ensuring a cleaner and healthier environment.

I want to specially thank the Center for Science and Environment, India, for their financial and technical support for the review of the National Guidelines for Environmental Audit in Nigeria.

It is important to acknowledge the inputs of some NESREA Accredited Environmental Consultants in this document, including Sustainabiliti Limited, Sorbita Nigeria Limited and Spatial Ecosystems Limited amongst others.

Finally, I wish to thank the entire staff of NESREA for their immense contribution in various ways in seeing to the successful review of this document.

I thank you all for a job well done.

**Dr. Innocent B.**
**Director General/Chief Executive Officer**
**NESREA**

# List of acronyms

| | | |
|---|---|---|
| EA | - | ENVIRONMENTAL AUDIT |
| EIA | - | ENVIRONMENTAL IMPACT ASSESSMENT |
| EMP | - | ENVIRONMENTAL MANAGEMENT PLAN |
| EMS | - | ENVIRONMENTAL MANAGEMENT SYSTEM |
| FGN | - | FEDERAL GOVERNMENT OF NIGERIA |
| GHS | - | GLOBAL HARMONISED SYSTEM |
| HSE | - | HEALTH SAFETY AND ENVIRONMENT |
| LFN | - | LAWS OF THE FEDERATION OF NIGERIA |
| NESREA- | | NATIONAL ENVIRONMENTAL STANDARDS AND REGULATIONS ENFORCEMENT AGENCY |
| PPE | - | PERSONAL PROTECTIVE EQUIPMENT |
| RD | - | RESEARCH AND DEVELOPMENT |
| UNDP | - | UNITED NATIONS DEVELOPMENT PROGRAMME |
| UNEP | - | UNITED NATIONS ENVIRONMENT PROGRAMME |

# CHAPTER ONE: INTRODUCTION

Environmental Protection remains a central topic of global discourse and imperative for sustainable development. Environmental Policies based upon comprehensive analysis of air, water and land pollution are becoming an important supplement to traditional single media approaches to environmental protection. In this regard globally, environmental regulatory agencies continue to embrace comprehensive, multi-statute solutions to facility permitting, compliance assurance, education/ outreach and regulatory development issues.

In relation to organisation's activities, sustainable development involves meeting the current need of the organisation while protecting resources so that future generations are able to meet their needs. To achieve sustainable development, the organization must consider 1) whether the natural resources they are currently consuming can be replenished for future generations, 2) the impact the production/service process has on the environment, and 3) the impact that their service or product's use and disposal will have on the environment. For these reasons governmental and corporate decision makers need an information system that provides feedback on environmental impact both for control purposes and to support environmental claims useful in promoting the firm as socially responsible.

This calls for Environmental Audit (EA) of existing industries and Environmental Impact Assessment (EIA) for new industries and major developmental projects as provided in sections 21 of the S.I.9 regulations of 1991 on National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes), EIA Act No. 86 of 1992 and 7 (a) and 7 (k) of the NESREA Act No. 25 of 2007 with amendments 2018.

The National Environmental Standards and Regulations Enforcement Agency (NESREA) is responsible for ensuring that all businesses and organizations comply with environmental laws that protect the environment and public health in Nigeria. Thus other than the statutory requirement of enforcing the conduct of environmental audit by all relevant facilities, NESREA ensures that environmental auditing complements regulatory requirements and prohibits the use of any equipment that undermines environmental integrity.

Organizations that conduct environmental audit as at when due, signal to their employees that the management is committed to improving its environmental

performance. In addition, it portends that the professionals within the organization are interested in environmentally conscious and wishes to maintain environmental governance.

Environmental Audit address regulators' problem of obtaining effective day-to-day monitoring of regulatory compliance with limited resources.

In addition, it aids in targeting enforcement actions because it is more reliable in differentiating between compliers and non-compliers. Environmental auditing has the long-term potential for improving relations between the regulator and the regulated that demonstrate innovative approaches to environmental management provides basis for the issuance of the NESREA GREEN MARK to deserving organizations.

## 1.1 Purpose of the Environmental Audit Guidelines

These guidelines are primarily to assist Environmental Consultants/Auditors to conduct environmental audits in organizational facilities. They can also be useful for Government Inspectors, Clients and the Regulated Community.
These guidelines may be replaced, amended or updated periodically. It is the responsibility of the Environmental Consultants/Auditors, Government Inspectors, Clients and the Regulated Communities to keep abreast of updates of these guidelines.

## 1.2. Environmental Audit Aim

Environmental Audit is designed to protect the environment with the aim of:

a. Assessing performance against a set of requirements or targets, related to specific issues;
b. Evaluating compliance with environmental legislation and corporate policies;
c. Measuring performance against the requirements of an environmental management system standard;
d. Generating Data for Policy formulations;
e. Improving Environmental Management and Sustainability;
f. Undertaking self-regulation practices towards resource conservation; and
g. Exploring the potential economic, social and environmental benefits that an improved performance can achieve, such as:
    - Environmental benefits in terms of conservation of natural resources and pollution reduction
    - Economic benefits in terms of savings in use of water, materials, energy towards sustainable goals

- Social benefits in terms of protection of health, vegetation, property and monuments, improvement in aesthetics and longevity

## 1.3 Objectives of Environmental Audit (EA)

The objectives of the EA include:

a. Generation of adequate environmental information of facilities for the potential environmental risks that are likely to be caused by their operations to the immediate environment;
b. Determine how well the environmental management systems and equipment are performing;
c. Achieving resource optimization and improved process performance;
d. Encouraging organizations to self-regulate their environmental practices and to increase their responsibilities to stakeholders and society;
e. Ensuring compliance, not only with laws, regulations and standards, but also with company policies, the requirements of the approved NESREA-endorsed Environmental Management Plan of the organization as standard;
f. Enabling environmental problems and risks to be anticipated and responses to be planned; and
g. Minimizing human exposure to risks from environment, health and safety issues.

## 1.4. Environmental Audit Focus

Environmental Audit (EA) focuses on achieving environmental results rather than adhering to procedures. The aim is to encourage innovations by giving organizations some flexibility in meeting environmental regulations. At the same time, organizations are expected to accept responsibility for environmental stewardship. Consequently, NESREA approach to compliance and enforcement include:

a. A broader mission for enforcement with a focus on environmental results rather than the number of enforcement actions taken;
b. Changing the relationship between the regulator and the regulated from an adversarial one to a more involving one to create partnerships and build relationships in which both groups cooperate in solving problems;
c. Changing the approach from one of enforcing all laws equally to one of setting priorities and recognizing limited resources;
d. Realizing that one method of correcting a problem may not necessarily be useful in all situations;
e. Moving towards multi-media, multi-pollutant deterrence programs;

f. Empowering the public with information by increasing public awareness. This will enable NESREA form partnerships and improve data quality and data access.

Environmental Audit as a management tool comprises a systematic, documented, periodic and objective evaluation of how well organizations, management and equipment are performing with the aim of safeguarding the environment and human health. This would facilitate management control of practices and assess compliance of organizations' policies which would include applicable regulatory requirements and standards.

In addition to environmental and public health considerations, environmental audit also takes cognizance of socio-economic impacts of an industry, projects or operations in the host community and at large, with regards to meeting sustainable development goals.

## 1.5. Defining the Scope of an Environmental Audit

As the prime objective of audits is to assess the adequacy of existing management systems, they fulfill a fundamentally different role from the monitoring of environmental performance. The greater the scope of the audit, the greater will be the size of the audit team, the time spent onsite and the depth of investigation and eventual holistic outlook of the organization.

In addition, the scope of an audit can vary from simple compliance testing to a more rigorous examination, depending on the perceived needs of the management. The technique is applied not only to operational environment, health and safety management, but increasingly to product safety and product quality management and to areas such as loss prevention.

The scope and focus of an audit can be defined on the basis of organizational; geographical; functional; and compliance contexts.

**1.5.1. Organizational** Boundaries address the company's operations (manufacturing, R&D, distribution, servicing, construction and so on) that should be included in the audit program. They generally depend on the organizational structure, business unit reporting relationships, and corporate culture.

**1.5.2. Geographical** boundaries address how far or wide the program applies (Local Government, State, National, Regional, or International). Selection of

geographical boundaries generally depends upon the location of facilities and offices, and the nature of products and services.

**1.5.3. Locational** boundaries address what "territory" is included in a specific audit. In many cases, the audit focus is mostly on the activities within the facility boundary although some companies audit beyond this boundary. For example, an audit could also include off site manufacturing or packaging activities, off site waste disposal activities, local residences, or a nearby river or lake if there is potential for environmental damage.

**1.5.4.** A number of specific **functional** areas can be included in an audit program. While most audit programs cover air and water pollution control, solid and hazardous waste management, employee safety, and industrial hygiene, many also include occupational health, fire and loss prevention, process safety, and product safety.

**1.5.5. Compliance** boundaries define the standards against which the facility is measured. These standards can include:

a. Federal, State, Local laws, edicts and regulations;
b. Corporate or division policies, procedures, standards and guidelines;
c. Strategic objectives as defined in the organizational Environment Management Plan;
d. Local facility operating procedures; and
e. Standards established by an outside group such as an industry or trade association

**Table 1.1 Scope of Coverage in an Environment Audit**

| Environment | Occupational Safety | Occupational Health |
|---|---|---|
| • Site history<br>• Process/materials<br>• Storage of Materials<br>• Air Emissions<br>• Water Discharges<br>• Liquid/Hazardous Wastes<br>• Asbestos<br>• Waste Disposal Onsite/ Offsite<br>• Oil/Chemical Spill Prevention<br>• Permits/license<br>• Storm Water Management | • Safety policy/procedures<br>• Accident Reporting<br>• Accident recording<br>• Accident Investigation<br>• Permit to work systems<br>• Special procedures for confined space<br>• Emergency response<br>• Fire fighting<br>• Job Safety analysis<br>• Safety training<br>• Safety communication/ promotion<br>• Housekeeping<br>• Regulatory compliance | • Employee exposure to air contaminants<br>• Exposure to physical agents, e.g. noise, radiation, heat<br>• Measurements of employee exposure<br>• Exposure records<br>• Ventilation/Engineering controls<br>• Personnel Protective Equipment<br>• Information and training on health hazards<br>• Medical surveillance programme<br>• Hearing conservation |

The intention of auditing is to help ensure that these broad areas are managed properly, and all relevant topics must be reviewed, including social, environmental and public health, occupational safety, as outlined in Table 1.1

## 1.6 Environmental Audit Criteria

An essential step in performing an environmental audit is the development of a set of criteria from which to gauge its success or failure. Documenting the criteria for auditing eliminates miscommunication and errors in interpretation

Regulatory compliance audit, the environmental management system audit or any audit type requires assessment on the basis of criteria. These criteria should be specific, measurable, reliable, acceptable, timely and coherent.

The different criteria that can be considered for use in a Regulatory Compliance Audit are outlined below:

a. National Laws — Acts of legislation and any regulations, guidelines, standards, rules, orders, etc made under an Act and having the force of law.
b. International agreements — such as, Convention, Protocol, and treaties which have been ratified by the Government
c. Binding Standards (including techniques, procedures and qualitative criteria) issued by environmental monitoring/regulatory agencies
d. Conditions Contained in Facility Permit
e. Contracts
f. Company Policies and Procedures on Environmental Matters
g. Company Environmental Management Plan Objectives
h. Codes of Professional Practice/International Code of Conduct
i. Good Environmental Management Practices

## 1.7 Types of Environmental Audit and their Scope

An environmental audit differs from EIA which aims to predict environmental impacts. Audit is a multidisciplinary process of objectively reviewing the environmental performance of an operating company including its processes, material storage, operating procedures and environmental management to identify potential environmental impacts and liabilities. Depending on the purpose of an audit, its aim and scope will vary.

The main types of audit include the following:

a. Regulatory Compliance Audit;
b. Environmental Management Systems Audit;
c. Process Safety Audit;

d. Product Life Cycle Audit;
e. Occupational Health & Safety Audit;
f. Liability Audit;
g. Risk Assessment Audit;
h. Waste Audit;
i. Energy Audit; and
j. Social Safeguard Audit

### 1.7.1 Regulatory Compliance Audit

a. This is mandatory for all companies in Nigeria and shall be conducted every three (3) years;
b. Companies/facilities operating without Environmental Impact Assessment (EIA) certificate must immediately conduct an environmental audit and submit a report to NESREA.
c. The focus of this guideline is on the mandatory regulatory compliance audit. The other audit types described below can be components of the regulatory compliance audit or stand-alone depending on the circumstances under which an environmental audit is required. When the other audits are conducted as stand-alone, then the frequency is determined on a need basis for internal improvement or at best annually.

### 1.7.2 Process Safety Audit:

a. Identifies hazards and quantifies the risks arising from the process.
b. Assesses past and current practices to identify and correct safety impediments which, if left unsolved may result in personal injuries, property damages or business interruptions.
c. Examines procedures for emergencies, accident response preparedness and awareness in health and safety
d. May be undertaken routinely or after industrial accident, to determine the causes and liabilities, consequences for the company future management, and the environmental impact resulting from the accident.

### 1.7.3 Occupational Health and Safety Audit

a. Examines exposure of the workforce to hazards that could result in physical disabilities (e.g. noise, temperature).
b. Ensures the availability of appropriate and good quality Personal Protective Equipment (PPE) and its usage.
c. Assesses workforce knowledge, attitude and perceptions of industrial/ production process and environmental outcomes.

d. May be undertaken annually as good management practice at industrial facilities, to assess current compliance, potential areas for improvement and to monitor implementation of recommendation remedial actions.

### 1.7.4 Liability Audit

a. Is a comprehensive assessment to identify potential environmental, health, and safety liabilities associated with the facility's operations, past activities, or future plans.
b. Examines environmental conditions of the site(s) and determines the need for clean up and remediation measures. It involves spot checks of site(s) known to have actual or potential environmental problems.
c. It should be conducted before a transaction takes place to reduce the likelihood of inheriting liabilities (e.g. contaminated land requiring remediation) and assess current practices at the facility/site.
d. Liability audits may focus on Environmental liabilities (e.g., contaminated soil, groundwater, or air), Health and safety liabilities (e.g., worker exposure, hazardous materials), Regulatory compliance liabilities (e.g., permit violations, reporting requirements), Financial liabilities (e.g., cleanup costs, fines, penalties) and Reputation and social liabilities (e.g., community concerns, public perception)

### 1.7.5 Management Audit

a. Checks the management system to ascertain whether it is an asset or a liability for the company's environmental performance
b. It may be undertaken if a company aims to implement environmental management system as part of an initial or routine certification process for EMS certification by an external accreditation body.

### 1.7.6 Waste Audit

a. Checks the waste management components of an operation or site/facility from the generation of waste through its management and disposal practices
b. It may be undertaken routinely/annually to identify potential opportunities for improvement in specific areas of the facility or process with a view to minimizing waste (including wastewater and energy), improving a product or for various other reasons.
c. Waste audits may focus on waste reduction and minimization, recycling and composting optimization, waste-to-energy opportunities, landfill diversion, special waste streams (e.g., hazardous waste, electronics), supply chain waste management and waste-related cost savings.

### 1.7.7 Energy Audit

An Energy Audit entails a comprehensive assessment of a building's or facility's energy usage and efficiency. It involves

a. Gathering energy consumption data, building plans, and equipment information,
b. Visually inspecting the building's envelope, lighting, HVAC systems, and other energy-using equipment, analyzing energy consumption patterns,
c. Identifying areas of inefficiency, and calculating energy savings opportunities,
d. Evaluating the condition and efficiency of energy-using equipment, such as boilers, chillers, and lighting systems,
e. Pinpointing areas for improvement, including energy-efficient upgrades, retrofits, and operational changes and
f. Evaluating the financial feasibility of recommended energy-saving measures.
g. In general, energy audits focus on Energy efficiency, Energy conservation, Renewable energy integration, Energy cost reduction, Greenhouse gas emissions reduction and Compliance with energy regulations and standards.

### 1.7.8. Risk assessment Audit

a. These audits identify, evaluate and mitigate potential risks and hazards associated with the facility's operations such as the likelihood and potential consequences of environmental incidents such as spills, leaks or contamination and recommends measures to mitigate risks and prevent incidents.
b. It entails a systematic evaluation of an organization's risk management processes to identify, assess, and prioritize potential risks that could impact its objectives.
c. The audit focuses on identifying potential risks that could impact the organization, assessing the likelihood and impact of identified risks, prioritizing risks based on their likelihood and impact, evaluating the effectiveness of existing risk mitigation measures, and reviewing the organization's risk monitoring processes.
d. The various risk categories that can be covered include Operational risks, Financial risks, Compliance risks, Environmental risks, Social risks, Reputation risks and Cybersecurity risks among others.

### 1.7.9. Social Safeguard Audit

a. A Social Safeguard Audit entails an assessment of an organization's social policies, and practices to ensure they are aligned with international standards and best practices.
b. Audit focuses on the organization's impact on people, including among others, Labor practices, Human rights, Community engagement, Indigenous peoples'

rights, Displacement and resettlement, Gender and diversity, Health and safety and Supply chain management. The audit evaluates the organization's Compliance with social safeguard policies and procedures, Identification and management of social risks, Stakeholder engagement and consultation, Grievance mechanisms, Monitoring and reporting of social performance.

c. The audit's objectives are to identify areas for improvement, Enhance social performance, Reduce social risks, improve stakeholder relationships, Ensure compliance with international standards.

d. Social Safeguard Audits are commonly conducted in industries with high social risks, such as- Extractive industries (mining, oil, and gas), Infrastructure development, Manufacturing, Agriculture, Construction. In addition, the audits are usually conducted by independent auditors, using frameworks like those of the International Finance Corporation (IFC) Performance Standards, World Bank Environmental and Social Framework, United Nations Guiding Principles on Business and Human Rights, ISO 26000 (Social Responsibility).

## 1.8 The Compliance Audit Regulated Sectoral Coverage

In recognition of sectoral based approach for comprehensive environmental protection, the following sector areas/activities outlined in Table 1.2, the Small Businesses under the Nigeria Association of Chamber of Commerce, Industry, Mines and Agriculture (NACCIMA) and the eleven sectoral groups of the Manufacturer's Association of Nigeria (MAN) are the regulated sectors to be covered in the conduct of environmental audits.

**Table 1.2: The Regulated Sectors Requiring Compliance Audit**

| Manufacturing | Infrastructural | Servicing |
|---|---|---|
| Food Beverages and Tobacco | Coastal and marine Development | Hospitality & Tourism Industry |
| Chemical and Pharmaceuticals | Port, Harbours and Terminals | Saw Mills |
| Domestic and Industrial Plastic, Rubber and Foam | Ground Transportation, Trucking, Railroad, Pipeline | Financial Service |
| Base Metals, Iron and Steel and Fabricated metal products | Quarry and Blasting Operations | Auto Workshops/ Service Centers |
| Pulp, Paper and Paper products printing, publishing and Packaging | Real Estates, Housing Estate, Government Building | Stadiums and Parks |
| Electrical and Electronics | Air Transportation, Shipping and Ferry | Small Businesses |
| Textile Wearing Apparels' Carpet, leather/leather footwear | Water Transportation, Shipping and Ferry | |
| Wood and Wood products including furniture, charcoal production and processing | Healthcare Industry | |

| Manufacturing | Infrastructural | Servicing |
|---|---|---|
| Non-Metallic Mineral Products | Urban Development | |
| Motor Vehicle and Miscellaneous Assembly | Electric Power Generation, Transmission & Distribution Systems | |
| MAN Export Group | Telecommunication (Base Transceiver Stations) | |
| | Construction, Asphalt Industry | |
| | Domestic Water and Sanitation | |
| | Waste Management Facilities, Landfills | |
| | Mining | |
| | Dams and reservoir | |

## 1.9 Environmental Audit Impact on Company Profitability

Environmental Audit in manufacturing, servicing, construction, infrastructural and agro allied industries have a direct impact on market share and company profitability because it promotes 'green' marketing thus there is now a range of practices which come under the label of environmental auditing.

# CHAPTER TWO: CERTIFICATION OF ENVIRONMENTAL CONSULTANTS

## 2.1 Environmental Consultants

Environmental Consultants conducts audits to assess the performance of commercial and industrial operations. Following established procedures, they collect and document evidence, to assess a facility's compliance with environmental laws and regulations. Typical work activities include making site visits, monitoring, measuring, documenting and reporting audit findings, advising clients, formulating action plans, checking compliance. Their assessment helps organizations identify risks, ensure regulatory compliance, and implement effective environmental management practices.

## 2.2 Areas of specialization requiring NESREA Accreditation

i. Environmental Audit
ii. Environmental Studies
iii. Waste Management
iv. Environmental Technology
v. Environmental Management System
vi. Laboratory Service

## 2.3 Criteria for Accreditation as Environmental Consultants

### Environmental Audit

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification, (additional advantage)

- Demonstration of competence in Audit process and techniques.

## Environmental Studies

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification, (additional advantage)
- Evidence of previous environmental research/studies done, eg. Environmental Impact Assessment (EIA)

## Waste Management

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification
- Evidence of Waste Management Facility with requisite equipment
- Membership of professional Waste Management Association(s) (additional advantage)

## Environmental Technology

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification, (optional)
- Evidence of technological innovation/proficiency in use of technology to mitigate environmental challenges.

## Environmental Management Systems

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification
- Certification in EMS from a recognized certification body — International Organization for Standardization / Nigerian National Accreditation System (ISO / NINAS)

**Laboratory Service**

- Requisite Environmental background and knowledge acquired through
  i. Work experience (at least 3 years)
  ii. Educational qualification (minimum of a Degree or equivalent in Environmental related studies)
  iii. Professional certification of laboratory staff
- Certification of laboratory by at least one relevant body (mandatory) Eg. IPAN
- Laboratory must be available for inspection (location)
- Proposed laboratory must be owned by the prospective consultant (not affiliate)

## 2.4 Requirement for Certification

The following shall constitute the minimum requirements for NESREA Certification of Environmental Consultants:

i. Certificate of Incorporation with Corporate Affairs Commission
ii. Memorandum and Article of Association
iii. Particulars of Directors of the Company (CAC Form 7/Status Report)
iv. Recent Tax Clearance Certificates of the Company
v. Evidence of competence in environmental consultancy (Relevant academic and professional certificates)
vi. Evidence of previous environmental jobs successfully completed
vii. Evidence of registration with other relevant regulatory bodies and in particular the Institute of Environmental Practitioner of Nigeria (IEPN) Issuance of certificate is however not solely dependent on the above, but subject to a successful interview with NESREA.

## 2.5 Responsibilities of the Environmental Consultant

Environmental consultants are appointed pursuant to the NESREA Act. In exercising their functions and duties, environmental consultants owe a primary duty of care to the environment and to Nigerians above all others. Environmental consulting is often a form of compliance consulting in which the consultant ensures that the client maintains an appropriate measure of compliance with environmental laws. The responsibilities of an environmental consultant includes amongst others;

a. Investigate business operations to assess compliance with environmental standards;
b. Collect data using questionnaires, interviews, on-site inspections, and investigate site history (i.e. land titles, aerial photos, where applicable);
c. Assess the level of environmental performance of various operations within the business or industry/facility;

d. Identify regulations, procedures, and practices that are relevant to the business and assist them in developing an Environmental Management Plan (EMP) and potential cost saving opportunities;
e. Examine an organization's records for appropriate government permits, safety standards, maintenance documentation, and inventory control measures;
f. Review emergency handling procedures, employee training programs, environmental monitoring programs, and waste management efforts;
g. Select and manage an audit team which shall include the environmental regulator and/or hazardous waste and pollution control technicians; and
h. Write quality and accurate environmental audit reports, including findings, data and recommendations to management and clients.

