Chapter-10

ENVIRONMENTAL MANAGEMENT PLAN

10.1 INTRODUCTION

The success of environmental management in an organization not only depends on deep involvement of its personnel at all levels but also on the creation of an effective implementing organizational structure. The objectives are:

- To implement environmental control and protection measures.
- Subsequent environmental monitoring of the efficacy of various control measures.
- Plantation/green belt development.
- Land restoration.

Keeping this in view, organizational structure responsible for the implementation of environmental control and mitigation measures as well as monitoring of such implementation has been discussed in this chapter.