## 2.6 Ethical Responsibility of the Environmental Consultant

Professional Ethics are moral principles or rules of conduct recognized and expected to be adhered to by a particular profession

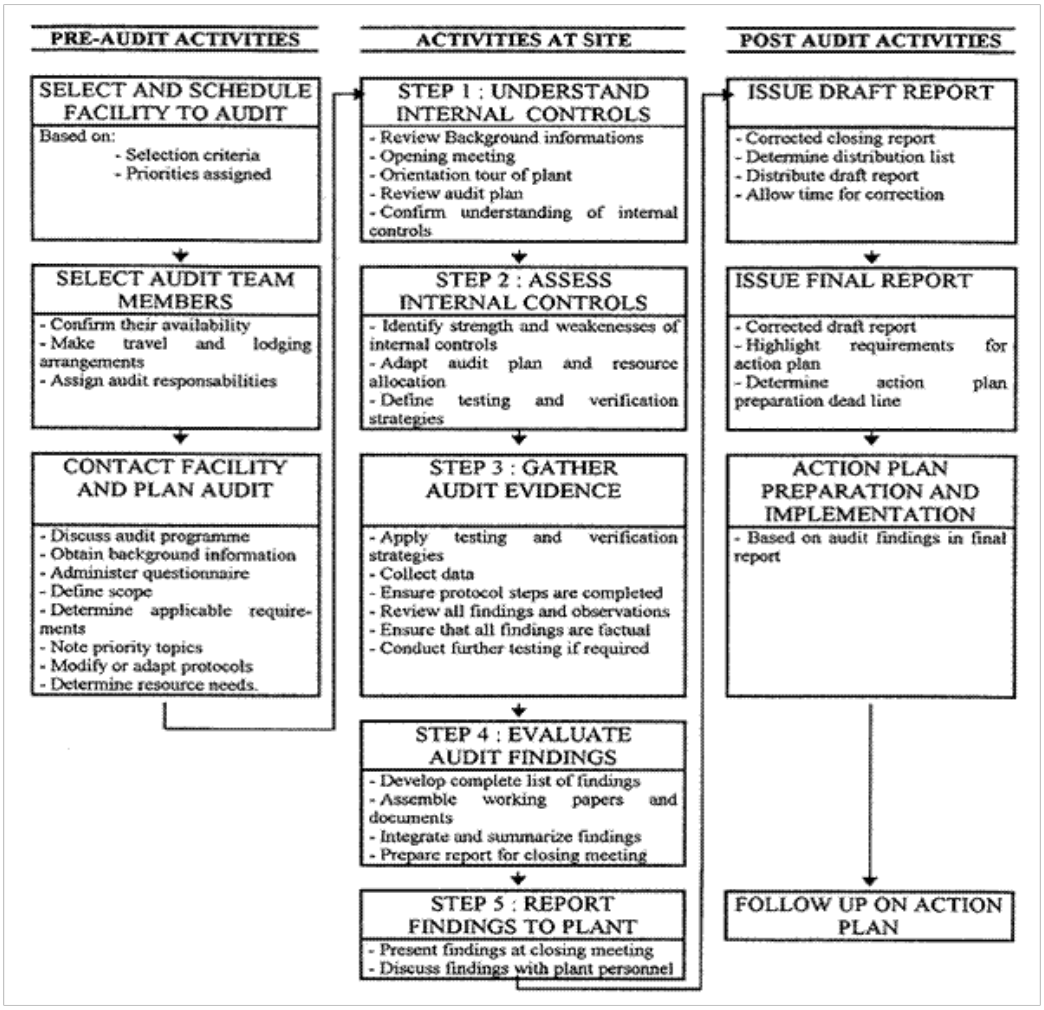
a. NESREA Accredited Consultants are environmental professionals that assist the regulated facilities not only to comply with environmental laws but to stay in business.
b. Because of the type of services that the consultants are expected to perform, high ethical responsibilities are expected of them
c. Thus, an accredited consultant shall:
d. Ensure that no action/omission on his part or within the scope of his responsibilities is detrimental to the interest, conditions or safety of the public and the environment;
e. Not act in any way that may prejudice that reputation of the Agency or her functions
f. Shall not give inadequate, false or misleading information
g. Ensure that all works undertaken by him are carried out in accordance with applicable standards and best practices, taking into account advancement in science and technology;
h. Conduct business for his client with due diligence;
i. Not unreasonably delay carrying out instruction received from client
j. Not breach the terms of contract with the client;
k. Not give his opinion on environmental study or report in which he has substantial interest unless he discloses the nature of his interest;
l. Not misrepresent or allow misrepresentation of his professional qualifications nor exaggerate his degree of responsibility of any work of a professional nature;

m. Not accept any commission, gift, or other inducement from the employee or agent of the operator or any other interested party when carrying out an audit, or knowingly allow any person to do so; and
n. Not disclose classified information acquired in the course of his professional engagement to any person other than the client without the consent of the client or the Agency.

# CHAPTER THREE: ENVIRONMENTAL AUDIT PROCESS

An Environmental Audit is undertaken in three phases:

- Pre-Audit Phase
- On-site Audit Phase
- Post-Audit Phase



## 3.1 Pre-Audit Phase

This is the audit preparation phase prior to site visit by an audit team. It entails:

a. Obtaining full management commitment;
b. Setting overall goals, objectives, scope and priorities;
c. Selecting a team to ensure objectivity and professional competence;
d. Sending out prepared pre-audit questionnaire to facility management (**Annexure 2.6**);
e. Reviewing background and operational information with facility management or factory/plant manager;
f. Conducting initial site visit at the facility to be audited; and
g. Reviewing audit plan and arrange logistics.

### I. Management Commitment

The first step in preparing for audit is an invitation letter from the facility to the auditor or a written management decision to conduct the audit. It should be obtained before commencement of the audit.

### II. Defining the Objectives and Scope

The objectives and scope of the audit have to be clearly defined and communicated to the facility at this stage specifying the type of audit. It should provide the baseline data to allow the preparation of an audit.

### III. Team Selection

The audit team should be carefully selected and should include the environmental regulator, employees of the facility or/and external consultants. The team leader should be a NESREA accredited consultant, while the other team members must have skills and knowledge relevant to the audit process as they relate to research, interview, data analysis and report writing. The selection of the team should be done as described in Chapter 2 of these guidelines. Each member of the team must understand his/her roles and responsibilities and undergo pre-audit training to ensure that all the team members are adequately prepared for the task.

Audit Team Members should, at a minimum:

a. Be selected from appropriate management backgrounds to ensure peer review;
b. Be multidisciplinary, representing a mix of expertise ranging from across management systems to control technology, with direct experience with the relevant type of operation;
c. Have direct experience with the type of operations at hand;
d. Collectively have appropriate expertise, knowledge and proficiency in auditing techniques, e.g. verification, observation and information analysis; and
e. Be non-biased and display due diligence.

## IV. Identify Facility Background Information

a. Maps
b. Drawings
c. Description of Geology/Hydrology
d. Flood Plains, Wetlands, Historical Sites
e. Land Use
f. Names, Phone Numbers and e-mail addresses
g. Records of Changes

## V. Identify Reports and Other Relevant Records

a. Compliance Records
b. Correspondents Citizen Complaints
c. Audit/Inspection Records and Reports
d. Inventory Records
e. Monitoring Data
f. Studies
g. Manifests
h. Contingency Plans, Spills Plans
i. Permits

## VI. Identify Pollutants and Waste Generation, Control, Storage, Transportations, Treatment and Disposal

a. Description and Design Data for Pollution Control Systems
b. Storage, Treatment and Disposal Facilities
c. Sources of Waste
d. Bypass Conditions or Potentials

## VII. Identify Requirements, Regulations and Limitations as applicable

a. Permits
b. Licenses

## VIII. Indicate Federal and State Database Relevant to Facility, such as, any nearby:

a. Abandoned, inactive or uncontrolled/hazardous waste sites;
b. Industrial Landfill
c. Municipal Landfill
d. Solid Waste Sites
e. Drinking Water Sources

## 3.2 On-site Audit Phase

The purpose of the on-site audit phase is to collect veritable evidence to determine whether audit criteria are being complied with. This entails well defined and systematic use of protocols or checklists which should start with:

### I. Conducting opening meeting with office manager and site personnel

a. Identify Areas to be Inspected
b. Outline Procedures
c. Outline Schedules
d. Identify Records and Documents to be Reviewed during Audit
e. Review Health and Safety Requirements
f. Review how Confidential Data will be handled.

### II. Collection of Information in line with relevant audit protocols, personal observations, collection of relevant samples and taking measurements, etc.

### III. Undertaking a review of relevant documents such as the following:

a. Corporate and/or management policy; NESREA endorsed facility Environmental Management Plan (EMP);
b. Management System Documentation;
c. Operational Procedures and Records;
d. Evidence of registration with relevant Producer Responsibility Organization (PRO) as applicable;
e. Records (Inventory, Utility, Monitoring, Transportation, Training);
f. Environmental Monitoring/Quality Records;
g. Correspondence on Environmental Issues;
h. Environmental Committee/Team Meeting minutes; and
i. Previous Environmental Audit Report (s) (if any).

### IV. Conducting detailed on-site inspection with the relevant Environmental Audit Protocol checklist

a. Facility Use — Past and Present;
b. Adjoining Properties type and use — Past and Present;
c. Above Ground Storage Tanks;
d. Sources of air pollution– mobile and stationary;
e. Air pollution control devices;
f. Asbestos;

g. Boilers;
h. Contaminated Sites;
i. Drinking Water Quality — Cross Connections;
j. Drinking Water Supplies;
k. Discharges to Groundwater;
l. Neighboring Federal Wetlands and Waterways Protection;
m. Hazardous Waste Storage, Handling and Disposal;
n. Medical Waste Handling and Disposal (where applicable);
o. Radioactive waste handling and disposal (where applicable);
p. PCB Containing Transformers and/or other PCB Regulated Equipment;
q. Sewage and Septic System Discharge;
r. Solid Waste Disposal at Un-permitted Facilities;
s. Effluent treatment and disposal (where applicable);
t. State Water Management Program;
u. Underground Storage Tanks;
v. Wetland Impacts;
w. Water Pollution and Storm-Water Runoff;
x. Depth of Blasting Pit/Hole;
y. Storm Water Management; and
z. Quantity of Explosives Used Per Hole and Per Blast.

## V. Conducting staff interview to obtain information on actual practices, awareness level of requirement, expectations and possible suggestions for better performance.

a. Identify Key Facility Personnel
b. Schedule ahead of time, meetings in work areas
c. Confirm Interview Time

## VI. Conducting Material Balance

a. To be effective, the audit must be conducted methodically and thoroughly under the direction of experienced individuals who understand the firm's processes and operations. It is necessary to record all data and information to ensure no operation is missed. The mass of inputs to the process/industry (water, raw material, fuel) should balance the mass of outputs (products, emissions and wastes, as well as any change in stocks).
b. The checklists and questionnaires in the annex of this guideline are provided to guide in the compilation of accurate, comprehensive data essential to a successful audit of a facility. Significant imbalances may occur due to measurement and estimation. Additionally, various inputs and losses, i.e. evaporation, may have been understated or missed altogether. Therefore, a

preliminary material balance must be made to determine if the information has gaps or inaccuracies. This simply entails the following steps.

i. Assembling unit process input and output information;
ii. Deriving a preliminary material balance for unit processes;
iii. Evaluating the material balance;
iv. Refining the material balance; and
v. Keep accurate records.

## VII. Ascertaining facts through a review of Environmental Audit evidence (information and findings).

## VIII. Evaluate Impacts of Facility Process on the Environment within 2km radius of the facility being audited with respect to soil, water and air.

## IX. Debriefing of the management of audit activities, findings, recommended corrective actions as appropriate and chain of communication in the following areas:

a. Identify Actual and/or Imminent Threats to Health and the Environment;
b. Identify Actual Non-Compliance;
c. Identify Potential Non-Compliance;
d. Identify and Discuss Information Gaps;
e. Identify and Discuss Unclear Audit Findings; and
f. Establish Clear Corrective Action Plan

## X. Evaluating Environmental Monitoring Data

In evaluating environmental monitoring data, the Environmental Auditor should consider the following amongst others:

a. Appropriateness of sampling, analysis procedures and results, to ensure compliance with relevant national guidelines;
b. The Auditor must outline the approach and steps taken to review, evaluate or verify data relied upon/referenced in the environmental audit report;
c. Ensure management of data obtained in the course of audit process such as: Index, Facility Records, Correspondence, Protocols and Checklists, Photographs (including date, time, what, when and other specific information), sampling records, and follow up data collection;
d. Evaluate the environmental management system; and
a. Identify data gaps, uncertainties and recommend appropriate actions to be taken.

## 3.3 Post Audit Activities

The objectives are to produce an Environmental Audit Report with audit findings and recommendations, and to contribute toward formulation of an Action Plan for continuous improvement of operations of the facility.

Actions required in post audit phase include:

I. Collation of information and follow up on outstanding issues; this may include but not limited to
   i. Quantity of resources used monthly such as water, raw material, energy, fuel
   ii. Type and quantity of product produced monthly
   iii. Sources of air pollution and measured air pollutant
   iv. Performance evaluation of pollution control device with respect to air quality, status of air quality around the plant;
   v. Quantity and quality of wastewater generated monthly, details and adequacy of effluent treatment facility, ambient water quality of the receiving stream/land;
   vi. Type and quantity of hazardous and non-hazardous waste generated monthly, its storage and disposal facility.
   vii. Status of Recycling chain verification through tracing the recycling process to ensure materials are properly recycled and not sent to landfills.
   viii. Verify compliance with relevant EPR regulations, permits, and licenses.
   ix. Status of any facility of recovery of valuable resources such as solvents, chemicals etc;
   x. Status of compliance with respect to license conditions laid down by regulatory authority
   xi. Status of occupational health of the employees

II. Evaluation of findings on the relevant outcome of material balance and impact evaluation of facility process on the environment;
III. Preparation of the draft audit report in the approved presentation format;
IV. Circulate draft audit report for comments to management and audit team;
V. Incorporate or resolve all comments;
VI. Preparation of an action plan as provided in the format in **Annexure 1** in consultation with the facility management to incorporate:
   i. A list of recommended actions, in terms of increasing cost effectiveness in addressing the facility's critical environmental issues;
   ii. Interim and long term targets/objectives and a timetable for achieving them for environmental improvement in the facility; and
   iii. An indication of investments and other resources (human and information)

that would be required at the facility without compromising their commercial confidential information.

a. Produce report for client and Regulatory Agency; and
b. Facilitate the Implementation of Action Plan at facility level.

### 3.3.1 Evaluation of Findings

After information gathering and data collection, the findings could be reviewed in line with the protocol and extant regulations with the facility management. The key rules in discussing the findings are:

a. The exact nature of the problems should be clearly stated;
b. Communicate the extent of the problem fully, stating whether the facility is in compliance or non-compliance;
c. Generalization should be avoided;
d. Contradictory messages should be avoided;
e. Using extreme languages should be avoided;
f. Use appropriate and familiar terminologies;
g. Drawing unsubstantiated conclusions should be avoided;
h. Provide good management practices suitable to the site/facility;
i. Provide context and rationale for findings;
j. Offer practical and site-specific recommendations;
k. Encourage open dialogue and feedback;
l. Maintain professionalism and objectivity; and
m. Emphasize opportunities for continuous improvement.

### 3.3.2 Steps after Analysis of Result

After analyzing the result of findings, the following steps should be taken:

a. Prioritize the problems/impacts;
b. Allocate responsibilities/roles;
c. Develop a plan of action;
d. Implement the plan;
e. Assess the effectiveness of the plan;
f. Make all necessary agreed changes with facility management if the plan is not effective;
g. Document and communicate the changes to the facility management;
h. Incorporate feedback and continuous improvement' and
i. Establish a monitoring and review process

### 3.3.3 Implementation of the Action Plan

Responsible parties need to undertake action according to allotted budget and timeline for completion within the environmental action framework (see annex 1).

# CHAPTER FOUR: AUDIT PROTOCOLS FOR ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

This chapter is intended to illustrate the organization of a protocol and the key features required. The protocols are organized around generic environmental issues and are applicable to all the regulated sectors in the manufacturing, infrastructural, agro allied and service areas covered in Section 1.8 and Table 1.2.

For the purpose of the mandatory Regulatory Compliance Audit due every three (3) years; the audit must assess compliance of the facility with criteria derived from:

a. National Policy on Environment;
b. b. Laws (National Environmental Standards and Regulations Enforcement Agency (Establishment) (Amendment) Act 2018, Environmental Impact Assessment Act Cap. E 12 LFN 2004, Harmful Waste (Special Criminal Provisions) Act Cap. H 1 LFN 2004);
c. Corporate or Management Policy;
d. Approved Facility Environmental Management Plan;
e. National Environmental Regulations (S.1.8, S.1.9, S.1.15 of 1991), S.1.28, 29, 30, 31, 33, 34, 35 and 36 of 2009), (S.1.11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 and 23 of 2011), (S.I. 34 and 35 of 2013), (S.I. 62, 63, 65 and 66 of 2014), (S.I. 2 of 2020), (S.I. 44 and 88 of 2021), (S.I. 52 of 2024) and those that will be gazette and come into force from time to time; and
f. Applicable Guidelines and Standards.

## 4.1 Significant environmental issues

The audit procedure for all kind of projects are mostly same, however, the depth of the audit and the significant parameters which needs to be considered varies depending on the type of project. For example, for line projects (roads, railways, transmission lines), impact on biodiversity and loss of flora/fauna is a significant parameter to be audited while for a large manufacturing industry, parameters

like water pollution, air pollution and safety are of prime concern. Project-wise significant parameters are provided at **Annexure 3**. The parameters considered are as follows

a. Air pollution
b. Water pollution
c. Generation of solid waste
d. Generation of hazardous waste
e. Biodiversity and loss of Ecology
f. Storm Water Management
g. Greenhouse Gas Emission Inventory
h. Abandoned Burrow, Mining and Quarrying Pits
i. Noise pollution
j. Soil pollution
k. Chemicals Management
l. Risk Assessment
m. Requirement for company policy
n. Energy requirement
o. Safety Issues
p. Occupational health of workers

These parameters are marked from low significance to high significance for different kind of projects depending on the nature of the project. While the other parameters are self-explanatory, the parameter of "Requirement for company policy" implies that the project proponent should have a detailed policy on measures to be taken to control environmental hazards and the strategies to reduce the use of natural resources. The auditor should consider these parameters while auditing different project as it will provide a clear understanding on the aspects to be focused on.

## 4.2 Audit Protocol for Manufacturing Industries

The manufacturing industries are usually termed as point source projects since the area of the industry is well defined with boundaries and the discharges of liquid waste, solid waste and air emissions are through well-defined outlets. The major component of an environmental audit for point source projects is the input and output matrix which gives the "pollution footprint" of an activity. In order to develop this matrix, both qualitative and quantitative information is required as shown in table 4.1 below

**Table 4.1: Input and output matrix**

| Resource | Input | Output |
|---|---|---|
| Material | i. Quantity of raw material consumed per unit of process<br>ii. Quantity of fuel consumed<br>iii. Type of fuel consumed and its calorific value | i) Quantity of product produces per month/year<br>ii) Quantity of material loss due to efficiency per unit of production<br>iii) Quantity of pollutant generated in terms of liquid, solid waste and air emission |
| Water | (i) Source of water and its quality<br>(ii) Quantity of water consumptions per unit of product<br>(iii) Quantity of water consumed for utilities, domestic washing and other purposes | (i) Quantity of waste water generated per unit of product<br>(ii) Quality of waste water |

## 4.2.1 Major Environmental issues

- Air pollution due to toxic gases and fumes
- Water pollution due to discharge of untreated chemically loaded effluent
- Hazardous/non-hazardous waste generation and its improper disposal
- Occupational Health and safety
- Noise pollution and Vibration
- Soil pollution
- Chemicals Management
- Risk Assessment
- Energy requirement

| What to look for | | Where to look |
|---|---|---|
| • Type, number and quantity of products | | • Records from storage department, Sales tax documents |
| • Type and quantity of raw material used | | • Logbook of storage department |
| • Quality of raw materials | | • Quality control document (the impurity in raw material which leads to pollution) |
| • Total water requirement and source<br>o Surface water<br>o Ground water<br>o Private tanker supply<br>o Treated water<br>• Any other | | o Log book of meters/pump at source (Utility department)<br>o Log book of meters/pump at source (Utility department)<br>o Payment receipts<br>o Log book of meters/pump at source (Utility department) |
| • Different water uses and quantity<br>o Process<br>o Utility<br>o Domestic<br>o Other purposes | | Log book of meters at sources (Utility department) |
| • Quantity and Quality of effluent generated | | Log book of meter at inlet of ETP (EHS department) |

| What to look for | | Where to look |
|---|---|---|
| • Treatment of effluent<br>o Capacity and technology of Effluent treatment plant (ETP) | | Purchase order and prefeasibility report and design of ETP |
| • Quantity and Quality of treated wastewater used and where it is used<br>o Gardening<br>o Utility<br>o Flushing<br>o Other | | Logbook of meter at outlet of ETP/storage of treated water (utility department) |
| • Water conservation practices, if any | | |
| • Disposal outlet of treated effluent and its quantity<br>o Surface water<br>o Sewer lines<br>o Other, specify | | Logbook of effluent discharged at designated outlet (EHS department) |
| • Effluent monitoring<br>o Parameters measured<br>o Frequency of monitoring | | Monitoring records from EHS department. Auditor should also collect effluent sample and compare with records |
| • Quantity and type of hazardous waste generated | | Logbook from EHS department |
| • Disposal of hazardous waste | | Manifest/payment receipt of facilitator |
| • Quantity and type of industrial non-hazardous waste generated | | Logbook from EHS department |
| • Disposal of non-hazardous waste | | Payment receipt from the buyer |
| • Provision of separate storm water drain with proper coverage | | Drainage system |
| • Provision of separate bund walls at area of farm tank and storage of raw material and hazardous waste | | farm tank, Generator House, Diesel Tank and storage |
| • Number of process stacks and vents | | EHS department |
| • Type and quantity of air pollutant released from combustion | | Measurement records from EHS department |
| • What air pollution control measures are in place | | Design document from EHS department |
| • Adequacy and efficiency of air pollution control measures | | Performance documents of the APCD |
| • Type and quantity of fuel used in combustion | | Records from storage department |
| • Type and quantity of air pollutant released from process | | Process and technical service department |
| • What Alternative or renewable energy sources are in place | | Provide details from EHS department |
| • Ambient air quality monitoring within and outside the industry premises<br>o Number of stations<br>o Parameters measured<br>o Frequency of monitoring | | Monitoring location map and monitoring reports. Auditor should perform ambient air quality monitoring on-site and compare with the records |

| What to look for | | Where to look |
|---|---|---|
| • Stack monitoring<br>o Number of stacks<br>o Parameters measured<br>o Frequency of monitoring | | Monitoring reports and check the frequency of parameters exceeding the standards. Auditor should perform stack monitoring on-site and compare with the records |
| • Identification of hazard areas in industry and measures to control<br>o Frequency of safety audit<br>o Number of accidents | | Safety audit report from EHS and check the implementation of the proposed measures |
| • Frequency of health outreach for employees and nearby habitants | | Health records |

### 4.2.2 Important points to be considered by the auditor

o Auditor should identify any odour problem within and outside the industry
o Auditor should conduct noise monitoring within and outside the premises, if necessary

| Draw a diagram of the plant layout and show: | | Check company records for the following: |
|---|---|---|
| • Storage of raw material<br>• Production area<br>• Location of ETP;<br>• Storage of hazardous waste<br>• Emergency evacuation area<br>• Storm water drains;<br>• Final discharge points for effluent;<br>• Flow diagram of production process;<br>• Bunding for protection of stored materials;<br>• Flow diagram of ETP<br>• Location of stacks | | • Purchasing orders for raw materials/machinery plant or processes;<br>• Evidence of registration with the relevant Producer Responsibility Organization (PRO) for the various sectors;<br>• Water and sewer records;<br>• Solid and hazardous waste management records;<br>• ETP maintenance records<br>• Production records;<br>• Environmental monitoring records;<br>• Material safety data sheets;<br>• Manifests annual reports; and<br>• Environmental permits<br>• Previous Environmental Audit Reports |

## 4.3 Audit Protocol for Housing Estate (complex)/ Real Estates/Infrastructure buildings

Like manufacturing industries, the housing estate projects are also considered as point source projects. These include all residential and commercial projects whether standalone buildings or housing complex. The residential colonies which are part of railway, port harbor and other similar projects are to be audited following this protocol. The audit for hospitality sector will also follow more or less the same protocol.

### 4.3.1 Major Environmental issues

o Fresh water requirement and its distribution
o Treatment and disposal of waste water

- Management of solid waste (dry waste, kitchen, garden waste etc)
- Energy consumption and fuel consumption from generator sets
- Noise pollution
- Emergency preparedness and response
- Drainage system

| What to look out for | | Where to look |
|---|---|---|
| • Number of apartments occupied | | • Records from maintenance office |
| • Number of occupants/apartment | | • Ask the maintenance office, otherwise take an average number as 4 |
| • Non-residential population | | • Staff register |
| • Total water requirement and source<br>o Surface water<br>o Ground water<br>o Private tanker supply<br>o Rain water<br>o Treated water<br>o Any other | | <br>o Log book of meters/pump at source<br>o Log book of meters/pump at source<br>o Payment receipts<br>o Log book of meters/pump at source<br>o Log book of meters/pump at source |
| • Different water uses and quantity<br>o Domestic<br>o Gardening<br>o Cleaning of common areas<br>o Other purposes | | Log book of meters (if available) or estimate through bucket and stopwatch method |
| • Disposal mechanism of generated waste water<br>o Municipal sewer<br>o Soak pit/septic tank<br>o In-house sewage treatment plant | | |
| • Quantity of waste water generated | | • Log book of meter at inlet of STP (if available) otherwise estimate through rationale |
| • Treatment of waste waster<br>o Capacity and technology of waste water treatment plant (WWTP) | | Purchase order and prefeasibility report of WWTP |
| • Quantity of treated wastewater used and where it is used<br>o Gardening<br>o Washing<br>o Flushing<br>o Other | | Logbook of meter at outlet of STP/storage of treated water<br>Estimation through bucket and stop watch flow measurement |
| • Water conservation practices, if any | | |
| • Quantity of total solid waste generated | | • Logbook or calculate using the rationale |
| • Waste Disposal<br>o Quantity sent to recyclers/third party/ disposal site<br>o Quantity composted in-house, if applicable | | Bill receipt |
| • Energy received from grid | | Electricity bill/bill payment receipts |
| • Supplementary support by generator sets, if any<br>o Number of operation hours/month<br>o Type and quantity of fuel used | | Logbook/bill receipts of purchased fuel |

### 4.3.2 Rationales for Estimation/Calculation

In case, the information is not available with the auditee, estimation/calculation can be done by using the following rationales.

Water:

Total population = No of apartments * average number of dwellers/apartment
Domestic water usage for residential population (drinking and other household purpose)=135 litre per capita per day (lpcd)-as per Indian norms
Water usage for non-residential population =45 lpcd
Total water consumption = Total residential population*135 lpcd + total non-residential population *45 lpcd
Total wastewater generation= 80 per cent of total water consumption

Solid waste:

Per capita waste generation= 0.3-0.5 kg
Total waste generation = Total population* per capita waste

### 4.3.3 Important points to be considered by the auditor

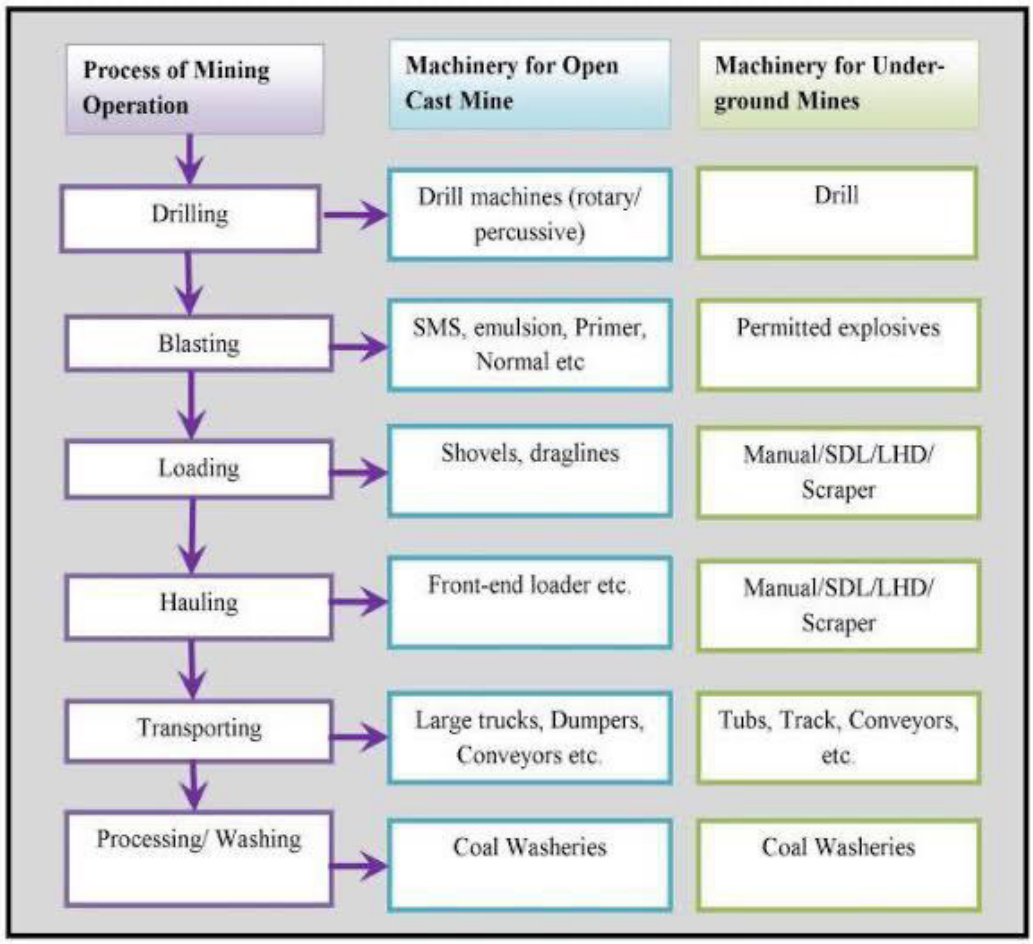
- Auditor should derive the quantity of water requirement by measuring flow through flowmeters and multiply with number of hours of operation. This will also cross check the values given by the management.
- If both groundwater and surface water are combined and used, the auditor should check the Total dissolved solids (TDS) concentration in the combined water and advice the management whether pre-treatment of water is required or not
- Auditor should explore the options to reduce the water consumption and solid waste generation and advise the same to the management and provide the same in the audit report. This may include options of using rain water and treated waste water and other practical applications;
- Auditor should assess the feasibility of using renewable energy at common areas such as corridors, street lightening etc
- Auditor should also check the emergency planning and arrangement with respect to fire and other hazardous events.

| Draw a diagram of audited complex and show: | | Check records for the following: |
|---|---|---|
| • Water distribution network<br>• Location of flow meters<br>• Sewers layout;<br>• Location of all drains and rubbish bins;<br>• Storm water drains;<br>• Final discharge points for treated waste water;<br>• Waste collection area; | | • Purchasing orders for fuel/water;<br>• Water and sewer records;<br>• Solid and hazardous waste management records;<br>• Waste water treatment units; and<br>• Environmental permits<br>• Previous Environmental Audit Reports |

## 4.4 Audit protocol for Mining

Mining projects are considered under area projects as it covers a large area not only longitudinally but also laterally and vertically. Mining process is of two types: surface mining and sub-surface mining. This protocol details out the issues and auditing protocol of surface mining.

**Mining process**




### 4.4.1 Major Environmental issues

- Air pollution
- Water Pollution due to discharge of untreated heavy metals from processing of ore
- Water requirement
- Noise pollution and vibration
- Ground water breaching

- Solid waste/over burden management/topsoil management
- Abandoned Mining Pits
- Chemicals Management
- Risk Assessment
- Energy requirement
- Occupational health and Safety

| What to look for | | Where to look |
|---|---|---|
| • Source of water and quantity<br>o Ground water (borehole)<br>o Surface water (river/lake)<br>o Private tankers | | o Log book of meters/pump at source<br>o Log book of meters/pump at source<br>o Payment receipt |
| • Residential and non-residential population | | • Maintenance department and staff register |
| • Water consumption<br>o Domestic (if residential colony included)<br>o Mine operation<br>o Land reclamation<br>o Drinking<br>o Dust suppression<br>o Green Belt/cover<br>o Fire service<br>o Others (specify) | | o Utility department (capacity of different tanks) |
| • Quantity and disposal mechanism of generated waste water<br>o Residential colony<br>o Mining activity<br>o Breached water<br>o Acidic water, if applicable | | o Logbook of STP inlet and check with flow meter<br>o Utility department or measure through rationale<br>o Logbook of pump/meter for pumping breached water<br>o Logbook of inlet of ETP or measure with flow meter |
| • Water conservation practices, if any | | • Check for recycling and reuse of treated domestic waste water, breached water and treated acidic water |
| • Noise pollution management | | • Monitoring results conducted by the project proponent, conduct monitoring |
| • Number of trucks per day<br>o Carrying overburden<br>o Carrying extracted ore | | • Register at entry gate |
| • Energy source and consumption | | • Electricity bill/fuel consumption of generator sets |
| • Air pollution | | • Monitoring results by the project proponent, conduct self-monitoring, or calculate air emissions using USEPA's AP-42 |
| • Air pollution management measures | | • Check the adequacy and efficiency of the measures |

| What to look for | | Where to look |
|---|---|---|
| • Quantity of waste generation<br>o Overburden<br>o Domestic<br>o Hazardous waste (waste oil) | | o Utility department or calculate using rationale<br>o Receipt from recycler |
| • Biodiversity<br>o Type and number of species of flora<br>o Type and number of species of fauna | | Forest department or perform reconnaissance survey |
| • Safety aspects | | Safety audit report and the implementation of recommendation mentioned in safety report |
| • Quantity of explosives used for blasting | | Permit for use of explosives |
| • Status of Land and Mining Pit Reclamation and Rehabilitation | | Document stating the current Status |

### 4.4.2 Rationales for Estimation/calculation

Domestic waste generation:
Total Number of residential population * 0.3-0.5 kg per person

Overburden:
1. Number of trucks carrying overburden each day* capacity of each truck; or
2. Ore production (in tonnes) * stripping ratio (obtain this information from mining manager)

### 4.4.3 Important points to be considered by the auditor

- Auditor should derive the quantity of water requirement by measuring flow through flowmeters and multiply with number of hours of operation. This will also cross check the values given by the management.
- Auditor must conduct noise monitoring near core area, buffer area of mining and outside mining area especially near habitat.
- Auditor should identify the number and type of flora and fauna near the mining area or obtain from forest department, prepare biodiversity index and compare it with the information provided in EIA report to identify if there is decline in the species count.
- In terms of safety, the auditor should examine and identify vulnerable areas in the mine area particularly the steep slopes within the mine and overburden storage apart from other aspects.
- For checking the efficiency of overburden management, the auditor should look for provision of concrete walls and geotextile layer around the overburden dump, guard drain to capture surface run off from the overburden dump and collection pond to store surface runoff.

| Draw a diagram of the plant layout and show: | | Check company records for the following: |
|---|---|---|
| • Core area of mining/ open pit<br>• Hauling roads<br>• Location of STP and hazardous waste storage<br>• Overburden dumpsite<br>• Domestic waste dumpsite, if applicable<br>• Borehole locations<br>• Residential colony, if applicable<br>• Breached water storage location | | • Production records<br>• Water and sewage treatment cost<br>• Solid and hazardous waste management cost<br>• Material safety data sheets<br>• Manifests annual reports; and<br>• Environmental permits<br>• Safety audit report<br>• Employee health records |

## 4.5 Audit protocol for Rail roads

Railways, highways, pipelines, transmission lines are considered as linear projects and may include even cross boundary with other regions or nations. Such projects have major impacts in terms of habitat fragmentation and loss of biodiversity. Railway includes rail coaches, stations, maintenance yards and railway housing colony. The audit procedure for railway housing colonies are similar to that of housing complex discussed earlier; the other three components are discussed here.

### 4.5.1 Major Environmental issues

- Water consumption and waste water generation at maintenance yards, coaches and stations
- Management and disposal of waste water, excreta and solid waste from rail coaches
- Accidents including animal corridors
- Noise pollution impact at congested habitats

| What to look for | | Where to look |
|---|---|---|
| • Water consumption<br>o In railway coaches while on run<br>o At major stations<br>o In maintenance yard<br>o At railway colony | | o Capacity of water tank and number of times it is filled during the journey<br>o Logbook of borehole/pump of surface water/ receipt of purchase from water board<br>o Logbook of borehole/pump of surface water |
| • Disposal mechanism for generated waste water<br>o Municipal sewer<br>o In-house sewage treatment plant | | |
| • Quantity of solid waste generation<br>o Railway colony<br>o From coaches<br>o At stations<br>o Used oil from maintenance yard | | • Logbook and receipt from recycler |
| • Solid waste disposal mechanism<br>o Landfill/dumpsite<br>o Sent to third party | | o Payment receipts |
| • Excreta generation and disposal mechanism from rail coaches, if bio toilets are not used | | • Capacity and number of excreta tank |

| What to look for | | Where to look |
|---|---|---|
| • Type and quantity of fuel consumption | | • Records from maintenance department<br>• Logbook at maintenance office |
| • Cases of accidents (major/minor) including animal fatality | | • Safety records |
| • Air emissions | | • Calculate as per the rationale |
| • Energy utilization/efficiency | | • Records from maintenance<br>• Sources of Energy (National Grid/Generator/ renewable energy etc) |

### 4.5.2 Rationales for Estimation/calculation

Air emissions generated from the fuel during rail movement can be calculated as follows

Pollutant (PM/Sox/NOx) (kg) =quantity of fuel used (tonnes) * Emission factor for pollutant of the fuel (kg/tonnes)

### 4.5.3 Important points to be considered by the auditor

- o Auditor should check the number of forest corridors on the route of the rail track and calculate the biodiversity index in those corridors to check if the number of species have declined or not. It is mandatory aspect of the audit for these projects
- o Identify the congested habitats on the rail route and ensure the noise barriers are provided

| Draw amap with GPS location showing: | | Check company records for the following: |
|---|---|---|
| • Location of railway housing colony<br>• Location of major stations<br>• Location of congested habitats<br>• Location of forest sections indicating animal corridors<br>• Location of railway yards | | • Fuel purchase records<br>• Solid and hazardous waste management cost<br>• Water and sewage treatment cost<br>• Electricity purchase cost<br>• Environmental permits for maintenance yards, stations, housing colony<br>• Previous Environmental Audit Reports<br>• Environmental Monitoring Data<br>• Environmental Impact Assessment (EIA) Certificate<br>• Emergency Response Plan<br>• Energy Utilization Records |

## 4.6 Audit protocol for Port and Harbour

The operation of ports is complex and diverse in nature and includes both land and water ecosystem. The activities included in the operation of port are listed as below

- o Loading/unloading of goods and material

- Operation of huge ware houses for storage of raw material/ goods including chemicals
- Regular dredging operation to extend and deepen access channels to achieve desired water depth.
- Blasting and repairs at maintenance workshops

### 4.6.1 Major Environmental issues

- Increased suspended solids in water, disrupted aquatic ecosystem and overburden disposal due to dredging
- Hazardous waste generation (used oil/paint residues)
- Waste water generation
- Solid waste generation
- Heavy traffic volume in port area
- Air pollution
- Noise pollution

| What to look for | | Where to look |
|---|---|---|
| • Number of cargos loading/unloading per day | | • Logbook at warehouses/office |
| • Number of dredging operation per year | | • Management records of port |
| • Quantity of overburden generated during dredging | | • Management records of port |
| • Overburden disposal/reuse mechanism | | • Management records of disposal |
| • Quantity and type of hazardous waste generated at maintenance yard | | • Logbook at yard or calculate from rationale<br>• Payment receipt from recycler |
| • Frequency of oil skimming due to spillage in marine ecosystem and quantity of oil recovered | | • Records from maintenance department |
| • Quantity of explosives used for blasting | | • Permit for use of explosives |
| • Quantity of solid waste generated<br>o From port housing complex<br>o From maintenance yard<br>o Office/commercial complex | | Payment receipt to third party/municipality/recyclers |
| • Source and quantity of water consumption<br>o From port housing complex<br>o From maintenance yard<br>o Office/commercial complex | | Payment receipt of municipal supplied water<br>Logbook of meters at different inlets |
| • Quantity of waste water generation<br>o From port housing complex<br>o Office complex<br>o Maintenance yard | | Logbook of meter/pump at STP inlet for residential and office complex<br>Logbook of meter/pump at ETP inlet for maintenance yard<br>Logbook of meter at marine disposal point |
| • Ship breaking activities, if any (mention the number of ship breaking/year) | | • Permit for ship breaking activity |
| • Air pollution due to traffic | | • Ambient air monitoring records and traffic volume records or calculate through rationale |

| What to look for | | Where to look |
|---|---|---|
| • Safety aspects | | • Safety audit report and the implementation of recommendation mentioned in safety report |
| • Energy consumption | | • Electricity bill and fuel for generator sets |

### 4.6.2 Rationales for Estimation/calculation

Air pollution due to traffic: Traffic volume of different segment of vehicles * emission factor for that sector (USEPA)

Waste/used oil generation (KL) from maintenance yard: Number of ships repaired per year* waste oil generated per ship

### 4.6.3 Important points to be considered by the auditor

- o The auditor should perform assessment of aquatic ecosystem through professional taxonomist or obtain information from marine department, if available.
- o Auditor should also perform marine water monitoring before and after dredging operation.

| Draw a diagram of the plant layout and show: | | Check company records for the following: |
|---|---|---|
| • Location of warehouse<br>• Location of loading unloading area<br>• Location of Ship maintenance yard<br>• Location of housing and office complex<br>• Traffic terminal/parking area<br>• Ship breaking area, if applicable<br>• Location of Lock gate | | • Water and sewer costs;<br>• Solid and hazardous waste management costs;<br>• Sewage and effluent treatment units;<br>• Cargo handling records<br>• Material safety data sheets;<br>• Environmental permits<br>• Ship breaking permit and use of explosive permit<br>• EIA certificate<br>• Previous Environmental Audit Reports<br>• Environmental Monitoring Data<br>• Emergency Response Plan<br>• Dredging and Sediment Management Records |

## 4.7 Audit protocol for Healthcare facilities

Health care facilities deals with biomedical waste/human waste (solid and liquid) and thus its handling, classification, storage and disposal are major concerns. Biomedical waste generated from this industry is of various nature, such as anatomical waste, infected/soiled cloths, date expired drugs, Injection syringe etc, thus their disposal system are also different. Hence, if such waste is disposed to land fill without segregation, the people in the habitat around disposal site will face extreme health hazard. Thus the strategy biomedical waste management

- Segregation
- Storage separately in color coded bags

- Disposed environmentally sound way as per their characteristic and approximate technology.

### 4.7.1 Color coding of waste

It is an extremely important system required to be in place within healthcare facilities. This system reduces the risk of injury, maintain compliance with biomedical waste, and keep medical waste disposal costs low. The storage of different kind of biomedical waste should be strictly performed as per the color coding system as stated in the National Environmental (Healthcare Waste) Regulations 2021 S.I. No. 44.

### 4.7.2 Major Environmental issues

- o Management of biomedical waste on basis of potential hazard and its disposal
- o Waste water generation, treatment and disposal
- o Hazardous Waste Management (Chemicals radioactive waste)

| What to look for | | Where to look |
|---|---|---|
| • Number of beds | | |
| • Quantity of Solid waste generation<br>o Anatomical waste (human)<br>o Anatomical waste (animal)<br>o Soiled waste (items contaminated with blood and fluid)<br>o Expired and discarded medicines<br>o Chemical waste<br>o Microbiology, biotechnology and other clinical waste<br>o Waste sharps including metals (needle, syringes)<br>o Contaminated waste such as plastics, tubing bottles, urine bags, intravenous tubes<br>o Glass wares (broken and discarded)<br>o Discarded bedding and linen<br>o Domestic waste | | o Records from OT<br>o Records from laboratory<br>o Records from OT and wards<br>o Store room<br>o Records from laboratory<br>o Records from laboratory<br>o Records from OT, OPD and wards<br>o Records from lab and wards<br>o Records from labs and wards<br>o Records from wards and OT<br>o Records from kitchen, store room and wards |
| • Disposal mechanism for generated waste<br>o Quantity incinerated with autoclaving/microwaving<br>o Quantity directly incinerated (without autoclaving)<br>o Quantity sent to recyclers<br>o Quantity sent to municipality | | o Payment receipt of biomedical waste management facility<br>o Payment receipt from recyclers<br>o Payment receipt from municipality |
| • Source and quantity of water consumption | | Logbook of meter at borehole/payment receipt from supplier |
| • Quantity of waste water generated<br>o Domestic<br>o Liquid chemical waste | | o Meter readings at inlet to sewer lines<br>o Logbook of meter at inlet of ETP |

| What to look for | | Where to look |
|---|---|---|
| • Quantity of Energy consumption<br>o Electricity<br>o Generator sets | | Electricity bill |
| • Quantity and type of fuel consumption<br>o Generator sets<br>o Boiler | | Logbook at maintenance office |
| • Safety aspects | | Safety audit report and implementation of recommendations |

| Draw a diagram of the healthcare facility and show: | | Check company records for the following: |
|---|---|---|
| • Waste storage area<br>• Location of ETP<br>• Sewer network;<br>• Storm water drains;<br>• Final discharge points for effluent;<br>• Storage Areas for Hazardous chemicals and Pharmaceuticals<br>• Areas where radioactive materials are used | | • Biomedical waste management cost<br>• Water and sewer costs;<br>• ETP/STP operation and maintenance cost;<br>• Monthly records for No of occupied beds;<br>• Material safety data sheets for all hazardous substances;<br>• Environmental permits<br>• Training records of employees on biomedical waste handling<br>• Environmental Management Plans<br>• Air Quality Records<br>• Incident and accident reports<br>• Radiation safety records<br>• Previous Environmental Audit Reports<br>• Emergency Preparedness and Response Plan<br>• Mitigation Measures |

## 4.8 Audit Protocols for Landfill site

Waste Management shall mean the collection, transport, recovery and disposal of waste, including the supervision of such operations and after-care of disposal sites'. The general principle of the waste hierarchy is prevention, minimization, reuse, recycling, energy recovery and disposal. Prevention is the most favoured and disposal is the least favoured option. Thus, strategies should focus on waste prevention and minimization through the '5 Rs' — Reduce, Repair, Reuse, Recover and Recycle, and disposal in an environmentally sound manner.

### 4.8.1 Waste

According to the Basel Convention, wastes are substances or objects that are disposed or are intended to be disposed or are required to be disposed by the provisions of national laws. Waste includes all items that people no longer have any use for, which they either intend to get rid of, or have already discarded.

Additionally, wastes are such items which people are required to discard, for example by law because of their hazardous properties. Many items can be considered

as waste e.g. household rubbish, sewage sludge, wastes from manufacturing activities, packaging items, discarded cars, old televisions, garden waste, empty paint containers, etc.

### 4.8.2 Types of Waste

Modern urban living brings on the problem of waste, which is increasing in quantity and changing in composition with each passing day. The different kinds of waste are:

a. **Municipal Waste:** Waste generated by households consisting of paper, plastic, packaging, organic waste, metals, etc.

b. **Industrial and Hazardous Waste:** Consists of waste generated during the manufacturing process which turns raw materials into consumer products. Some of this waste can also be hazardous.

c. **Biomedical Waste:** Waste generated by hospitals, disease diagnostic centres/ Laboratories, and other health providers consisting of discarded drugs, medical sharps, microbiology and biotechnology waste, human anatomical waste, animal waste, etc.

d. **Construction and Demolition Waste:** Waste arising from activities such as the construction and demolition of buildings, creation of infrastructure such as road planning and maintenance, etc

e. **Mining Waste:** Waste arising from prospecting, extraction, treatment and storage of minerals.

f. **E-Waste:** This consists of end of life electrical and electronic equipment and comprises of such items as information technology and telecommunication equipment like computers and printers, electrical and electronic tools, washing machines, medical equipment, refrigerators, televisions, etc

g. **Radioactive Waste:** Waste that contain a concentration of radio nuclides greater than those deemed safe by national authorities and for which no use is foreseen. Because of the wide variety of nuclear applications, the amounts, types and even physical forms of radioactive waste vary considerably. Some of these wastes remain radioactive for hundreds or thousands of years, while others may require storage for only a short period, while they decay, prior to conventional disposal.

h. **Other Waste:** These include end-of vehicles, unserviceable aircraft and ships, packaging waste, tyres, batteries, agricultural waste, waste from forestry and other hazardous waste classified under the Basel Convention.

### 4.8.3 Audit issues in Management of Waste

Some of the major issues in the management of waste are:

a. Existence of database regarding waste;
b. Recognition of threats to health and environmentl posed by waste;
c. Existence of waste policy/laws/rules governing waste management;
d. Strategies to reduce, reuse and recycle waste;
e. Collection and segregation of waste;
f. Processing of waste/recovery of energy from waste;
g. Proper final waste disposal;
h. Proper accountability mechanism;
i. Compliance with waste policies/laws/guidelines/rules/plans;
j. Monitoring of compliance with waste policies/laws/guidelines/rules/plans; and
k. Adequacy of infrastructure for waste management

This protocol deals with the auditing of municipal landfill sites. Similar criteria with some additional markers can be used for hazardous waste management sites.

### 4.8.4 Major Environmental Issues

o Leachate contamination
o Groundwater contamination due to leakage
o Surface runoff from landfill catchment area
o Generation of toxic and fire prone gases
o Fire Hazard
o Air pollution (green House Gas emission and Odour)
o Soil pollution
o Public Health Risk

| What to look for | | Where to look |
|---|---|---|
| • Compliance with site selection criteria laid down by NESREA | | • NESREA guidelines |
| • Availability of proper fencing to prevent entry of stray animals | | • Check fencing area |
| • Total waste entered in the premises | | • Computer record at overbridge |
| • Total number of trucks entered | | • Computer record at over bridge/entry book at gate |

| What to look for | | Where to look |
|---|---|---|
| • Whether the incoming waste is segregated or not? | | • Logbook of dry and wet waste section |
| • Quantity of waste going for compositing | | • Logbook at wet waste section |
| • Quantity of waste going for recycling and landfill | | • Receipt from recycler<br>• Logbook at landfill section<br>• Auditor should do the mass balance as given in the rationale |
| • Quantity of water consumption | | |
| • Quantity of leachate from landfill | | • Logbook of leachate collection/ auditor should also perform the flow measurement |
| • Treatment facility | | • Check the adequacy of treatment with respect to design parameters and existing performance |
| • Disposal mechanism | | • Log book at laboratory to check the discharge parameters and check the compliance with standards |
| • Availability of guard drain around landfill area constructed and maintained or not | | • Check drainage area |
| • Maintenance of HDPE liner | | • Logbook of HDPE maintenance area |
| • Number and location of air quality monitoring stations | | • Monitoring reports |
| • Assess the air quality at site and nearby areas | | • Monitoring reports done by proponent and conduct self-monitoring |
| • Piezo metric network for ground water sampling | | • Check the analytical report for results and frequency of sampling and do self- monitoring |
| • Safety audit report | | • Check whether recommendation are implemented or not |
| • Health status of workers | | • Heath records of checkups done by proponent |

## 4.8.5 Rationales for Estimation/calculation

Mass balance of waste:
Total waste = Total dry waste+ total wet waste
Total dry waste= total recyclable waste + waste sent to landfill
If quantity of total waste is equal to waste sent to landfill, there is no segregation of waste
If landfill waste is equal to total dry waste, no waste is sent for recycling

## 4.8.6 Important points to be considered by the auditor

- The auditor should calculate the total waste entering and waste per truck to crosscheck the waste details
- Auditor should collect the leachate sample and groundwater sample for analysis

| Draw a diagram of the plant layout and show: | | Check company records for the following: |
|---|---|---|
| • Unloading area<br>• Location of weighing bridge<br>• Location of compositing<br>• Leachate treatment area<br>• Location of fire extinguishers<br>• Storm water drains;<br>• Final discharge points for leachate;<br>• Storage areas for bulk materials incoming;<br>• Location of ground water monitoring stations | | • Manifests annual reports;<br>• Environmental monitoring data;<br>• Emergency response plan;<br>• Leachate management plan; and<br>• Environmental permits |

## 4.9 Audit protocol for Wildlife Facilities and Sanctuaries

Wildlife facilities are establishments that provide care, shelter, and support for various animal species. These facilities often focus on rehabilitation, conservation, education, and research to ensure the welfare and wellbeing of the Wildlife in their care. The facilities include: Zoo, Parks, Game Reserves, Sanctuaries, Rescue centers and Recreational centers.

### 4.9.1 Major Environmental Issues

- o Animal welfare and well-being
- o Enclosure design and maintenance
- o Animal handling and training practices
- o Nutrition and dietary management
- o Veterinary care and health protocols
- o Record keeping and data management
- o Staff training and qualifications
- o Safety protocols for visitors and staff
- o Conservation and education programs
- o Compliance with laws and regulations

| What to look for | | Where to look |
|---|---|---|
| Animal welfare (Nutrition, Dietary Management and Well- being general) | | Wildlife Parks, Zoos, Sanctuaries, etc (Cages, Pen, etc.), Facility's Management records of feeds for Wildlife species |
| Enclosure design and maintenance | | Wildlife Parks, Zoos, Sanctuaries, etc |
| Animal handling and training practices | | Facility Records and Management personnel records |
| Veterinary care and health protocols | | Facility's Veterinary Clinic, Drugs and Medicine, Log books, etc. |
| Record keeping and data management | | Facility's Manager Office |
| Staff training and qualifications | | Management's Personnel Records |
| Safety protocols for visitors and staff | | Records from health and safety Unit |

| What to look for | | Where to look |
|---|---|---|
| Conservation and education programs | | Facility's Manager Office (Logbook) |
| Compliance with laws and regulations | | Logbook for Facility maintenance, Animal well-being, Records of Certification and Permit |

## 4.10. Audit protocol for wood and wood products including charcoal production and processing

The audit protocol for wood and wood products, including charcoal production and processing, is designed to ensure compliance with environmental regulations, sustainability standards, and best practices in resource management. This protocol aims to assess the legality, sustainability, and traceability of wood and wood products throughout the supply chain.

### 4.10.1 Major Environmental Issues

- Legal Compliance (Permits, Licenses and Regulatory Compliance e.g. CITES)
- Sourcing and Traceability (Origin of Raw Materials and Chain of Custody)
- Sustainability Practices (Forest Management Practice, Biodiversity Assessment, Carbon Footprint and Certification Standards)
- Corporate Social Responsibility (Community Engagement and Labor Practices)
- Production Processes (Processing Standards and Quality Control)
- Health and Safety (Worker Safety Protocols and Health Risks)
- Waste Management (Waste Reduction and Recycling and Reuse)
- Chemical Use and Pollution

| What to look for | | Where to look |
|---|---|---|
| Environmental Compliance status (Permits, Licenses and Regulatory Compliance) | | • Certification records<br>• Safety book record |
| Sourcing and Traceability (Origin of Raw Materials and Chain of Custody) | | Procurement Manager / Supply Chain Manager<br>- Certificates of legality and sustainability<br>- Chain of custody documents |
| Sustainability Practices (Forest Management Practice, Biodiversity Assessment, Carbon Footprint and Certification Standards) | | Sustainability/ Manager<br>- Environmental impact assessments (EIAs)<br>- Sustainability reports<br>- Compliance audits and assessments |
| Corporate Social Responsibility (Community Engagement and Labor Practices) | | Public relation officer's desk<br>- CRS Records |
| Production Processes (Processing Standards and Quality Control) | | Quality Control Manager<br>- Production logbooks<br>- Process flow diagrams<br>- Quality control records |

| What to look for | | Where to look |
|---|---|---|
| Health and Safety (Worker Safety Protocols and Risk Management) | | Health and Safety Officer<br>- Safety training records<br>- Incident reports<br>- Safety audits and inspections |
| Waste Management (Waste Reduction, Recycling and Reuse) | | Operation Manager's desk<br>- Logbook<br>- Stock movement records<br>- Waste management records |
| Chemical Use and Pollution | | Operation Manager<br>- Chemical Inventory records<br>- Safety Data sheet<br>- Waste Management Records |

### 4.10.2 Important points to be considered by the auditor

- Auditors should ensure compliance with environmental regulations and sustainable sourcing practices.
- Verify the traceability of raw materials to prevent illegal logging and assess the adequacy of inventory management and quality control processes to ensure product integrity and safety.
- The auditor should perform assessment of aquatic ecosystem through professional taxonomist or obtain information from marine department, if available.

## 4.11 Audit Protocols for Health and Safety

Health and Safety is an important concern of most businesses, particularly those in the manufacturing, infrastructural and service industries. Most industries/ businesses need to conduct regular (annually) health and safety audits to make sure that the working environment is as safe as possible for all employees. Health and safety audit is a methodical approach to evaluate potential hazards enabling suggestions for improvement. It is an important tool for identifying deterioration of standards, areas of risks or vulnerability, hazards and potential incidents in the machines or production lines for determining necessary action to minimize hazards thus ensuring effective and meaningful safety efforts.

Issues typically addressed other Occupational Health and Safety Audit includes the following (as appropriate and regulated) as shown in Table 4.2

**Table 4.2: Occupational Health and Safety Management**

| Occupational Health | Safety Management |
|---|---|
| • Medical Surveillance<br>• First Aid including first aid provisions and training<br>• Accident/Illness Investigation<br>• Record-Keeping and reporting<br>• Workplace Requirements including general workplace requirements, ventilation, temperature, lighting, sanitary provisions, cloak room, drinking water, rest areas, workplace violence, pestering, sexual harassment, etc<br>• Ergonomics including general ergonomic requirements, visual screen equipment, manual handling of loads and back injury prevention.<br>• Exposure Limits Protection including chemical agents, vibrations, UV-reactive materials, asbestos, lead, radon, etc<br>• Ionizing and Non-Ionizing Radiation.<br>• Materials Safety Data Sheet on Chemical Usage<br>• Details of Internal Classification including use of the Global Harmonised System of Classification and labeling of chemicals (GHS) | • Duty of Care/General Prevention including general duty of care, general prevention requirements, occupational health and safety expert persons and services, works councils, health and safety committees, etc<br>• Risk Assessment and Risk Management Program including risk assessment, action plan and risk management, reporting, etc.<br>• Information, Communication and Training including training and health and safety signs/ posters.<br>• Protection Classes of Employees including young workers, pregnant and breastfeeding workers, temporary workers, night workers, home workers, etc.<br>• On-site Contractors and Construction Activities<br>• PPE<br>• Strategic Placement of safety signs within facility.<br>• Strategic placement of precautions to be taken for each machine |

## 4.12 Audit Protocol for Water Resources

I. The requirements in this subsection pertain to the need for authorizations, permissions or environmental licenses for specific types of water-related activities such as, if:
   a. The facility extracts materials such as stones, sand or gravel from streams, channels or beds of waterways;
   b. The facility plans to construct works that will occupy a channel or stream;
   c. The facility establishes tourist, recreation or sporting activities in streams, lakes or other waters of public domain;
   d. The facility has to alter channels or marginal slopes to avoid floods or damage in shoreline areas;
   e. The facility wishes to establish a concession for water for power use;
   f. The facility collects and channels drainage or irrigation waters;
   g. The facility wishes to explore or prospects for groundwater resources; and
   h. The facility has constructed dikes or dams to capture water for its use.

II. Each environmental license will indicate all the requirements, obligations and conditions with which licensee must comply. Key environmental legislation and regulations covered in this protocol are noted as follows:
   a. National Environmental (Wetlands, River Banks and Lake Shores) Regulations S.I. 26 of 2009; and
   b. National Environmental (Wetlands, Mountainous, Hilly and Catchment Areas) Regulations S.I. 27 of 2009.

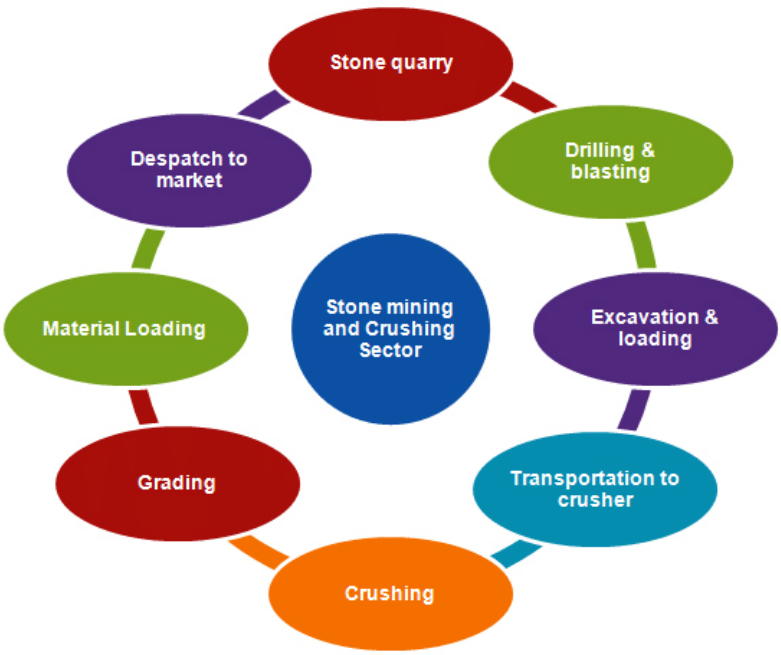
III. Issues typically addressed under Water Resources Audit include the following (as appropriate and regulated):

a. Environmental Licenses/Authorization for Construction and/or Operations of certain water related activities
b. Drainage and Runoff
c. Development of Groundwater Resources
d. General Requirements for Private Water Supplies
e. Private Drinking Water Supplies
f. Water Quality Criteria for Human and Domestic Consumption
g. General Discharge Limitation
h. Discharges to Surface Waters
i. Discharges to Groundwater
j. Discharges to Sewers
k. Permissions/Authorizations for Liquid Discharges
l. Prevention of Water Resources Contamination

## 4.13 Audit protocol for Quarrying and Blasting Operations

Quarrying is the process of removing rock, sand, gravel or other minerals from the ground in order to use them to produce materials for construction or other uses. So, a quarry is any such working on the surface of the earth where minerals are extracted

**Quarrying, Blasting and Crushing Process**



### 4.13.1 Major Environmental issues

- Air pollution due to drilling and blasting activities
- Water pollution
- Noise and vibration
- Solid waste/over burden management/topsoil management
- Quantity of explosive used per hole and per blast operation
- Depth of the Quarrying Pits
- Abandoned Quarrying Pits
- Risk Assessment
- Requirement for company policy
- Energy requirement
- Safety Issues
- Occupational health of workers
- Rehabilitation and Decommissioning Plan

| What to look for | | Where to look |
|---|---|---|
| • Operational procedures across all stages of the process | | • Operational Manual |
| • Distance of the Quarry to the nearest residential buildings | | • Check the adequacy and efficiency of the measures |
| • Source of water and quantity<br>o Ground water (borehole)<br>o Surface water (river/lake)<br>o Private tankers | | o Log book of meters/pump at source<br>o Log book of meters/pump at source<br>o Payment receipt |
| • Water consumption<br>o Domestic (if residential colony included)<br>o Drinking<br>o Dust suppression<br>o Green Belt/cover<br>o Others (specify) | | o Utility department (capacity of different tanks) |
| • Noise pollution management | | • Monitoring results conducted by the project proponent, conduct monitoring |
| • Surface and Ground Water Pollution Management | | • Monitoring results conducted by the project proponent, conduct monitoring<br>• Conducting In-situ and Ex-situ analysis |
| • Number of trucks per day<br>o Carrying materials | | • Register at entry gate |
| • Energy source and consumption | | • Electricity bill/fuel consumption of generator sets |
| • Air pollution | | • Monitoring results by the project proponent, conduct self-monitoring or calculate air emissions using USEPA's AP-42 |
| • Air pollution management measures | | • Check the adequacy and efficiency of the measures |

| What to look for | | Where to look |
|---|---|---|
| • Quantity of waste generation<br>o Solid waste<br>o Domestic<br>o Hazardous waste (waste oil) | | o Utility department or calculate using rationale<br>o Receipt from recycler |
| • Biodiversity<br>o Type and number of species of flora<br>o Type and number of species of fauna | | Forest department or perform reconnaissance survey |
| • Safety aspects | | Safety audit report and the implementation of recommendation mentioned in safety report |
| • Worker training and competency assessments | | Interview or interactions with workers |
| • Quantity of explosives used Per Hole and Per blast | | Permit for use of explosives |
| • Depth and Volume of the Quarrying Pits | | Check the adequacy and efficiency of the measures |

## 4.13.2 Rationales for Estimation/calculation

Domestic waste generation:
Total Number of staff * 0.3-0.5 kg per person

Overburden:

1. Number of trucks carrying material each day* capacity of each truck; or
2. Material production (in tonnes) * stripping ratio (obtain this information from quarrying manager)

## 4.13.3 Important points to be considered by the auditor

- o Verify the presence and validity of all required permits, licenses, and regulatory approvals.
- o Ensure compliance with occupational health and safety regulations, such as those related to worker training, personal protective equipment (PPE), and emergency response.
- o Review adherence to environmental protection laws and guidelines, including those addressing air quality, water management, noise, and waste disposal.
- o Assess the overall site layout, including access controls, traffic management, and segregation of different operational areas.
- o Evaluate the maintenance and inspection procedures for quarrying equipment, such as excavators, loaders, and haul trucks.
- o Examine the material extraction, handling, and storage processes to identify potential inefficiencies or safety risks.
- o Review the blasting plan development and approval process, ensuring that it considers factors such as vibration, fly-rock, and air overpressure.

- Verify the depth and volume of the quarrying pit
- Evaluate the blasting execution, monitoring, and post-blast evaluation procedures to ensure safety and effectiveness.
- Assess the selection, maintenance, and performance of the crushing equipment, including its suitability for the material being processed
- Examine the material handling and stockpiling procedures, with a focus on dust control and suppression measures.
- Evaluate the efficiency and optimization of the crushing and processing operations.
- Verify the adequacy of worker training and competency assessments, particularly for high-risk tasks.
- Ensure the proper use, storage, and maintenance of personal protective equipment (PPE).
- Review the emergency response planning and the effectiveness of emergency drills and preparedness measures.
- Assess the effectiveness of noise and vibration mitigation strategies, such as the use of noise barriers and monitoring programs. - Evaluate the water management and wastewater treatment practices, including the compliance with discharge requirements.
- Review the waste management and disposal procedures, ensuring responsible and sustainable practices.
- Examine the communication and engagement processes with nearby communities, addressing their concerns and feedback.
- Assess the effectiveness of the grievance management and resolution procedures. - Evaluate the collaboration with regulatory bodies and local authorities to address community-related issues.
- Auditor must conduct noise monitoring near core area, buffer area of quarrying and outside quarrying area especially near habitat.
- Auditor should identify the number and type of flora and fauna near the quarrying area or obtain from forest department, prepare biodiversity index and compare it with the information provided in EIA report to identify if there is decline in the species count.

| Draw a diagram of the plant layout and show: | | Check company records for the following: |
|---|---|---|
| • Quarrying/Blasting pit<br>• Crushing Plants<br>• Hauling roads<br>• Location of STP and hazardous waste storage<br>• Domestic waste dumpsite, if applicable<br>• Borehole locations<br>• Residential colony, if applicable | | • Production records<br>• Water and sewage treatment cost<br>• Solid and hazardous waste management cost<br>• Material safety data sheets<br>• Manifests annual reports; and<br>• Environmental permits<br>• Safety audit report<br>• Employee health records<br>• Decommissioning Plan |

## 4.14 Audit protocol for Construction

Construction refers to the act of building or assembling infrastructure, structures, or other physical components. It involves the planning, design, and execution of projects that create or modify buildings, roads, bridges, dams, and other facilities. The construction process typically includes activities such as: - Site preparation and excavation - Laying foundations and structural framing - Installing electrical, plumbing, and HVAC systems

### 4.14.1 Major Environmental issues

- o Air pollution
- o Water pollution
- o Noise pollution and vibration
- o Site Waste
- o Liquid waste
- o Deforestation
- o Storm water
- o Abandoned Burrow Pits
- o Occupational health and safety

| What to look for | | Where to look |
|---|---|---|
| • Operational procedures across all stages of the process | | • Operational Manual |
| • Site Waste Management | | • Utility department |
| • Storm water Management | | • Storm water Management Plan |
| • Set back to the nearest river, lake or waterways | | • Construction design |
| • Source of water and quantity<br>o Ground water (borehole)<br>o Surface water (river/lake)<br>o Private tankers | | o Log book of meters/pump at source<br>o Log book of meters/pump at source<br>o Payment receipt |
| • Water consumption<br>o Domestic activities<br>o Drinking<br>o Dust suppression<br>o Others (specify) | | o Utility department (capacity of different tanks) |
| • Noise pollution management | | • Monitoring results conducted by the project proponent, conduct monitoring |
| • Surface and Ground Water Pollution Management | | • Monitoring results conducted by the project proponent, conduct monitoring<br>• Conducting In-situ and Ex-situ analysis |
| • Number of trucks per day if applicable<br>o Carrying materials | | • Register at entry gate (Construction yards) |
| • Energy source and consumption | | • Electricity bill/fuel consumption of generator sets |

| What to look for | | Where to look |
|---|---|---|
| • Air pollution | | • Monitoring results by the project proponent, conduct self-monitoring, or calculate air emissions using USEPA's AP-42 |
| • Air pollution management measures | | • Check the adequacy and efficiency of the measures |
| • Quantity of waste generation<br>o Solid waste<br>o Domestic<br>o Hazardous waste (waste oil) | | o Utility department or calculate using rationale<br>o Receipt from recycler |
| • Biodiversity<br>o Type and number of species of flora<br>o Type and number of species of fauna | | Forest department or perform reconnaissance survey |
| • Safety aspects | | Safety audit report and the implementation of recommendation mentioned in safety report |
| • Worker training and competency assessments | | Interview or interactions with workers |
| • Quantity of explosives used for blasting | | Permit for use of explosives |

## 4.14.2 Rationales for Estimation/calculation

Domestic waste generation:
Total Number of staff * 0.3-0.5 kg per person

Overburden:

1. Number of trucks carrying material each day* capacity of each truck; or Material production (in tonnes) * stripping ratio (obtain this information from project manager)

## 4.14.3 Important points to be considered by the auditor

- Verify the presence and validity of all required permits, licenses, and regulatory approvals.
- Ensure compliance with occupational health and safety regulations, such as those related to worker training, personal protective equipment (PPE), and emergency response.
- Review adherence to environmental protection laws and guidelines, including those addressing air quality, water management, noise, and waste disposal.
- Note the set back of the projects to the water way, rivers/lake
- Site Waste Management Plan: The operator/facility shall submit a Site Waste Management Site Waste Plan (SWMP) to the Agency for all new construction projects that will require Management mandatory Environmental Impact Assessment (EIA) or such projects that Plans may generate significant waste.

- Storm Water Discharge Permit: Storm Water Discharge Permit shall be obtained from the Agency with some requirements.
- Storm Water Management Plan of the project
- Lighting Activities that can or have the potential to cause disturbance to the surrounding community.
- Control of Dust and Fugitive Emission
- Noise generated within the work site shall be within permissible limit
- Hazardous Substances: There shall be proper management of Hazardous Substances by the operator/facility owners.
- Use of Asbestos: Note that use of asbestos for construction is prohibited.
- Spent Oil: The Spent Oil shall be disposed off in an environmentally friendly manner as approved by the Agency

| Draw a diagram of the plant layout and show | | Check company records for the following |
|---|---|---|
| • Set back to the nearest water channel<br>• Hauling roads<br>• Location of STP and hazardous waste storage<br>• Domestic waste dumpsite, if applicable<br>• Borehole locations if applicable | | • Solid and hazardous waste management cost<br>• Material safety data sheets<br>• Manifests annual reports; and<br>• Environmental permits<br>• Safety audit report<br>• Employee health records<br>• Rehabilitation and Decommissioning Plan if applicable |

## 4.15. Audit protocol for Open Burning activities for Regulatory Agencies and others

Open burning of seized and confiscated contraband, substandard manufactured products, mutilated notes, health care wastes, etc by regulatory agencies of government, medical institutions / centers, and others in Nigeria, is one of the major contributors to climate change in the country. The need to ensure compliance with extant national protocols, laws and regulations is of utmost important to mitigate this menace.

### 4.15.1 Major Environmental issues

- Types of contraband
- Method of burning in practice
- Clearance evidence for open burning
- How frequent is burning exercise (annually or biannually)

| What to look for | | Where to look |
|---|---|---|
| • Types of contraband | | • Logbook at warehouses/office |
| • Method of burning in practice | | • Management / Operational records of disposal |
| • Clearance evidence for disposal | | • Management records of clearance by relevant issuing Authority on environmental matters |
| • How frequent is the disposal (annually or biannually) | | • Management / Operational records of disposal |
| • Quality of disposable items | | • Operation Manager/Director of Operation, Health Safety Environment Officer (HSE) |

### 4.15.2 Important points to be considered by the auditor

- The auditor should perform assessment of aquatic ecosystem through professional taxonomist or obtain information from marine department, if available.
- Auditor should also perform marine water monitoring before and after dredging operation.

# CHAPTER FIVE: REPORTING PROCEDURES

The Environmental Audit (EA) Report is a written record of the Environmental Audit process. It describes project or process being audited, lists the environmental effects associated with that project or process, quantifies the industrial data regarding input and output of the process and identifies the relevant environmental legislation and standards that applies in order to provide an objective analysis of the environmental impacts arising from a project or process and ultimately provide the information required to draw up a Comprehensive Mitigation Plan in the event of there being any significant negative impacts on the environment.

The EA Report needs to communicate the relevant information clearly and concisely and should therefore:

a. Be presented to make information accessible to the non-specialist, avoiding technical terminology where possible.
b. Have information presented in summary tables and use good quality maps, charts, diagrams and other visual aids wherever possible.
c. Be clearly laid out with a clear table of contents, to allow the reader to find and assimilate information easily and quickly.
d. Present information without bias and discuss issues with the emphasis appropriate to their importance as in the overall context of the Environmental Audit.

## 5.1 Contents of Environmental Audit Report

### I. Introduction

The objectives and scope of the Environmental Audit

### II. Conduct of the Audit

Those interviewed during the audit, the timing and audit methodologies used should be presented

### III. Description of the Development or Activity Under Audit

The size and nature of the development or activity, a description of the relevant management structures and workforce, a summary of all inputs and outputs,

ancillary operations such as transport and services, storage and processing operations.

## IV. Description of Industrial data

Quantification of raw material, water, energy/fuel used in the process along with the products and waste generated (air, water, solid waste) from the process or activity. The measures taken for controlling air pollution, water pollution and management of solid/hazardous waste to be detailed including the technical information and capacity wherever applicable.

## V. Description of the Environment

A brief description of the surrounding environment including the natural and built environment, local ecology (Noting any sites or special interest or conservation value) and socio-economic or cultural factors that may have a bearing on the audit.

## VI. Description of Environmental Effects

Environmental effects related to the transport, handling, processing, storage and eventual disposal route to the environment of all relevant inputs and outputs should be presented systematically in a clear and appropriate manner. They should include:

a. The environmental effects observed during the course of the audit
b. The good and bad management practices that were observed during the course of the audit, including the effectiveness of existing environmental mitigation measures.

## VII. Evaluation of Environmental Effects

The relevant environmental legislation and standards that apply must be defined. These should be cross referenced to the environmental effects identified in the Description of Environmental Effects in paragraph 5 above. The environmental effects must be systematically evaluated and ranked in terms of their significance and the assessment of significance justified.

## VIII. Recommendations

a. The EA Report must make recommendations to address any significant negative environmental effects and, importantly, allocate and justify priorities for action
b. Recommendations should include the control and reduction of emissions by improved efficiency, management and technical control measures.
c. The emphasis should be on incentive and removing the source of a problem rather than the use of command and control or “end of pipe” technology.

## 5.2 Environmental Audit Report Format

a. Title Page (including the name of complying facility);
b. List of Preparers;
c. Disclaimer by the auditors involved
d. Certificate of accreditation
e. Table of Contents;
f. Acknowledgement;
g. Executive Summary (background, audit findings, conclusion and recommendations);
h. Introduction;
    i. Overview of Background Information;
    ii. Objectives;
    iii. Terms of Reference (ToR)/Scope of Audit
    iv. Approach and Methodology

i. Overview of the Facility/Development or Activity under Audit
    i. Description of facility;
    ii. Organizational Structure;
    iii. Process Description;
    iv. Summary of ancillary operations (such as transport and services, storage and processing operations)
    v. Quantification of all inputs (raw material, water, energy etc) and outputs (product, waste etc) to the process as provided in Annexure 4

j. Baseline Environmental Assessment and Management Study
    i. Description of Surrounding Environment;
    ii. Existing Environmental Management Systems;
    iii. Survey of Compliance with Environmental Laws, Regulations and Company Policies

k. Audit Findings
    i. Observations and Evaluation of General Housekeeping Practices
    ii. Identification, Quantification and Characterization of Waste
    iii. Material Balance
    iv. Description of Environmental Effects related to Operational Activities
    v. Impact Evaluation

l. Conclusion
    i. Summary of Audit findings; and

ii. Assessment of Facility's environmental performance and compliance status.

m. Recommendation
   i. General Recommendations;
   ii. Specific Recommendations; and
   iii. Follow-up Action Plan with timelines, responsibilities and performance indicators to track implementation of the action plan.

n. Bibliography

o. Appendix
   i. Project layout;
   ii. Company's policies (avoid including unnecessary photocopies of regulations).
   iii. Photo logs (optional)
   iv. Supporting documentation (optional)

# CHAPTER SIX: REVIEW OF ENVIRONMENTAL AUDIT REPORT

The submitted environmental audit reports will be reviewed for its quality and appropriateness of data by the committee formed by NESREA. If the review of the audit report is satisfactory, the report will be accepted, otherwise the auditor will be advised to either resubmit the report with modifications as suggested or the report may be rejected due to its poor quality. The auditors will be called for a discussion during the review exercise.

## 6.1 Review Committee

NESREA may decide to have a single technical committee that reviews reports of type of projects in the country, but this may overburden the committee. The other alternative is to have a technical committee at the headquarters which reviews audit reports of large-scale and complex projects and then other technical committees at the zonal/regional level which reviews audit reports of small-and medium-scale projects.

## 6.2 Review Parameters

The parameters to be covered under the environmental audit review will include but not limited to

- Status of auditor certification
- Layout and housekeeping of the plant/project
- Raw material consumption and production figures
- Water conservation and waste water generation
- Waste generation and management
- Quantity of Waste Generated
- Quantity of Waste Recycled
- Quantity of Waste Used
- Air pollution and mitigation measures
- Any project specific requirements
- Applicable rules, permit conditions and its compliance status
- Environmental management system evaluation
- Hazardous materials management
- Energy management

- Material safety data sheet
- Emergency preparedness and response
- Biodiversity and Ecosystem Protection
- Noise Pollution Monitoring and Control
- Soil Contamination and Remediation Measures
- Occupational Health and Safety (OHS) Compliance
- Community Engagement/Corporate Social Responsibility
- Resource Recovery and Circular Economy Initiatives
- Effluent Quality Monitoring
- Lifecycle Assessment (LCA) of Products or Services
- Environmental Risk Assessment
- Training and Capacity Building on Environmental Issues
- Compliance with Extended Producers Responsibility (EPR) Program.

The checklist for the review of audit report is provided at **Annexure 11**

# ANNEXURE

## ANNEXURE 1: Environmental Action Plan Framework

| Environmental Issue | Objective | Target | Action | Responsible Department | Personnel Responsible | Budget | Timeline for Implementation/ Completion |
|---|---|---|---|---|---|---|---|
| Material Management | | | | | | | |
| Energy Management | | | | | | | |
| Waste Management | | | | | | | |
| Water & Wastewater Management | | | | | | | |
| Air Quality | | | | | | | |
| Noise Emission | | | | | | | |
| Transportation & Travelling | | | | | | | |
| Emergency Response Procedures | | | | | | | |
| Staff Awareness and Training | | | | | | | |
| Response to public Enquiries and Complaints | | | | | | | |
| Publicity of Environmental Information | | | | | | | |
| Environmental Management Plan | | | | | | | |

# ANNEXURE 2: Audit Protocol and Checklist

Audit Site .....
Audit Date .....
Auditor (s) .....
Site Personnel .....

## ANNEX 2.1: AUDIT PROTOCOL FOR WASTE CONTROL

### Legislation: Waste Control & Sanitation Regulations S.1.28

| Reference | Requirement | Activity | | | | Comments/ Remarks |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| S.1. 28 Section (4), (19), (28) | Registration<br><br>Examine Waste Registration & attach a coopy | | | | | Business activity: Type of Waste produced |
| Section (13) | Waste Disposal<br>(1) (a) Arrangement to deliver waste to reception point(s)<br><br>(1) (b) If disposal internally, examine license and site reference no.<br><br>(2) If no suitable reception point for the waste, examine & attach the approval for the present disposal arrangement | | | | | Reception point(s) |
| Section (13) | Containment<br><br>Waste Containers of suitable design<br><br>Suitable material (corrosion resistant) well maintained | | | | | |
| | Proper Packaging<br>(1) (a) Waste stored to ensure handling safety and container effectiveness<br><br>(1) (b) Containers properly and securely closed and surface free to waste<br><br>(1) (c) Incompatible wastes not missed, packed or stored in same container<br><br>(1) (d) Sufficient air space allowed in containers of liquid chemical waste | | | | | |

| Reference | Requirement | Activity | | | | Comments/ Remarks |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| | Storage in Working Area<br>Wastes stored in working area<br>Quantity stored in single are below 50 litres<br>Containers properly stored and labeled<br>Containers kept in cabinet or receptacle of suitable material and construction<br>Containers of incompatible wastes separated by an impermeable partition inside cabinet | | | | | |
| | Storage Area<br>(2) (a) Dedicated storage area<br><br>(2) (b) Enclosed on 3 sides with no less than 2m in height or height of tallest container or stack of containers<br><br>(2) (c) Adequacy of area ventilation<br><br>(2) (d) Isolation from surface water drains or foul sewers<br><br>(2) (e) Adequacy of handling space<br><br>(2) (f) Indoors storage area and building escape/exit not obstructed<br><br>(2) (g) Outdoors storage area covered<br><br>(2) (h) Storage area kept clean and dry | | | | | |
| | Liquid Waste Storage<br>(1) (a) Storage area floor/surface permeation proofed<br><br>(1) (b) Capacity of retention structure sufficient to accommodate contents of the largest container or 20% volume of waste in storage<br><br>(1) (c) Walls or partitions of stacked container storage area constructed of impermeable material | | | | | |

| Reference | Requirement | Activity | | | | Comments/ Remarks |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| | Warning Signs on Storage Area<br>(1) Warning notice at/near the entrance or opening of every stored waste storage area, cabinet and receptacle<br><br>(2) Kept clean and free from obstruction | | | | | |
| | Engagement of Waste Collector<br>Examine contract with a licensed waste collected and attach a copy | | | | | |
| | Particulars of Waste Collector<br>(1) Examine and attach a copy of trip ticket<br><br>(2) Confirm retention of trip ticket copies for 12 months | | | | | |
| | Provision of Sanitary Facilities<br>(1) Examine adequate toilet facilities including adequate water supply for use of their customers/ staff<br><br>(2) Examine adequate hand washing facilities | | | | | |
| | Emergency Procedures<br>(1) (a) Availability of written emergency procedures ticket<br><br>(1) (b) Adequacy of employee instruction and training on emergency procedures. | | | | | Assess employee competence and awareness |

**This audit does not cover the import, export or manufacture of the ozone depleting scheduled substances. * ***

Audit Site .....
Audit Date .....
Auditor (s) .....
Site Personnel .....

## ANNEX 2.2: AUDIT PROTOCOL FOR THE OZONE LAYER

### Legislation: National Environmental (Ozone Layer Protection) Regulation S.1. No. 32 of 2009

| Reference | Requirement | Activity | | | | Comments/ Remarks |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| S.1 | Approval<br>(1) Any use of controlled refrigerant Examine approval from Authority and site Ref. No. | | | | | Particulars of Furnace Oven or Chimney<br><br>Types, grade and quantity of fuel consumed.<br><br>Operation time in each period of 24 hours<br><br>Details of automatic or semi-automatic control connected<br><br>Rating of the boiler:<br>Dimension and material of chimney:<br><br>Mechanical stoking device (for solid fuel)<br><br>Burner appliance (for liquid or gaseous fuel) |
| | Record of Refrigeration Equipment Service<br>(1) Examine the record of refrigeration equipment service by authorized person and attach a copy<br><br>(2) Confirm retention of the record for at least 1 year | | | | | Particulars of the Refrigeration Equipment Service<br><br>Date of refrigerant removal;<br>Date of refrigerant replacement;<br>Registration No. of the authorized person; |

| Reference | Requirement | Activity | | | | Comments/ Remarks |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| | For destruction facility<br>Permit to operate ODS/HFC destruction facility<br>List of ODS/HFCs destroyed<br>Amount of emission of ODS/ HFC into the atmosphere during destruction<br>Details of technical qualification of operators<br>ODS/HFC Storage information | | | | | |
| | For any facility<br>Special permit for Refrigeration and Air-conditioning<br>List of Refrigerants used<br>Details of what the refrigerants are used for<br>Details of reuse, recovery, recycling or reclamation of refrigerants<br>Method of disposal of refrigerant<br>Method of storage of refrigerants | | | | | |

**This protocol covers only noise arising from Factory, Workshops, Infrastructure, Construction or Mining and related activities, Storage facilities, Public places and Domestic premises only.**

Audit Site .....
Audit Date .....
Auditor (s) .....
Site Personnel .....

## ANNEX 2.3: AUDIT PROTOCOL FOR NOISE POLLUTION CONTROL

**Legislation: National Environmental (Noise Pollution Control) Regulation S.1. No. 35 of 2009**

| Reference | Requirement | Activity | | | | Comments/Remarks (Measurements to be specified) |
|---|---|---|---|---|---|---|
| | | Compliance | | | | |
| | | Yes | No | N/A | Unknown | |
| S.1. 35 | Noise at Night or on a General Holiday<br><br>Any noisy activity produced<br><br>(1) Prohibited time in residential area<br><br>(2) designated noise control zone | | | | | |
| S.1.35 section (5) | Noise at Any Time<br><br>Any noise produced from:<br><br>(1) (a) Musical or other instrument operation<br><br>(1) (b) Loud-speaker, megaphone, or other device for magnifying sound<br><br>(1)(c) Trade or business activity<br><br>(2) Air-conditioning or ventilating system<br><br>(3) Animal or bird examine any record of previous prosecution/complaints | | | | | |

## ANNEX 2.4: AUDIT PROTOCOL FOR HAZARDOUS SUBSTANCE AND WASTE CONTROL

The protocols for Hazardous Substance Management cover those substances in Schedule X111 of the Regulations S.1.28 of 2009

Confirm manufacture, storage or use the following hazardous substance or waste at this premise

| Hazardous Substances | Hazardous Substances | Special Activity Involved | | | Description of Hazardous substance or waste |
|---|---|---|---|---|---|
| Category | Type | Manufacturing | Store | Use | |
| 1 | Explosives | | | | |
| 2 | Compressed Gases | | | | |
| 3 | Flammable Liquids | | | | |
| 4 | Flammable Solids | | | | |
| 5 | Oxidizing substances and organic peroxide | | | | |
| 6 | Poisonous toxic substance | | | | |
| 7 | Corrosive | | | | |
| 8 | Eco toxic | | | | |

- For definition of different types of hazardous substances, please refer to Schedule XIII of Regulations S.1.28

Audit Site .....
Audit Date .....
Auditor (s) .....
Site Personnel .....

## ANNEX 2.5: AUDIT PROTOCOL FOR HAZARDOUS SUBSTANCE AND WASTE CONTROL

### Legislation: National Environmental (Waste Control and Sanitation) Regulation S.1. No. 28 of 2009

| Reference | Requirement | Compliance Activity | | | | Comments/Remarks |
|---|---|---|---|---|---|---|
| | | Yes | No | N/A | Unknown | |
| S.1. 28 | (1) Examine license to manufacture/store compressed gases and attach a copy<br><br>(2) Exempt if the quantity is within exemption criteria | | | | | Registration No.<br><br>Business activity:<br><br>Type of compressed Gases:<br><br>Quantity |
| | License Conditions<br><br>(a) Conformation of storage construction with the approved plan<br><br>(b) Equipped with appropriate fire extinguisher | | | | | Storage Site:<br><br>Materials of Construction:<br><br>Means Ventilation<br><br>Method of fixing gas distribution pipeline:<br><br>Fire extinguisher type |
| | Use of Approved Cylinder<br>Use of appropriate cylinders for specific gas<br>Use of listing and classification | | | | | Specification to be Stated |
| | Marking of Cylinder<br><br>Cylinders appropriately colour coded (i.e. red inflammable, yellow — poisonous, half red and half yellow — both) | | | | | |
| | Labeling of Cylinders | | | | | |

**The protocols for Water Pollution Control cover all operations that discharge or release waste water or effluent in the course of its operations**

Audit Site .....
Audit Date .....
Auditor (s) .....
Site Personnel .....

# ANNEX 2.6: AUDIT PROTOCOL FOR WATER POLLUTION CONTROL

## Legislation: Water Pollution Control Limitations

| Reference | Requirement | Compliance Activity | | | | Comments/Remarks (Measurements to be specified) |
|---|---|---|---|---|---|---|
| | | Yes | No | N/A | Unknown | |
| S.1. 28 section (35)<br><br>S.1.29 section (4)<br><br>S.1.31. (section) 10<br><br>S. 1.33 section (15)<br><br>S.1.34, section (11)<br><br>S.1.36 section (16), (17). | Discharge, other than domestic sewage and unpolluted water into:<br><br>(i) Water system<br>(ii) inland water<br>(iii) public drains and underground injection<br><br>Examine license to discharge or from non-domestic premise and attach a copy<br><br>Examine expedient connection and site plan | | | | | Sources of discharge:<br><br>Type of drainage connected: |
| License Conditions (as per license)<br><br>(4) Compliance with license terms and condition<br><br>License terms and conditions:<br><br>I _____<br><br>II _____<br><br>III _____<br><br>IV _____<br><br>V _____ | | | | | | Particulars on the discharge —<br><br>Place:<br><br>Time/Period:<br><br>Rate/Total Amount:<br><br>Characteristics:<br><br>Effluent treatment and equipment used:<br><br>Assess the competence of treatment equipment and operators |
| Examine and attach effluent sampling/ measurement records | | | | | | |

* N/A - Not Applicable: Un — Unknown
** For definition of domestic sewage and unpolluted water, please see below

### Definition of Domestic Sewage and Unpolluted Water

**Domestic Sewage**: Means waste of a kind and quantity that is generated by the domestic use of toilet, water closet, bath, shower, sink, basin or other sanitary

fitment by person residing in a household or while at a place of work but does not include:

(a) The solid residue from a wastewater treatment facility;
(b) The effluent from a wastewater treatment facility that uses electrical or mechanical equipment in its operation; or
(c) Waste that is generated by a good business.

**Unpolluted Water** means:

(a) Rain water from any part of a building, including any area appurtenant of a building;
(b) Water used:
a. For firefighting purpose;
b. In connection with an occurrence in which life or property is endangered
c. For the cleansing of streets, thoroughfares, and other areas.

## Annex 2.7 PRE-AUDIT QUESTIONNAIRE AND CHECKLIST

### INTRODUCTION

The purpose of this questionnaire is gathering the necessary information on your Facility prior to undertaking an on-site Environmental Audit. The questionnaire covers each area of environmental concern, and is supplemented by information checklists for each of these areas. This questionnaire is designed to familiarize the Audit Team with your Facility operations prior to the Environmental Audit visit, while information checklists highlights a list of the documents required prior to the audit.

Please complete the forms as thoroughly and accurately as possible. Where a question does not apply or cannot be answered, please respond with not applicable or unknown. Respondents are encouraged to provide responses which reflect and actual conditions as opposed to the 'ideal' situation. Provision of pertinent information prior to the audit visit will allow the audit team to be adequately prepared for a more effective audit.

***Note: Unless otherwise specified, references made to 'premises' or 'area' in this questionnaire generally refer to the Facility which the respondent represents.***

## 1. General Company Information

Name of Facility: ----------
---
Location: ----------
---
---
Telephone No. ----------
E-mail address: ----------
Company Registration No. ----------
Commencement Date of Operations: ----------
Estimated Age of Facility: ----------

Number of Employees:
Full-Time: ---------- Part Time:---------- Contract Staff ----------
TOTAL: ----------

Normal Operation Schedule:
Hours per day:---------- Days per Week: ------ Weekly Total: --------

No. of Shifts per day: ---------- Hours per shift:----------

Weekly Days of Operations: ----------
Facility Location Percent

Industrial ----------
Mixed Industrial/Commercial ----------
Mixed Industrial or Commercial/Residential ----------
Predominantly Residential ----------
Agricultural, Underdeveloped or Rural ----------
Others (describe) ----------
---
---

Are there any off-site locations (warehouses, processing units, farms, etc) that fall under the direct control of plant Management Yes/No

If yes, list the site location ----------
---

If applicable, state distance to nearest:

Residence: ----------Business ----------
Industrial Facility ---------- Public Building ----------

River/Stream/Lake ---------- Ancient Monuments -------

Provide an Aerial Photograph of the Facility (where applicable) and a Site Plan/ View of the Facility Showing:

Wastewater Discharge Point(s) Air Pollution Vent Stacks

Chemical Storage Tanks Chemical Drum Storage Areas

Solid Waste Disposal Areas

Itemize a list of operations applicable to the Facility in a sequential manner

•
•

Mention the Jobs, Tasks, and/or Areas where Respiratory Protective Equipment (Dust Mask, Charcoal Respirators, Air-supplied Respirators, etc) are required within this facility

•
•

Mention Areas within the Facility where Noise Protection Equipment (Ear Muffs, Ear Plugs) are required:

•
•

Describe any Routine Programme for Periodic Measurement of levels of employee exposure to Airborne Chemicals, Noise, Heat or Radiation.

•
•

Identify any products manufactured/stored/used at this Facility that reasonably might endanger the environment if the products fails or is misused.

•
•

## 1.1 Building Premises Information

a. i. Are the premises owned or leased?
   ii. When were the properties first acquired by this Facility
   iii. What are the areas of the premises (break down by floor/functional area)?
   d. Are there any known cases of asbestos material used in the building construction? If so, are these uses indicated on the floor plans?

b. Indicate the dates, ownership, and use(s) of the properties prior to the date of acquisition or lease by this Facility.

c. Have there been any remedial investigations of corrective actions taken at these premises (e.g. indoor air quality (IAQ) monitoring, wastewater monitoring etc)? Describe briefly:

d. Have there been any known discharges, investigations, or mitigation actions at neigbouring offices/adjacent buildings? If so, Describe briefly:

e. List the names of environmental or building services consultants retained (for Indoor Air Quality (IAQ) monitoring, energy audit as applicable etc.) and briefly describe the projects involved.

## 1.2 Overall Environmental Management and Responsibilities *Company Level*

*(Questions A to L to be completed by any Environmental Committee Member/ Health Safety and Environmental (HSE)/Plant Management)*

a. Who at this Facility is responsible for:

| | Name/Job Title | Time Spent (%) | Reports To: |
|---|---|---|---|
| Air Pollution Control | ---------- | ---------- | ---------- |
| Water Pollution Control | ---------- | ---------- | ---------- |
| Effluent Pollution Control | ---------- | ---------- | ---------- |
| Solid and Hazardous Waste Mgt | ---------- | ---------- | ---------- |
| Emergency Responses: | ---------- | ---------- | ---------- |
| Occupational Health: | ---------- | ---------- | ---------- |
| On-Site Contractors: | ---------- | ---------- | ---------- |
| Liaison with Govt. Agencies | ---------- | ---------- | ---------- |
| Coordinating Environment Health | ---------- | ---------- | ---------- |

b. How to you characterize the facility position to the following aspects of Environmental Management at this Facility? (Tick applicable the descriptor).

| | N — Never | S — Some-s time | F — Fre-quency | NE —New Emp-loyee |
|---|---|---|---|---|
| Written Policies and Procedures | N | S | F | NE |
| Written Job Description | N | S | F | NE |
| Environmental Training | N | S | F | NE |
| Other Training | N | S | F | NE |
| Review of new Capital Projects/Operations | N | S | F | NE |
| Written Reports to Head of Facility | N | S | F | NE |
| Written Reports to the Board | N | S | F | NE |
| Written Reports to Government Areas | N | S | F | NE |

c. Is there a Corporate Environmental Policy? If so, please provide a copy.

d. Is there an Environmental Management Plan? If so, is it endorsed by NESREA, please provide a copy.

e. Describe the scope of existing Company Environmental Policy (i.e. application to resources used, pollution prevention, energy use and conservation, training, public relations, etc).

f. Is the Environmental Policy by the CEO or his designated nominees;

g. Has the Company Environmental Coordinator/HSE Manager been formally appointed and given the responsibility of implementing the policy within the Facility?

h. Has the Company Environmental Coordinator HSE Manager been given the responsibility for monitoring the effectiveness of policy implementation?

i. Is the Environmental Policy on prominent display at all Company premises?

j. Has every staff member been issued with a copy (or summary) of the Environmental Policy?

k. Is there a written procedure and schedule for reviewing the Environmental Policy?

l. Area all revisions of the Environmental Policy communicated to all parties concerned? (i.e., office managers, staff members, concerned public members)?

m. Have staff, financial and other necessary resources been allocated to cover specific environmental issues (i.e. emergencies, waste management, monitoring, audit, etc) at Facility level? Please specify.

n. List number of staff at the premises

| | GF | IF | 2F |
|---|---|---|---|
| Professional | ---------- | ---------- | ---------- |
| Technical/Field | ---------- | ---------- | ---------- |
| Others (please specify) | ---------- | ---------- | ---------- |

o. Does the Facility have a documented Emergency Procedure? Yes/No

p. If Yes, does it cover Tick Applicable descriptor)

Chemical Spills ---------- Accidental releases to the atmosphere ----------
Fire Protection ----------Coordinated Responses with Local Authorities--------

q. Have staff, financial and other necessary resources been allocated to cover specific environmental issues (emergencies, waste management, monitoring of discharges/emission, environmental performance audit) at office level? Please specify.

Provide name of staff responsible for Emergency Procedure issues at this Facility
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.3 Materials Procurement Policy

Facility Level
(Questions A to F to be completed by any Environmental Committee Members/ Health Safety and Environmental (HSE)/Plant Manager)

a. Is there an inventory of all incoming supplies and materials for:
   i. Office supplies (i.e. paper, stationery, etc)

ii. Computer related supplies (i.e. printer toner cartridges, paper, etc)
iii. Refreshment supplies (i.e. Biscuits, Soft Drinks, Styrofoam cups, packaged beverages etc)
iv. Others, (specify)

b. Are there defined procedures for inventory keeping, updating and checking?
c. Is there a mechanism for verify new supplies/materials for:
   i. Nature, quality, quantity, and specification
   ii. Compliance with environmental regulations and/or Departmental guidelines
   iii. Potential environmental impacts
   iv. Compliance with health and safety regulations and/or Departmental guidelines
   v. Packaging materials (i.e. quantity, biodegradability, recyclability, etc

d. Provide details on any policy/guidance for reviewing existing supplies and materials in relation to possible environmentally friendly' alternatives;
e. Is there a similar system of controls on the materials introduced to the premises (i.e. contractors, laboratory samples, etc)
f. Where are laboratory analysis done?

Provide the name of staff responsible for Facility procurement issues.
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.4 Energy Management

(To be completed by any Environmental Committee Member/HSE/Plant Manager)

a. Are there records of energy use for the Facility's premises (e.g. break down by Section or floor levels)?
b. Have there been audits undertaken to identify energy use and minimization opportunities? If so, where are the reports kept?
c. Are there defined maintenance programmes to ensure all equipment is operating at optimum efficiency?
d. Are there formal arrangements to replace energy inefficient equipment/ fixtures

e. Are there formal procedures to consider energy efficiency when purchasing new equipment?
f. Is there a written commitment to reduce energy use? If so, attach a copy.
g. Has the responsibility to reduce energy use been formally allocated in writing?
h. Programmes to monitor energy use and to quantify reduction? Where are the records kept?

Provide name of staff responsible for Energy Management issues at this premises.
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.5 Material Management

(To be completed by the Environmental Committee Member/HSE/Plant Manager or other appropriate persons)

**Office Operation**

a. Is there an inventory for all supplies and materials?
b. Is there a mechanism for managing existing supplies and materials for:
   i. Nature, quality, quantity and specification
   ii. Compliance with environmental regulations and/or Facility guidelines
   iii. Possible environmental impacts
   iv. Compliance with health and safety regulations and/or Facility guidelines
   v. Packaging materials (i.e. quantity, biodegradability, recyclability, etc)

c. Describe any guidance or procedures to review current supplies and materials in relation to:
   i. Eliminate/minimize use of environmentally unfriendly materials
   ii. Eliminate/Minimize storage of environmentally unfriendly materials
   iii. Eliminate/minimize waste generation
   iv. Recycling and reuse (i.e. printer toner cartridges, used paper, etc)

d. Describe any guidance or practice on material management leading to overall environmental performance improvement (i.e. double sided printed, single line spacing, use of non glossy report covers, use of recycled paper stock, etc). PA

**Laboratory Operation**

e. Indicate activities where hazardous materials are used. Describe the nature and quantity of hazardous materials involved, including the following materials

— acid, irritants, bases, sensitizers, asphyxiants, heavy metals, cryogens, flammables, carcinogens, poisons, biological/infectious materials, radioactive, explosive materials.

f. Is there an inventory of all incoming supplies and materials for:
   i. Standard laboratory supplies
   ii. Dangerous materials
   iii. Chemicals
   iv. Biological/infectious materials
   v. Radioactive materials

g. Does the facility maintain a current file of Material Safety Data Sheets (MSDS) for all hazardous materials stored at the facility?

h. Provide details of any licenses, permits or applications on file pertinent to hazardous material storage and handling (i.e. title, number, materials, covered, etc)

i. If applicable, describe investigations or corrective actions taken in the past (i.e. regarding fugitive emissions to atmosphere, major chemical spillages, etc)

j. Provide details on any policy or practices relating to the prevention or reduction in overall environmental impact concerning:
   i. Elimination of use of environmental or health and safety adverse substances (i.e. ozone depleting substances, asbestos
   ii. Proper storage and leakage containment of dangerous materials and chemicals (i.e corrosive substances, explosives, poisons, etc)
   iii. Appropriate storage and labeling of materials
   iv. Scheduled inspection of storage and handling facilities

k. What chemicals are stored in bulk on Site? (State generic name, brand name or trade name of chemical as appropriate)
   Chemicals No. of Tanks Tank Vol. U/G A/G Bunded

l. What Chemicals are stored in Drums on Site?

| Chemical | Appropriate Number of 100 — 200 Drums | Is Storage area Protected/Curbed (Yes/No) |
|---|---|---|
| | | |

m. Are drums of chemicals routinely segregated so that incompatible materials (e.g. Solvents and Oxidising Agents) are not stored together? Yes
   No

n. List Chemicals stored in bags on site ----------
---
---

o. List of the Chemicals used in this Facility with Regulated Workplace Exposure

| Name of Chemical | Usage of Facility | Regulatory Limit |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

p. Does the Facility have polychlorinated biphenyls (PCBs) on Site? Yes / No

If yes, indicate the Quantity----------

| | | | |
|---|---|---|---|
| Proper Labelling | Yes | No | Don't Know |
| Operator Training | Yes | No | Don't Know |
| Appropriate Spill Containment | Yes | No | Don't Know |

q. Does the Facility have a Secondary buyer for its Chemicals or waste materials/ scraps?

Provide name of staff responsible for Hazardous Materials Handling this premises.
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

**Pesticides**

r. Are pesticides used in the premises? If yes, indicate general types and indicate if the use of these pesticides are restricted by any sort of control.

Algicides ---------- Herbicides ----------
Insecticides ---------- Rodenticides ----------
Fungicides ---------- Others ----------

s. Are pesticides applied by Facility personnel? If so, indicate whether any certification was obtained by pesticide handlers. Provide details of this certification (i.e. certification title and number, type of pesticides covered, etc.)

t. If pesticides are stored at these facilities, briefly describe the following:
   i. Locations and storage practices
   ii. Measures in pesticide storage, application and disposal
   iii. Segregation practices

u. If outside contractors are utilized for pesticide application, indicate below:

| Contractor | Service Provided | Initial Date of Application and Frequency | Certification Number |
|---|---|---|---|
| | | | |

Indicate the name of staff responsible for Pesticides issues at the premises.
Staff Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

**Asbestos**

v. Describe any formal Asbestos management programme in place
w. Describe any formal procedures to audit compliance in the Asbestos Management Programme
x. Have formal Surveys and inspections been conducted at the site to identify areas if and where Asbestos — containing materials are located
y. If known, list the premises that have been identified as having Asbestos — containing materials and indicate whether the buildings are leased or owned, whether abatement is occurring or is planned, and the type of Asbestos — containing material(s) present.

| Premises | Leased/ Owned | Abatement Action | Asbestos — Containing Material type |
|---|---|---|---|
| * Use following codes:<br>A = sprayed on insulation;<br>B = Pipe insulation<br>C = Vessel/Tank Insulation<br>D = Equipment (describe, i.e. Ovens etc);<br>E = Others (describe, i.e. floor tiles, bench tops, etc) | | | |

Provide name of staff responsible for Asbestos Management issues:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.6 Water Supply Management

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

**a.** Indicate the source of water supply at the premises
**b.** What are the uses of water supplied?
**c.** Are water quality checks done? If so, please provide a copy of laboratory analysis
**d.** Describe any on-site potable/process water treatment systems
**e.** Indicate frequency of system maintenance/resin generation.

Provide name of staff responsible for Asbestos Management issues:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.7 Wastewater Management

*(To be completed by Environmental Committee/HSE/Plant Manager)*

a. List the sources of wastewater, type of discharge and daily volumes for the following types of Wastewater:

| Sources | Discharge Frequency | Volume (Indicate units) |
|---|---|---|

i. Facility Process Water
ii. Laboratory Wastewater
iii. Sanitary Wastewater (Domestic/Kitchen)
iv. Cooling Water Contact Noncontact
v. Others (describe)

b. Provide details of any permits or applications on file pertaining to water pollution control regulations (i.e. Permit title and number, sources of wastewater covered, locations of discharge points, specific discharge standards, etc)

c. Describe any analysis and type(s) of wastewater pre-treatment prior to discharge (i.e. oil separation, neutralization, filtration, ion exchange, carbon treatment, etc)

d. Indicate locations of all discharge points.

e. Describe operational specifications and maintenance schedules of the pre-treatment system. Have records been kept?

f. Is any wastewater recycled? If so, describe briefly (i.e. treatment and use).

g. Describe any formal criteria for reviewing the premises discharge strategies (i.e. reduce or eliminate discharges).

h. Describe any written procedures to be followed in the event of accidental discharge standards.

i. Are all relevant staff fully trained in the above procedures?

j. Describe any wastewater compliance monitoring programmes in place. Where are records of all monitoring results kept? What is the frequency of monitoring?

k. Were there ever any internal investigation and/or mitigation action taken for wastewater related issues? If so, specify

l. Where do process wastewaters, including cooling waters go? Tick applicable descriptor.

Municipal Waste Facility (via Sewers): ----------
On-Site waste Facility, via discharge to surface water ----------
Discharge to surface water without pre-treatment ----------
To a deep well ----------
To an irrigation system ----------
Others (describe) ----------

Provide name of staff responsible for Asbestos Management issues:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.8 Waste Management

*(To be completed by Environmental Committee/HSE/Plant Manager)*

a. Provide details of internal classification, source, nature, quantity and frequency of waste generated for:
   i. Dangerous Waste
   ii. Chemical Waste
   iii. Biological/Infectious Waste
   iv. Solid Waste (including obsolete equipment & scraps)
   v. Radioactive Waste
   vi. Other Wastes e.g. Used Oil (Specify)

b. Provide details of any licenses, permits or applications on file (i.e. License/ permit and title, number, issuing agency, sources covered, special conditions, etc) in related to generation, storage, handling, disposal or transportation of these wastes.

c. Provide details of any on-site waste or disposal systems (i.e. types of waste disposal system and capacity, type and quantity of waste disposed of, etc) for these wastes.

d. Describe operational specifications and maintenance schedules of the pre-treatment system. If records have been kept, indicate location.

e. Briefly describe any waste recycled (i.e. type, source, characteristics, treatment and use)

f. Briefly describe any current waste minimization programmes (i.e reductions, re-use and recycling) and indicate responsible staff.

g. Provide the following information for any off-site facilities used for waste treatment, storage or disposal in the past three (3)

| Company Name | Premises Name | Type of Waste | Volume (Per Month) | Treatment Disposal Method |
|---|---|---|---|---|
| | | | | |

h. Existing programme to audit regulatory compliance in place at the premises? Describe briefly.

i. Has there been any internal investigation in relation to waste generation, storage, handling or disposal? If so, describe briefly.

j. Where does Sanitary Waste go? Tick applicable description(s)
   i. Municipal Waste facility (via Sewers) ----------
   ii. On-Site waste facility, via discharge to surface water ----------
   iii. Discharge to surface waste without pre-treatment ----------
   iv. To a specific system ----------
   v. Other (describe) ----------

k. How is non-hazardous Solid Waste disposed of at this Facility?
   Incineration: ----------
   Burial on Site ----------Burial in a Public or Commercial Landfill ----------
   Give address of location of Public or Commercial Landfill ----------

l. How does this Facility normally dispose of waste/used oils and solvents? Tick applicable descriptor(s)

   Incineration: ----------
   Supplemental Boiler Fuel : ----------
   Sold or given to Contract recycler: ----------
   Poured on the ground: ----------
   Others (describe) ----------

m. Does this Facility generate any waste that are considered toxic or hazardous or whose disposal is generally regulated?

   If yes, name the waste and approximate annual volume generated
   Describe how the hazardous waste are accumulated and stored before disposal
   Describe how these wastes are normally disposed of
   Indicate which functions are regulated:

| | Regulated (Y/N) | Regulatory Body |
|---|---|---|
| Storing | | |
| Transporting | | |
| Treating | | |
| Disposing | | |

n. Have personnel from your Facility ever inspected the Facilities to which Solid Hazardous wastes are sent for Treatment and/or Disposal?

Yes No Don't Know

If yes, describe any problems that were observed: ----------
---
---

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.9 Air Quality Monitoring and Control

*(To be completed by Environmental Committee/HSE/Plant Manager)*

***General***

a. Describe any formal policy or written guidance in relation to air quality (e.g. smoking policy, use of non-formaldehyde containing carpet underlay/ furniture, substitute ozone depleting substances in solvents, refrigerants and fire extinguishers, etc.)

***Office Operation***

b. Indicate the number of each type of the following equipment at this premises:

Laser Printer ----------
Photocopier ----------
Facsimile Machine ----------
Computer ----------
Others (e.g. ozone Generator, specify) ----------

c. Indicate all other significant sources of indoor air emissions/pollutants not covered above.

d. Has indoor air pollution at this premises been monitored in the past year? If so, are records of findings kept and where?

e. Is there a programme to monitor the indoor air quality at this premises? If so, describe briefly.

f. Describe any mitigation actions taken in the area with respect to indoor air quality improvement.

g. Indicate any known respiratory symptoms or irritations experience by staff in this premises (i.e. frequent flu systems, sore throat, eye irritation, etc)

h. Describe known time pattern of symptoms occurrence and relief (i.e. morning, afternoon, weekends, etc)

i. How many process fume stacks are present at this Facility?
Description/Function Height above Ground/Roof

j. Is Arrestment Plant fitted on any Vents/Stacks? Yes/No
If yes, give details/description

k. How many and what size of Boiler(s) does the Facility have?
Is it fired with:
Gas: ---------- Oil (If yes %) ----------
Coal (if yes %) ---------- Other ----------
Approximate height of the Stack(s) in meters

l. Does the emission stack (s) discharge at a height at least 3 meters above the highest point of the building roof?
Yes No Don't Know

m. Is the exhaust ventilation greater than the air intake such that the Facility is under negative air pressure?
Yes No Don't Know

n. List all relevant cooling towers, wet scrubbers, etc., and tick applicable descriptor
Name (E.g. Foundry Cooling Tower) ----------
Regularly Tested for Legionella species: ----------
Frequency of Testing ----------

Treated with biocide ---------- Name of Biocide ----------
Is the equipment Registered with FMEnv./NESREA: ----------

o. How many Fork-Lift Trucks used in the Facility powered by:
Are the Fork-Lift Trucks used in the Facility powered by:

Battery: ---------- Propane:---------- Diesel: ----------

p. Describe the type of Boiler water treatment chemical used:

Is Boiler blow down discharged to the sewer? Yes/No

To the Ground" Yes/No

Elsewhere? (describe): ----------
---
---

q. How many Cooling Towers are at this Facility?
Describe the type of biocide and corrosion inhibitor added to the cooling water
How is the Cooling Tower sludge dislodged of:

Is Cooling Tower blow down discharged to the Sewer?

To the ground? ----------
Elsewhere (describe): ----------

r. Is Monitoring undertaken on any Emission, Discharge, etc
If Yes, Specify:
Source:
Species Monitored
Frequency of Monitoring

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

***General Process Operation***

s. Identify operations conducted at the premises that involve air emission (i.e. handling of chemicals and solvents, biological sample preservations, etc).
t. Is there an inventory of all emissions (including fugitive emissions) released from the area?
u. Explain how the facility deals with fugitive emissions
v. Describe any programme of updating emissions inventory
w. Describe the air pollution control equipment installed and operating at the premises (i.e. particulate filters, scrubbers, etc)
x. Indicate the number and location of stacks, vents or other outside emission points originating from the area.
y. Provide details of any licenses or applications on file pertinent to ambient air quality regulations (i.e. license title and number, issuing agency, sources of air emissions, etc)
z. Describe any formal criteria for reviewing the premises emission strategy (i.e. eliminate or reduce emissions).
    i. Has this area ever been under any internal investigation and/or taken mitigation action related to ambient air emissions? If so, specify
    ii. Describe any ambient air compliance monitoring programmes in place at the premises and the frequency. Are records kept of all monitoring results?
    iii. Describe any written procedures to be followed in the event that the set standard is exceeded
    iv. Are all relevant staff fully training in the above procedures?

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.10 Noise Monitoring and Control

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. Identify all operations or activities that may be substantially elevate noise beyond normal premises background levels.
b. If applicable, describe any current practices to reduce noise levels at the premises
c. Have there been any noise monitoring programmes undertaken at the premises? If so, describe briefly

d. Have there been any formal complaints received on noise generated within the area, If so, provide details

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.11 Transportation and Travel

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. Describe any formal car fleet procurement policies or selection criteria related to overall environmental performance (i.e. fuel type and economy, refrigerant use, emissions standards, noise level, recyclability of materials, paint use, etc)

b. Is there an inventory of transportation devices operated by the Facility? Describe scope of the inventory (i.e fuel type and economy, emission level, maintenance requirement, etc).

c. Describe scope of maintenance programme in place for all transportation devices.

d. Is there any formal policy or guidance on spillage prevention and disposal of fleet maintenance wastes (i.e. engine oil, refrigerant, tyres, etc)

e. Is there a programme in place to monitor air and noise emissions and to effect appropriate arrangement for corrective maintenance as required?

f. Describe training/instruction provided to drivers/operators on increasing the fleet's environmental performance (i.e. turn off idle engines, minimize number of trips, etc)?

g. Is there any written policy or guidance on use of Facility Vs private vehicles?

h. Existing guidance on staff transport arrangements to encourage use of public transportation?

i. Provide name of staff responsible for Transportation and Travel related issues at this premises.

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.12 Emergency Response Procedures

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. Attach copy of any formal emergency response procedures and/or contingency plans on:
   i. Disruption of water supply
   ii. Supplied water treatment system failure
   iii. Wastewater treatment system failure
   iv. Chemical/chemical waste spillage
   v. Dangerous materials/waste spillage
   vi. Biological/infectious materials/waste release
   vii. Radioactive materials/waste release

b. Provide details of any equipment located in areas where emergencies have the potential to occur.

c. Are the staff in these areas appropriately trained in emergency response procedures?

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.13 Staff Awareness and Training

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

**Staff Awareness**

a. Are there regular general meetings on the improvement of the working environment?

b. Has there been wide participation in specific environmental management issues in the office (e.g. campaigns on reduction of paper and energy usage)? If so, are staff members adequately informed of the specifics (i.e. objectives, approach etc.)

**Training**

c. Describe briefly the nature and topics of premises environmental training (workshops, seminars, campaigns/activities), offered in the past year

d. Is the training programme offered to all relevant personnel?

e. Have there been regular reviews to ensure the effectiveness of the training programme?

f. Have the participants been involved in the training review process?

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.14 Publicity of Environmental Information

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. Describe any formal programme to ensure staff members responsible for publicity of environmental information have the relevant experience and adequate training.

b. Are there any formal procedures to review adequacy of publicity materials?

c. Describe any programme to ensure that information contained in the publicity materials are correct and up to date.

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.15 Response Public Enquiries and Complaints

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. Describe any formal procedures or guidelines in enquiry referral (i.e. both internal and external).

b. Does the Facility have any procedures in place to handle enquiries on Environmental information that is publicly available? If so, describe the procedures.

c. Are there any procedures or guidelines available to handle complaints received from the public? If so, describe briefly.

d. Describe any complaints from neighbours regarding Noise, Odour, Dust, or Nuisance, with indications of frequency of complaints.

e. List all the Environmental Permits, Consents, and Registrations you have obtained and the operations or equipment they cover (include Import Permits, Discharge Consents, Waste Management Licenses, etc)

f. Name and Designation of Person responsible for coordinating Environmental Management activities at this Facility.

List and give details (Dates, etc) of all plant activities covered under Sections 5 and 8 of S.1.9 Regulation, 1991.

Has a Plant Environmental Committee/Task Force been established to handle all Environmental Management Activities in this Facility?

If yes, give details including the names and designation of the members.

List and give details (Dates, etc) o all plants activities covered under Section 5 and 8 of S.1.9 Regulation, 1991

g. What are the principal agencies that regulate environmental matters at this Facility?
   i. Give applicable names
   ii. Do you have copies of all Environmental Laws and Regulations at the Facility?

h. Which Environmental Regulatory Agencies have inspected the Facility and when?

i. Has the Facility ever been cited for fined or violations of Environmental Laws? If yes, describe citation and/or fine.

j. Has the Facility ever been cited or fined for violations of Occupational Health Laws?
   If yes, describe citation and/or fine

k. Has the Facility ever been cited or fined for violations of Safety Laws?
   If yes, describe citation and/or fine

l. Describe any complaints from employees regarding potential chemical exposures, Noise, Heat or symptoms suspected of being connected to workplace exposures?

   Describe frequency of complaints

Provide name of staff responsible for Waste Management issues at this premises:
Name and Title: ----------
Location: ----------
Telephone No: ----------
E-mail address: ----------

## 1.16 Environmental Concerns

*(To be completed by Environmental Committee Member/HSE/Plant Manager)*

a. What are the principal Environmental Concerns at this Facility?

b. What are the principal Occupational Health Concerns at this Facility?

c. Other comments

**PRE-AUDIT QUESTIONAIRE COMPLETED BY:**

Name and Title: ----------

Premises: ----------

Location: ----------

Telephone No: ----------

E-mail address: ----------

Date: ----------

# 1. GENERAL INFORMATION

## PREMISE INFORMATION

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| Diagrams of premises layout | | | | |
| 2. Drainage layout plans | | | | |
| 3. Environmental reports (prepared-in-house or by external consultants) | | | | |
| 4. Diagrams of ventilation ducting layout | | | | |
| 5. Diagrams of lighting wiring layout | | | | |

## 2. OVERALL ENVIRONMENTAL POLICY

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Department Environmental Policy Statement | | | | |
| 2. Procedures and Schedules for reviewing Environmental Policy | | | | |
| 3. Record of overall Environmental Performance Review Meetings | | | | |
| 4. Departmental Environmental Structure | | | | |

## 3. MATERIALS PROCUREMENT POLICY

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Procurement Policy | | | | |
| 2. Procedures for Inventory keeping, updating and checking | | | | |
| 3. Procedures for the review and selection of materials that are not environmentally detrimental | | | | |
| 4. Guidelines on 'green products' for suppliers | | | | |

## 4. ENERGY MANAGEMENT

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Energy use records for the past three (3) years<br>- Gas<br>- Electricity<br>- Liquid Fuel<br>- Solid Fuel<br><br>Evaluation Frequency | | | | |
| 2. Audit Reports or monitoring data on energy conservation | | | | |
| 3. Procedures or guidelines for energy conservations | | | | |
| 4. Documentation on energy conservation grades over the past three (3) years. | | | | |

## 5. HAZARDOUS MATERIAL MANAGEMENT

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Procedures or guidelines for material management (i.e. specific storage and handling procedures etc). | | | | |
| 2. List of any hazardous materials and chemical stored within the office areas | | | | |
| 3. Diagrams showing the routes for hazardous materials and chemicals transport | | | | |
| 4. Diagrams showing the storage areas, for hazardous materials and chemicals | | | | |

## Laboratory Operations/Public Service

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Certification for the analyses being conducted | | | | |
| 2. Document on contracted out laboratory analyses and copies of the laboratories' certificate for the analyses | | | | |
| 3. Evidence of analytical methods used in compliance with standards methods. | | | | |
| 4. Dangerous goods/chemicals inventory. | | | | |
| 5. List of permits for storage of dangerous goods and chemicals. | | | | |
| 6. Procedures or guidelines for dangerous goods/chemical handling | | | | |
| 7. Diagrams showing hazardous materials storage areas | | | | |
| 8. Hazardous materials inspection logs | | | | |
| 9. Material Safety Data Sheet (MSDS) file | | | | |
| 10. Guidelines provided for training of staff in handling hazardous materials/ chemicals | | | | |
| 11. Documentation/training for Personnel | | | | |
| 12. Violation notices received | | | | |
| 13. Alarm systems and evacuation procedures in case of an emergency | | | | |

## Pesticides

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Pesticides inventory | | | | |
| 2. Pesticides storage area diagrams | | | | |
| 3. Guidelines for pesticide handling | | | | |
| 4. Records of the use of pesticides in office and laboratory areas for the past three years | | | | |
| 5. Violation notices received in the past three years | | | | |

### Asbestos

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Formal asbestos management plan or policy statement | | | | |
| Asbestos — Containing Materials (ACM) inspection or survey reports | | | | |
| ACM management or monitoring plans and copies of any ACM abatement or removal plans or certificate | | | | |
| 4. Regulatory agency inspection | | | | |
| 5. Notices of violation received pertaining to asbestos | | | | |
| 6. List of any operations which generate asbestos waste | | | | |

## 6. WATER SUPPLY MANAGEMENT

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. List of sources of water supply (including that for flushing) | | | | |
| 2. Records of water consumption (office and laboratory) | | | | |
| 3. Water Quality Monitoring Data | | | | |
| 4. Details of water pre-treatment system | | | | |

## 7. WASTEWATER MANAGEMENT

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Wastewater discharge license(s) | | | | |
| 2. Expedient connection and site drainage plan | | | | |
| 3. Effluent discharge monitoring data | | | | |
| 4. Regulatory inspection reports | | | | |
| 5. Violation notices received in the past | | | | |
| 6. Floor plans the wastewater storage and discharge points | | | | |
| 7. Accessibility of discharge point(s) for sampling | | | | |
| 8. Details of existing wastewater treatment facilities | | | | |

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 9. Operation and maintenance manual(s) for wastewater treatment facility(ies) | | | | |
| 10. Procedures or guidelines for collection, preparation and analysis of wastewater samples | | | | |

## 8. WASTE MANAGEMENT

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Permit(s) or license(s) for waste storage, transportation and disposal with specification of terms and conditions | | | | |
| 2. Procedures or guidelines for waste handling | | | | |
| 3. Guidelines for classification of waste | | | | |
| 4. Diagrams showing waste storage areas and routes for waste handling | | | | |
| 5. List of sources generating these wastes | | | | |
| 6. Waste analysis data and profiles for all current waste streams | | | | |
| 7. Waste analysis data and profiles for all current waste streams | | | | |
| 8. Copies of any regulatory inspection reports | | | | |
| 9. Any violation notices received | | | | |
| 10. Waste transportation and disposal documentation (including waste contractor licenses and any associated documents) | | | | |
| 11. Waste recycling and minimization plan and associated documents | | | | |
| 12. Documents related to the disposal facilities used | | | | |
| 13. Operating records of any disposal facilities | | | | |
| 14. Any incident reports for the past three years | | | | |
| 15. Waste control or management licenses issued from the appropriate authorities | | | | |
| 16. Safety procedures or programmes | | | | |
| 17. Details of waste segregation programme(s) | | | | |

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 18. Dangerous Goods License(s) | | | | |
| 19. Training records for personnel | | | | |

- Waste denotes dangerous waste, chemical waste, biological/infectious waste, radioactive waste and other wastes

## 9. AIR QUALITY MONITORING AND CONTROL

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Air Quality Policy | | | | |
| 2. Air Quality Survey records or reports | | | | |
| 3. Air quality monitoring data | | | | |
| 4. Any Complaints related to emissions to the atmosphere or indoor environment | | | | |

### Indoor Air Quality

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Guidelines for the use of office machines or operations to minimize gaseous emissions | | | | |
| 2. Reports of any in-house investigation of emission sources | | | | |
| 3. Details of mitigation measures taken and evaluation of its effectiveness | | | | |
| 4. Details of indoor air quality improvement programme (s) | | | | |

### External Air Emission

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. All permits related to air emission | | | | |
| 2. Any violation notices regarding air emissions issued within the past three years | | | | |
| 3. Investigation reports identifying any sources of air pollutant emissions | | | | |
| 4. Diagrams of premise emission Location | | | | |
| 5. Compliance, assessments, and/or sampling reports | | | | |

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 6. List of control apparatus for air emissions | | | | |
| 7. Air Quality Monitoring Logs | | | | |
| 8. Plan(s) for air emissions elimination or reduction | | | | |

## 10. NOISE MONITORING AND CONTROL

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Noise Control Policy | | | | |
| 2. Noise monitoring data or monitoring programme being exercised | | | | |
| 3. Reports of any in-house investigation to identify the sources of noise emissions | | | | |
| 4. Details of mitigation measures and their effectiveness | | | | |
| 5. Details of programme for improvement of noise emission | | | | |
| 6. Complaints related to noise emissions | | | | |

## 11. TRANSPORTATION AND TRAVEL

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Departmental policy relating to transportation and travel | | | | |
| 2. Records of reports for the use of Departmental Vehicles | | | | |
| 3. Maintenance and overhaul procedures or guidelines for Departmental vehicles | | | | |
| 4. Procedures for handling of chlorofluorocarbons (CFC) | | | | |
| 5. Procedures for handling of use oil and antifreeze | | | | |
| 6. Records of fuel consumption of Departmental vehicles | | | | |
| 7. Data on the environmental performance of the Departmental vehicles | | | | |

## 12. EMERGENCY RESPONSE PROCEDURES

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Emergency response procedures and contingency plans | | | | |
| 2. Staff training record in emergency response procedures | | | | |

## 13. STAFF AWARENESS AND TRAINING

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. List of any regular meetings on the improvement of the working environment | | | | |
| 2. Copy of any Departmental environmental policy on staff training | | | | |
| 3. List of staff training programmes relating to environmental matters | | | | |
| 4. Details of criteria for selection of staff to attend the relevant training programme | | | | |
| 5. Report on the effectiveness of training programme | | | | |
| 6. Staff training record | | | | |

## 14. COMMUNITY RELATIONS

| Information to be Reviewed | Available | Not Available | Not Applicable | Location of Documents/ Comments |
|---|---|---|---|---|
| 1. Procedures or guidelines for the dissemination and/or publicity of environmental information | | | | |
| 2. List of regular publications | | | | |
| 3. Details of training programme for staff responsible for publicity of environmental information | | | | |
| 4. Procedures or guidelines on responding to public enquiries and complaints | | | | |
| 5. Records or reports of public enquiries and complaints | | | | |
| 6. Staff training programme on public enquiry and complaint response. | | | | |

# ANNEXURE 3: MAJOR INDUSTRIAL SECTORS AND THEIR RELATED ENVIRONMENTAL ISSUES

| A. Manufacturing Sectors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl No. | Type of Sector | Environmental Pollution Regulation and compliance | | | | Require-ment of Company Policy and self-regulation | Energy | Safety | Occu-pational Health | Bio-diversity and loss of Ecology |
| | | Air (including Noise) | Water | Solid Waste | Hazardous waste | | | | | |
| 1 | Food Beverage and Tobacco | ++ (Boiler/ dust) | +++ | ++ | + | + + | ++ | + | + | - |
| 2 | Chemical and Pharmaceutical | ++ (if it is for-mulation unit) | +++ | ++ | ++ | +++ | ++ | ++ (Storage of chemi-cal) | ++ | - |
| 3 | Domestic and Industrial rubber and foam | ++ | ++ | +++ | +++ | ++ | ++ | ++ | ++ | - |
| 4 | Base Metals, Iron and Steel and Fabricated metal products | +++ | + | | + | +++ | +++ | ++ | ++ | - |
| 5 | Pulp, paper and paper products printing, publishing and packaging | ++ | +++ | ++ | + | +++ | ++ | ++ | ++ | + |
| 6 | Electrical & Electronics | + (without solvent) ++ (with solvent) | ++ | +++ | +++ | +++ | +++ | +++ | +++ | - - |
| 7 | Textile wearing, carpet, leather/ | ++(Boiler) | +++ (if dying is included) | ++ | + | +++ | + | + | + | - |
| 8 | Wood & wood products including furniture | + (Noise) | ++ | ++ | +(chemical contains) | ++ | + | + | + | + |
| 9. | Non-metallic Mineral Products | +++ | + | | | +++ | +++ | + | ++ | +++ |
| 10. | Motor Vehicles and Misc (if manufacturing) | ++ | ++ | ++ | + | ++ | ++ | ++ | ++ | - |
| 11. | Battery Control | ++ | +++ | +++ | +++ | ++ | ++ | ++ | ++ | +++ |
| B. Infrastructural | | | | | | | | | | |

| A. Manufacturing Sectors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl No. | Type of Sector | Environmental Pollution Regulation and compliance | | | | Require-ment of Company Policy and self-regulation | Energy | Safety | Occu-pational Health | Bio-diversity and loss of Ecology |
| | | Air (including Noise) | Water | Solid Waste | Hazardous waste | | | | | |
| 1 | Port, Harbours and Terminals | +++ | +++ | +++ | +++ (waste/ used oil) | +++ | +++ | +++ | +++ | +++ (Aquatic) |
| 2. | Electric power generation Transmission and distribution system | +++ | +++ | +++ | + (waste oil) | +++ | +++ | +++ | +++ | ++ (for Trans-mission |
| 3 | Real estate, Housing estate Government building | ++ | +++ | ++ | + | + | ++ | + | + | - |
| 4 | Urban development | +++ (Mobility) | +++ | +++ | + | +++ | +++ | ++ | ++ (Accident due to sewer line cleaning | ++(if near forest area) |
| 5 | Mining | +++ | +++ | +++ | ++ | +++ | ++ | +++ | +++ | +++ |
| 6 | Domestic water and sanitation | - | +++ | ++ | - | + | + | + | + | - |
| 7 | Waste management facilities, landfill | ++ | ++ | +++ | + | ++ | - | +++ | ++ | - |
| 8 | Quarries, construction asphalt industry | +++ | - | ++ | + | ++ | + | + | ++ | ++ |
| 9 | Healthcare industry | ++ (if inci-nerator ope-rated by hospital) | ++ + (sewage) | ++ | +++ (Bio-medical waste) | +++ | + | ++ | ++ | - |

| A. Manufacturing Sectors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl No. | Type of Sector | Environmental Pollution Regulation and compliance | | | | Requirement of Company Policy and self-regulation | Energy | Safety | Occupational Health | Biodiversity and loss of Ecology |
| | | Air (including Noise) | Water | Solid Waste | Hazardous waste | | | | | |
| 10 | Roads | + (Due to traffic NIOSE near habitat | + | ++ (terminals/ eateries) | ++ (waste oil from workshops) | ++ | - | +++ | - | +++ (if passing through forest area) |
| 11 | Railways | (NIOSE) | ++ | +++ | ++ (waste oil from maintenance yards) | ++ | +++ | +++ | + | +++ (if passing through forest area) |
| 12 | Water Transportation, shipping and ferry | + | ++ | + | + | + | + | + | | + (aquatic) |
| 13 | Air transportation, shipping and ferry | ++ (NOISE) | + | ++ | + | +++ | +++ | +++ | + | + |
| 14 | Watershed and wetland management | - | +++ | + | - | ++ | | - | - | ++ (aquatic) |
| 15 | Hospitality Industry | ++ | ++ | ++ | - | ++ | + | + | - | - |
| 16 | Quarry and Blasting Operation | +++ | + | ++ | + | ++ | ++ | +++ | +++ | + |
| 17 | Construction and Asphalt Operation | +++ | + | +++ | + | ++ | + | + | +++ | + |
| 18 | Logging | + | + | ++ | + | ++ | + | + | + | + |
| 19 | Wildlife | + | + | + | + | + | + | + | + | + |

LEGEND

+ Low significance ++ Medium significance +++ High significance

NOTE: The ratings (in Annex 4) for the Food & Beverages sector, is a generalized arbitrary rating of the likelihood of severity of impact which may not be the same or apply for some of the facilities or classes of industries in the sector. The environmental pollution index of facilities and the sensitivities of different ecosystems on which they operate result in different effects and thus ratings of the parameters of Quality/Quantity of Water-use, Wastewater Quality, Safety, Hazardousness of waste and Energy requirements as well as other effects and their contributions to climate change differs with levels of significance.

# ANNEXURE 4: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-MANUFACTURING INDUSTRIES

## PART A

1. Name and address of the owner/occupier of the industry
2. Production capacity(with units)
3. Year of establishment
4. Date of last environmental audit submitted
5. GIS coordinate of the unit
6. Brief background on type of industry, process, raw material, fuel, water and wastewater
7. Type of air and water polluting activities nearby to the industry, what they produce, raw material [Consultant can get the name of the industry and details can be provided by the regulatory agency]

## PART B

### 8. Product type and generation

| S. no. | Type of product | Quantity (tonne or in kilo litre) | |
|---|---|---|---|
| | | Current audit report (Year) | Previous audit report (Year) |
| | | | |
| | | | |

### 9. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater (bore well) | | |
| Surface water (river, lake) | | |
| Seawater | | |
| Third-party water (tankers, others) | | |

## 10. Water consumption

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic | | |
| Utility(cooling towers, boilers) | | |
| Process | | |
| Others | | |

## 11. Details of boreholes

| Details of boreholes | Current audit report (year) | Previous audit report(year) |
|---|---|---|
| Number of boreholes | | |
| Depth and head of boreholes | | |
| Average running hours of boreholes | | |
| Number of piezometers installed<br>For ground water monitoring | | |

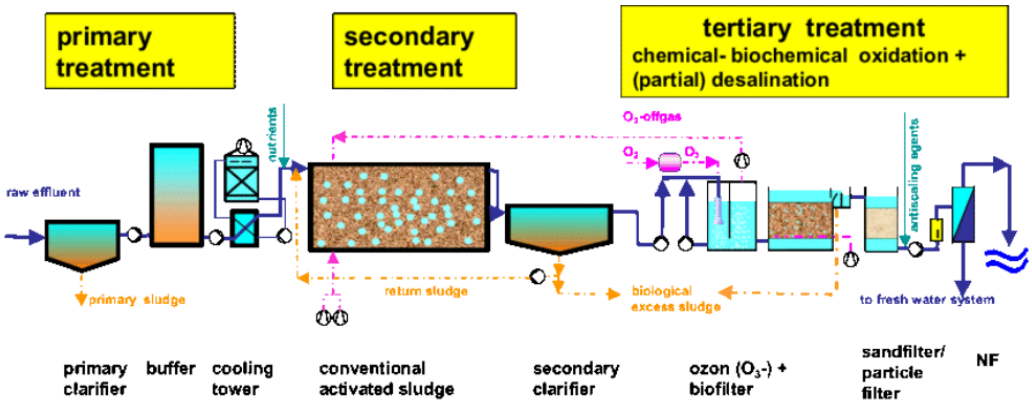
## 12. Details of flowmeters

| Description | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Type of flow meter installed<br>i) Electromagnetic<br>ii) Mechanical type<br>iii) Others, if any | | |
| Number of flow meters installed at different locations, | | |
| When were they last calibrated, mention the date<br>Share the calibration certificates for each meter. | | |

## 13. Waste water generation

| | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| **Total waste water generated in KL** | | |
| **Quantity of waste water recycled or Reused in KL** | | |
| Waste water discharge point<br>•Surface water<br>i) With treatment<br>ii) Without treatment<br><br>•Seawater<br>i) With treatment<br>ii) Without treatment<br><br>Other , specify | | |

Notes: Provide the diagram for the waste water treatment scheme;




## 14. Raw material consumption

| Name of raw material including chemical | Consumption of raw material (in tonne or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

## 15. Fuel consumption

| Name of fuel | Consumption of fuel(in tonne/litre/kg or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

## 16. Energy consumption

| Energy consumption | Consumption of energy in kwH or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

## PART C

17. Pollution discharge to environment/unit of output(parameters as specified in license condition issued)

| Pollution | Parameter | Quantity of pollutants discharged(mass/day) | Concentration of pollutants | Prescribed standard |
|---|---|---|---|---|
| Water | 1. pH<br>2. SS<br>3. BOD<br>4. COD | | | |
| Note:Add more parameters | | | | |
| Air | 1. PM<br>2. SOx<br>3. NOx | | | |
| Note: Add more parameters | | | | |

## PART D

### 18. Details of hazardous waste(as specified under license condition)

| Hazardous waste | Current financial report | | | Previous financial report | | |
|---|---|---|---|---|---|---|
| | Quantity recycled | Quantity sold | Quantity disposed | Quantity recycled | Quantity sold | Quantity disposed |
| From process<br>i.<br>ii. | | | | | | |
| From Pollution Control Device<br>i.<br>ii. | | | | | | |

## PART E

### 19. Details of non-hazardous waste

| Non-hazardous waste | Current financial report | | | Previous financial report | | |
|---|---|---|---|---|---|---|
| | Quantity recycled | Quantity sold | Quantity disposed | Quantity recycled | Quantity sold | Quantity disposed |
| From process<br>i.<br>ii. | | | | | | |
| From Pollution Control Device<br>i.<br>ii. | | | | | | |

## PART F

20. Describe qualitatively disposal practices adopted for these categories of waste.

## PART G

21. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART H

22. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART I

23. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

## Part J

a) Number of people interviewed from local community and their overall feedback on environmental and other issues
b) Number of people interviewed from district government offices and their overall feedback on environmental and other issues

| Stakeholder | Feedback | Recommendations for improvement |
|---|---|---|
| Locals | Details of environmental and others issues highlighted | What do they think company should do to improve their environmental or other issues |
| Government office 1 | | |
| Government office 1 | | |

# ANNEXURE 5: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-REAL ESTATE/HOUSING COMPLEX

## PART A

1. Name and address of the owner/occupier of the housing complex
2. Number of apartments
3. Occupancy status
4. Year of establishment
5. Date of last environmental audit submitted
6. GIS coordinate of the unit
7. Brief background on type of complex, other facilities in the complex, fuel, water and wastewater
8. Type of any air and water polluting activities nearby to the complex, what they produce, raw material [Consultant can get the name of the industry and details can be provided by the regulatory agency]

## PART B

### 9. Facilities provided

| S. no. | Type of facilities | Current audit report (Year) | Previous audit report (Year) |
|---|---|---|---|
| 1 | Swimming pool | | |
| 2 | Gym | | |
| 3 | Commercial area etc | | |

### 10. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater(bore well) | | |
| Surface water(river, lake) | | |
| Seawater | | |
| Third-party water (tankers, others) | | |

## 11. Water consumption

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic | | |
| Gardening | | |
| Cleaning of common areas | | |
| Others | | |

## 12. Details of boreholes

| Details of boreholes | Current audit report (year) | Previous audit report(year) |
|---|---|---|
| Number of boreholes | | |
| Depth and head of boreholes | | |
| Average running hours of boreholes | | |
| Number of piezometers installed for groundwater monitoring | | |

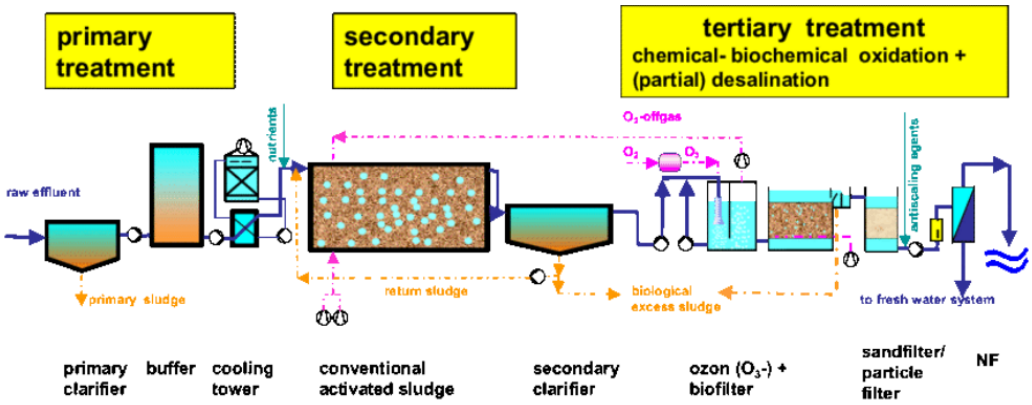
## 13. Details of flow meters

| Description | Currentaudit report (year) | Previousaudit report (year) |
|---|---|---|
| Type of flow meter installed<br>i) Electromagnetic<br>ii) Mechanical type<br>iii) Others, if any | | |
| Number of flow meters installed at different locations, | | |
| When were they last calibrated, mention the date<br>Share the calibration certificates for each meter. | | |

## 14. Wastewater generation

| | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Total wastewater generated in KL | | |
| Quantity of wastewater recycled or Reused in KL | | |
| Wastewater disposal mechanism<br>o Municipal sewer<br>o Soak pit/septic tank<br>o In-house sewage treatment plant<br>o Other , specify | | |

Notes: Provide the diagram for the wastewater treatment scheme;




### 15. Energy consumption

| Energy consumption | Consumption of energy in kwH) | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| From Grid | | |
| From generator sets | | |

### 16. Details of solid waste generated

| Type of waste | Current audit report (year) specify unit | Previous audit report (year)specify unit |
|---|---|---|
| Domestic | | |
| Other, specify | | |

## PART C

17. Describe qualitatively disposal practices adopted for these categories of waste.

## PART D

18. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART E

19. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART F

20. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption. Specify the target and deadline.

# ANNEXURE 6: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-MINING

## PART A

1. Name and address of the owner/occupier of the mine
2. Area licensed for mining activity (Acre/hectare)
3. Area covered presently under mining (Acre/hectare)
4. Production capacity (with units)
5. Type of mining (coal mineral)
6. Year of establishment
7. Date of last environmental audit submitted
8. GIS coordinate of the unit
9. Brief background on process, raw material, fuel, water and wastewater
10. Type of air and water polluting activities nearby to the industry, what they produce, raw material [Consultant can get the name of the industry and details can be provided by the regulatory agency]

## PART B

### 11. Product type and generation

| S. no. | Type of product | Quantity (tonne) | |
|---|---|---|---|
| | | Current audit report (Year) | Previous audit report (Year) |
| | | | |
| | | | |

### 12. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater(borehole) | | |
| Surface water(river, lake) | | |
| Seawater | | |
| Third-party water (tankers, others) | | |

## 13. Water consumption in $m^3$/day

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic | | |
| Mining Activity | | |
| Others, specify | | |

## 14. Details of boreholes

| Details of boreholes | Current audit report (year) | Previous audit report(year) |
|---|---|---|
| Number of boreholes | | |
| Depth and head of boreholes | | |
| Average running hours of boreholes | | |
| Number of piezometers installed<br>For groundwater monitoring | | |

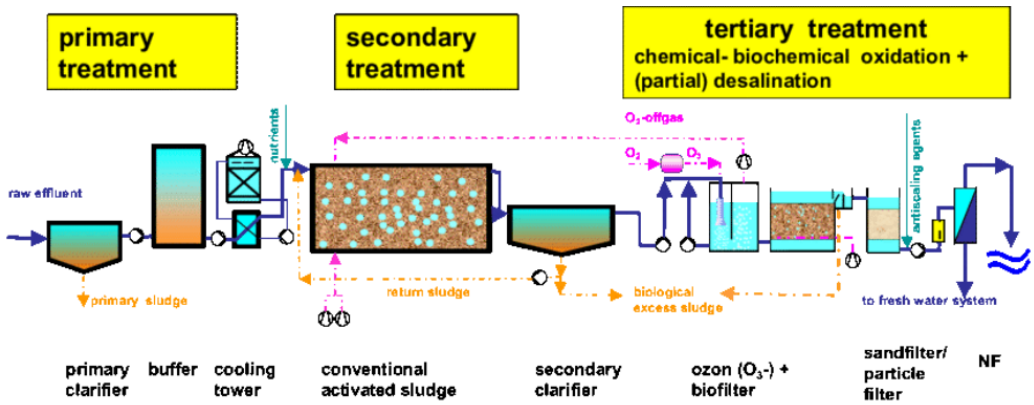
## 15. Details of flow meters

| Description | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Type of flow meter installed<br>i) Electromagnetic<br>ii) Mechanical type<br>iii) Others, if any | | |
| Number of flow meters installed at different locations, | | |
| When were they last calibrated, mention the date<br>Share the calibration certificates for each meter. | | |

## 16. Wastewater Generation

| Description | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Total wastewater generated in KL | | |
| Waste water generated from mining activity | | |
| Quantity of acidic water generation, if any | | |
| Water generated from breaching | | |
| Domestic waste water | | |
| Quantity of wastewater recycled or Reused in KL | | |
| Wastewater discharge point<br>•Surface water<br>i) With treatment<br>ii) Without treatment<br><br>•Seawater<br>i) With treatment<br>ii) Without treatment<br><br>Others, specify | | |

Notes: Please provide the diagram for the wastewater treatment scheme;




## 17. Fuel consumption

| Name of fuel | Consumption of fuel(in tonne/litre/kg or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

### 18. Energy consumption

| Energy consumption | Consumption of energy in kwH or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 Domestic | | |
| 2 Mining | | |
| 3 Others, specify | | |

## PART C

### 19. Pollution discharge to environment/unit of output (parameters as specified in license condition issued)

| Pollution | Parameter | Quantity of pollutants discharged(mass/day) | Concentration of pollutants | Prescribed standard |
|---|---|---|---|---|
| Water | pH<br>SS<br>BOD<br>COD | | | |
| Note: Add more parameters | | | | |
| Air | PM<br>Sox<br>Nox | | | |

Note: Add more parameters

## PART D

### 20. Details of solid waste generated

| Type of waste | Current audit report (year)specify unit | Previous audit report (year) specify unit |
|---|---|---|
| Domestic | | |
| Overburden | | |
| Hazardous waste (used/waste oil) | | |

## PART E

21. Describe qualitatively disposal practices adopted for these categories of waste.

## PART F

### 22. Assessment of Biodiversity

| S No | Flora | | Fauna | | Biodiversity Index | |
|---|---|---|---|---|---|---|
| | Name of species | Population of species | Name of species | Population of species | Current | At time of EIA |
| 1. | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |

## PART G

23. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART H

24. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART I

25. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

## Part J

a) Number of people interviewed from local community and their overall feedback on environmental and other issues

b) Number of people interviewed from district government offices and their overall feedback on environmental and other issues

| Stakeholder | Feedback | Recommendation for improvement |
|---|---|---|
| Locals | Details of environmental and others issues highlighted | What do they think company should do to improve their environmental or other issues |
| Government office 1 | | |
| Government office 2 | | |

# ANNEXURE 7: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-RAIL ROADS

## PART A

1. Name and address of the owner/occupier of the industry
2. Year of establishment
3. Date of last environmental audit submitted
4. Brief background on type of industry, process, raw material, fuel, water and wastewater
5. Number of large stations
6. Number of railway colonies
7. Number of corridor passing through forest area and provide GIS coordinate of each corridor
8. Number of dense habitat on the railway track along with GIS coordinate of each habitat

## PART B

### 9. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater(borehole) | | |
| Surfacewater(river, lake) | | |
| Third-party water (tankers, others) | | |

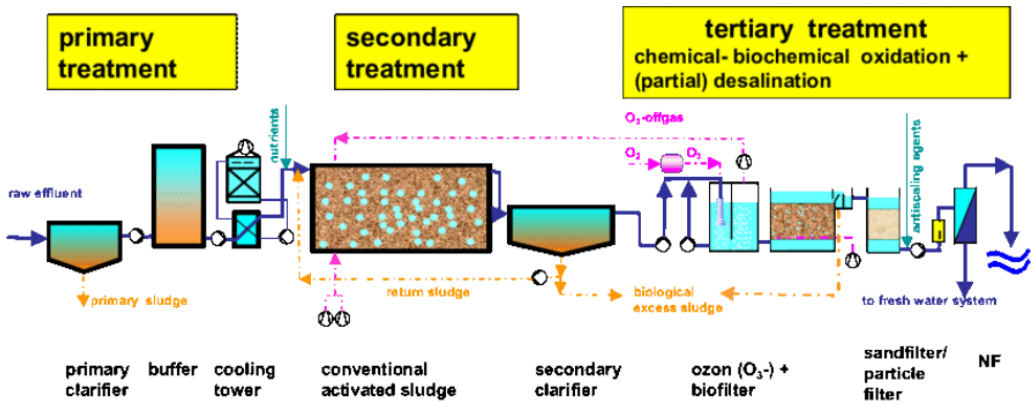
### 10. Water consumption in $m^3$/day

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic<br>o Supply to railway colonies<br>o Supply to large stations<br>o Supply to rail coaches | | |
| Maintenance yard | | |

## 11. Wastewater generation

| | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Total wastewater generated in KL | | |
| Quantity of wastewater recycled or Reused in KL | | |
| Wastewater discharge point<br>•Municipal Sewer<br>i) With treatment<br>ii) Without treatment<br><br>•Surface water<br>i) With treatment<br>ii) Without treatment | | |

Notes:Please provide the diagram for the wastewater treatment scheme;




## 12. Fuel consumption

| Name of fuel | Consumption of fuel(in tonne/litre/kg or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

## 13. Energy consumption

| Energy consumption | Consumption of energy in kwH or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

### 14. Noise

- o Status of noise generation near congested habitats (db)
- o Status of noise generation at forest area particularly near animal corridor (db)

### 15. Details of solid waste generated

| Type of waste | Current audit report (year) specify unit | Previous audit report (year) specify unit |
|---|---|---|
| Domestic<br>o from railway colonies<br>o From large railway stations<br>o From Rail coaches | | |
| Excreta generation from rail coaches | | |
| Hazardous waste (used/waste oil) | | |

## PART C

16. Describe qualitatively disposal practices adopted for these categories of waste.

## PART D

### 17. Assessment of Biodiversity

| S No | Flora | | Fauna | | Biodiversity Index | |
|---|---|---|---|---|---|---|
| | Name of species | Population of species | Name of species | Population of species | Current | Previous year |
| 1. | | | | | | |
| 2 | | | | | | |
| 3 | | | | | | |

## PART E

18. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART F

19. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART G

20. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

## Part H

a. Number of people interviewed from local community and their overall feedback on environmental and other issues
b. Number of people interviewed from district government offices and their overall feedback on environmental and other issues

| Stakeholder | Feedback | Recommendation for improvement |
|---|---|---|
| Locals | Details of environmental and others issues highlighted | What do they think company should do to improve their environmental or other issues |
| Government office | | |

# ANNEXURE 8: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-PORT AND HARBOUR

## PART A

1. Name and address of the port along with map of the port
2. Total area covered (acre/hectare)
3. Total capacity- Cargo handling (tonnes/ year)
4. Year of establishment
5. Date of last environmental audit submitted
6. Brief background on type of industry, process, raw material, fuel, water and wastewater

## PART B

### 7. Cargo handling

| S. no. | Type of cargo | Quantity(tonnes) | |
|---|---|---|---|
| | | Current audit report (Year) | Previous audit report (Year) |
| | | | |
| | | | |

### 8. Water sourcing

| Types of sources | Water consumption inKL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater(borehole) | | |
| Surface water(river, lake) | | |
| Seawater | | |
| Third-party water/ municipal supply | | |

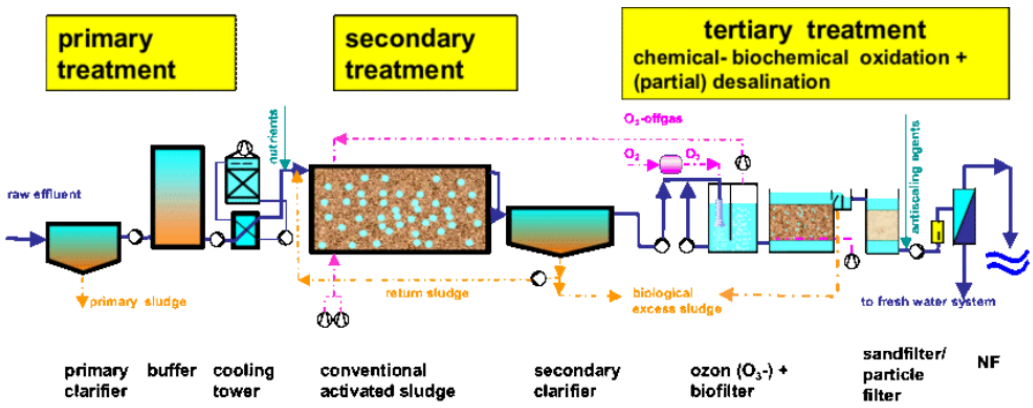
### 9. Water consumption

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic<br>o Housing complex<br>o Office complex | | |
| Ship maintenance yard | | |
| Others | | |

## 10. Wastewater generation

| | Current year | Previous year |
|---|---|---|
| Domestic water<br>o Housing complex<br>o Office complex | | |
| Storm water | | |
| Waste water from ship maintenance yard | | |
| Wastewater discharge point<br>•Seawater<br>i) With treatment<br>ii) Without treatment | | |

Notes: Please provide the diagram for the wastewater treatment scheme




# PART C

## 11. Details of waste generated

| Type of waste | Current audit report (year) specify unit | Previous audit report (year)specify unit |
|---|---|---|
| Domestic<br>o from housing complex<br>o From port area | | |
| Dredging overburden | | |
| Hazardous waste (used/waste oil/ paint/chemcials) from maintenance yard | | |

# PART D

12. Describe qualitatively disposal practices adopted for these categories of waste.

## PART E

13. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART F

14. Assessment of aquatic ecosystem and water quality around dredging area

## PART G

15. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART H

16. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

# ANNEXURE 9: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-HEALTH CARE FACILITY

## PART A

1. Name and address of the owner/occupier of the healthcare facility
2. Number of beds
3. Average occupancy (in percentage)
4. Facilities: OPD Emergency ICU Pathology Radiology
5. Year of establishment
6. Date of last environmental audit submitted
7. GIS coordinate of the unit
8. Brief background about the unit

## PART B

### 9. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Groundwater(borehole) | | |
| Surface water(river, lake) | | |
| Third-party water (tankers, others) | | |

### 10. Water consumption

| Different water-consuming areas | Water consumption per unit of product/output | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| **Domestic** | | |
| **Utility(fire, cooling, steam)** | | |
| **Health care service** | | |
| **Laboratory water** | | |

### 11. Wastewater generation

| | Current year | Previous year |
|---|---|---|
| Total wastewater generated in KL<br>o Domestic<br>o Liquid chemical waste | | |
| Quantity of wastewater recycled or Reused in KL | | |

| | Current year | Previous year |
|---|---|---|
| Wastewater discharge point<br>•Surface water<br>i) With treatment<br>ii) Without treatment<br><br>•Seawater<br>i) With treatment<br>ii) Without treatment | | |

Note: Please provide the diagram for the wastewater treatment scheme

## 12. Fuel consumption

| Name of fuel | Consumption of fuel(in tonne/litre/kg or per tonne of product) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |

## 13. Energy consumption

| Energy consumption | Consumption of energy in kwH) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

# PART D

## 14. Waste Generation

| Type of waste | Quantity generated Current audit report (year)specify unit | Quantity generated Previous audit report (year)specify unit |
|---|---|---|
| o Anatomical waste (human) | | |
| o Anatomical waste (animal) | | |
| Soiled waste (items contaminated with blood and fluid) | | |
| o Expired and discarded medicines | | |
| o Chemical waste | | |
| o Microbiology, biotechnology and other clinical waste | | |
| o Waste sharps including metals (needle, syringes) | | |
| o Contaminated waste such as tubing bottles, urine bags, intravenous tubes | | |

| Type of waste | Quantity generated Current audit report (year)specify unit | Quantity generated Previous audit report (year)specify unit |
|---|---|---|
| o Glass wares (broken and discarded) | | |
| o Discarded bedding and linen | | |
| o Domestic waste | | |

### 15. Waste Disposal

| Type of waste | Current audit report (year) specify unit | Previous audit report (year) specify unit |
|---|---|---|
| o Quantity incinerated with autoclaving/microwaving | | |
| o Quantity directly incinerated (without autoclaving) | | |
| o Quantity sent to recyclers | | |
| o Quantity sent to municipality | | |

## PART E

16. Describe qualitatively disposal practices adopted for these categories of waste.

## PART F

17. Provide the details of manifest system for waste disposal

## PART G

18. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART H

19. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART I

20. Indicate both qualitatively and quantitatively how the industry plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

## PART J

a) Number of people interviewed from local community and their overall feedback on environmental and other issues

b) Number of people interviewed from district government offices and their overall feedback on environmental and other issues

| Stakeholder | Feedback | Recommendation for improvement? |
|---|---|---|
| Locals | Details of environmental and others issues highlighted | What do they think company should do to improve their environmental or other issues |
| Government office 1 | | |

# ANNEXURE 10: FORMAT FOR ENVIRONMENTAL AUDIT STATEMENT-LANDFILL

## PART A

1. Name and address of the owner/occupier of the industry
2. Ownership- Municipality (urban local body) or private (authorized by regulatory agency)
3. Design capacity (in tonnes)
4. Design period
5. Designed population (projected population as per designed period)
6. Area licensed for landdfill activity (Acre/hectare)
7. Area covered presently under landfill (Acre/hectare)
8. Year of establishment
9. Date of last environmental audit submitted
10. GIS coordinate of the unit
11. Brief background on process, raw material, fuel, water and wastewater
12. Type of air and water polluting activities nearby to the facility, what they produce, raw material [Consultant can get the name of the industry and details can be provided by the regulatory agency]

## PART B

### 13. Quantity of municipal waste accepted

| S. no. | Type of waste | Quantity(tonne/year) | |
|---|---|---|---|
| | | Current audit report (Year) | Previous audit report (Year) |
| | Wet waste (Organic waste) | | |
| | Dry waste (recyclable) | | |
| | Dry waste (inert/land fillable) | | |

### 14. Water sourcing

| Types of sources | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Surface water(river, lake) | | |
| Municipal supply | | |
| Third-party supply (tankers, others) | | |

Note: No water should be extracted for groundwater

## 15. Water consumption

| Different water-consuming areas | Water consumption in KL | |
|---|---|---|
| | Current audit report (year) | Previous audit report (year) |
| Domestic | | |
| Landfill activity | | |
| Others, specify | | |

## 16. Wastewater Generation

| Description | Current audit report (year) | Previous audit report (year) |
|---|---|---|
| Domestic | | |
| Leachate | | |
| Wastewater discharge point<br>Surface water<br>i) With treatment<br>ii) Without treatment<br><br>Municipal Sewer<br>iii) With treatment<br>iv) Without treatment | | |

Notes:Please provide the diagram for the wastewater treatment scheme;

## 17. Energy consumption

| Energy consumption | Consumption of energy in kwH) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 Domestic | | |
| 2 Landfill | | |
| 3 Others, specify | | |

## 18. Fuel consumption

| Name of fuel | Consumption of fuel(in tonne/litre/kg) | |
|---|---|---|
| | Current audit report (year)specify unit | Previous audit report (year)specify unit |
| 1 | | |
| 2 | | |
| 3 | | |

## PART C

### 19. Pollution discharge to environment(parameters as specified in license condition issued)

| Pollution | Parameter | Quantity of pollutants discharged(mass/day) | Concentration of pollutants | Prescribed standard |
|---|---|---|---|---|
| leachate | pH<br>SS<br>BOD<br>COD<br>Heavy metals | | | |
| Note: Add more parameters | | | | |
| Air | NH3<br>H2S<br>Ch4<br>PM | | | |
| Note: Add more parameters | | | | |
| Groundwater | pH<br>COD<br>TDS<br>Heavy metals | | | |

## PART D

20. Provide the percentage of population currently covered and strategies to cover entire population in collection network

## PART E

21. Provide the number of trucks/tractors engaged for collection of municipal waste along with the number owned by municipal authority and private owners.

## PART F

22. Impact of pollution abatement measures taken on conservation of natural resources and benefit thereof.

## PART G

23. Additional measures/investment proposal for environment protection abatement of pollution, prevention of pollution.

## PART H

24. Indicate both qualitatively and quantitatively how the facility plans to reduce its pollution, reduce its natural resource consumption, and maximize its waste consumption as raw material/fuel. Specify the target and deadline.

## Part I

a) Number of people interviewed from local community and their overall feedback on environmental and other issues

b) Number of people interviewed from district government offices and their overall feedback on environmental and other issues

| Stakeholder | Feedback | Recommendation for improvement |
|---|---|---|
| Locals | Details of environmental and others issues highlighted | What do they think company should do to improve their environmental or other issues |
| Government office 1 | | |
| Government office 2 | | |

# ANNEXURE 11: CHECKLIST FOR REVIEW OF ENVIRONMENTAL REPORTS

| S/No | Description | Document needed for proof | Yes | No | Remark |
|---|---|---|---|---|---|
| **Registration status** | | | | | |
| 1. | Is the auditor/audit firm certified with NESREA | NESREA certificate | | | If not present, return the report |
| 2 | Have all members of the audit team agreed on the report | Disclaimer form | | | If not present, return the report |
| **Layout plan and housekeeping** | | | | | |
| 3 | Has the report mentioned any congestion in the project and susceptible risk? | Layout plan drawing | | | If yes, what is the recommendation given by the auditor |
| 4 | Is the storage area properly ventilated, well-spaced and the raw material/ products kept properly stacked? | Photos of storage areas | | | If not, what is the recommendation given by the auditor |
| 5 | Is the storm water drain properly laid down and well maintained? | Photos of storm water drain | | | If not, what is the recommendation given by the auditor |
| 6 | Is there any spillage and leakage in the project premises? | Photos of premises | | | If yes, what is the recommendation given by the auditor |
| 7 | Are the internal roads and working places clean and well maintained? | Photos of the roads and other spaces | | | If not, what is the recommendation given by the auditor |
| **Raw material and Production details** | | | | | |
| 8 | Is the production figure as per license condition? | Granted license | | | If not, ask for clarification |
| 9 | Has the auditor checked the production figures with the technical team | Production report/log book | | | If not, ask to provide the record |
| 10 | Are the production figures given by the plant matched with the figures of other agencies like tax department? | Sale tax document | | | If not, ask to provide the record |
| 11 | Is the raw material as per the license condition? | Granted license | | | If not, ask for clarification |
| 12 | Has the auditor checked the raw material consumption with the log book of the storage | Log book of storage | | | If not, ask to provide the record |
| 13 | Did the auditor make the material balance (applicable only for manufacturing sector)? | | | | If not, the auditor may be asked to provide |

| S/No | Description | Document needed for proof | Yes | No | Remark |
|---|---|---|---|---|---|
| 14 | If S.no 13 is yes, is the raw material consumption high compared to material balance? | | | | |
| 15 | If s.no 14 is yes, what is the reason thereof?<br>i)Is it due to impurities so that effective raw material is less?<br>ii)Is the production process condition not controlled properly?<br>iii)Is material handling not proper and resulting in spillage?<br>iv)Is the requirement as per the demand of the reaction?<br>v)Is there any off- specific product?<br>vi) any other reason | | | | What are the recommendations given |
| **Water conservation and waste water generation** | | | | | |
| 16 | Is the water consumption as per the license? | Granted license | | | If not, ask for clarification |
| 17 | Did auditor make any water balance for the project? | Provide the water balance | | | If not, ask the auditor to re-submit the report with water balance |
| 18 | If S. no is yes, is the water quantities mentioned in the water balance measured or estimated? | | | | If not measured, has the auditor recommended the plant to install flow meters? |
| 19 | If estimated, has the report provided any rationale for estimates? | | | | If not, ask the auditor to re-submit the report providing the rationale. |
| 20 | Did the auditor indicate the area of loss of water or water recycled? | | | | If not, ask for clarification |
| 21 | Is the quantity of wastewater as per the license condition? | Check the granted license | | | If not, are there any reasons listed for exceeded quantities |
| 22 | Is there any designated outlet for discharge of wastewater fitted with flow measurement device? | Photos of designated outlet | | | If not, has the auditor recommended to construct the outlet |
| 23 | If S. no 22 is yes, has the auditor measured the waste water quantity at outlet | Photos of flow measurement | | | If not, ask the audit team to provide the rationale for the quantity provided |

| S/No | Description | Document needed for proof | Yes | No | Remark |
|---|---|---|---|---|---|
| 24 | Has the auditor tested quality of waste water discharged? | Laboratory report | | | If not, ask to conduct the waste water sampling and provide report |
| 25 | Are the values of parameters tested comply with the standards? | | | | If not, ask for clarification |
| 26 | Is the provided wastewater treatment adequate? | Provide performance evaluation report of waste water treatment plant | | | If performance evaluation not done, ask for reasoning |
| 27 | If s.no 26 is no, is there any recommendation provided? | | | | |
| 28 | Is the entire waste water treatment plant well maintained? | Photos of the waste water treatment plant | | | If not, what areas has the auditor identified for improvement and what recommendations are provided. |
| **Waste generation and management** | | | | | |
| 29 | Has the report provided the list of all hazardous and non-hazardous waste along with its quantity generated from the project? | | | | |
| 30 | Is the quantity of waste generated exceeds the license? | Provide industry log book for generated waste | | | If yes, what recommendations are provided |
| 31 | Does the industry dispose the waste in an environmentally safe manner? | Proof for disposal of all kind of waste | | | If not, what recommendation are provided |
| 32 | Has the audit report identified recyclable/reusable waste for effective recycle/reuse? | | | | If yes, whether auditor has provided recommendations on where it can be applied. |
| 33 | Are all the containers holding hazardous waste well-maintained and stored properly? | Photos of hazardous waste storage | | | What is the observation of the auditor? |
| **Air Pollution and measures** | | | | | |
| 34 | Has the audit report identified sources of air pollution | | | | If not, ask for explanation |
| 35 | If s.no 34 is yes, is the air pollutant generated through combustion? | | | | Mention the sources like boiler, heater, generator sets etc |
| 36 | Has the report provided the type and quantity of fuel used? | Check logbook of the industry for quantity | | | If not, ask the auditor to provide the details |
| 37 | Are there any air pollutant from the process? | | | | If yes, are the sources and type of pollutant identified? |

| S/No | Description | Document needed for proof | Yes | No | Remark |
|---|---|---|---|---|---|
| 38 | Are the pollutants from process quantified? | | | | If not, ask for the clarification |
| 39 | If s.no 38 is yes, is the measured or estimated | If measured, provide laboratory reports | | | If estimated, provide rationale used for the estimation |
| 40 | Has the industry installed Air pollution control devices (APCDs)? | Photos of APCDS | | | If not, what are reasons listed in the report |
| 41 | Is the performance of APCD adequate? | Check Performance evaluation report of APCD | | | If not, has the auditor recommended any modification in the device or installation of an appropriate one. |
| 42 | Is there any stack monitoring programme in place by the project? | If yes, provide monitoring datasheet of project | | | If not, has the auditor recommended any monitoring programme |
| 43 | Has the auditor performed any stack monitoring during the audit period? | If yes, provide the laboratory report | | | If not, provide explanation |
| 44 | Does the monitoring results matches with the results of the industry? | | | | If not, has the auditor identified any reasons for the difference |
| **Biodiversity Assessment (applicable for line and mining projects)** | | | | | |
| 45 | Has the auditor performed biodiversity monitoring (type of species and population) for flora and fauna | If yes, provide photos | | | If not, reject the report and ask to re-submit after performing assessment |
| 46 | Is any biodiversity index prepared by the auditor? | | | | If not, ask the auditor to provide the same |
| 47 | If s.no 46 is yes, does the present index less than the index provided in EIA | | | | If yes, has the report identified the species lost. What recommendation has been provided by the auditor for restoration of lost species? |
| **Health and Safety** | | | | | |
| 48 | Did the project have safety report? | | | | If not, what are the comments of the auditor |
| 49 | Has the auditor visited the identified hazard areas | | | | If not, ask for justification |
| 50 | If s. no 49 is yes, are the measures mentioned in safety report properly implemented | | | | If not, what are the recommendation of the auditor |

| S/No | Description | Document needed for proof | Yes | No | Remark |
|---|---|---|---|---|---|
| 51 | Has the auditor identified major environmental and health concerns in case of major accident | | | | If yes, what are the measures given by auditor |
| 52 | Has the report mentioned number of accidents happened in the projects and how many are fatal? | | | | If yes, what are the remedial measures taken |
| 53 | Has there any accident reported which has affected the people/ environment outside the premises of the project? | | | | If yes, what are actions taken |
| 54 | Does the project have regular health check-up programme for employees as well as nearby habitants | If yes, provide the medical reports | | | If not, what are the recommendation of the auditor |
| 55 | Is there any co-relation between health issues mentioned in the medical report and pollutants from project | | | | If yes, what actions has taken by the project |

## ANNEXURE 12: CLASSIFICATION OF FACILITIES

For Large Facilities:

i. Staff strength: Greater than 50 workers and mechanized;
ii. Land mass: From 2,000 — 5,000 square meters and mechanized.

For Medium Facilities:

i. Staff strength: Greater than 10 workers and less than 50 workers and mechanized;
ii. Land mass: From 1,000 — 2,000 square meters and mechanized.

## ANNEXURE 13: CLASSIFICATION OF FACILITIES IN THE HOUSING SECTOR

Any building above sixty (60) rooms and two (2) hectares should conduct Environmental audit

## ANNEXURE 14: CLASSIFICATION OF FACILITIES IN THE CONSTRUCTION SECTOR

Any 1 km road awarded and still under construction after the 5 years EIA certificate has elapsed should conduct Environmental audit.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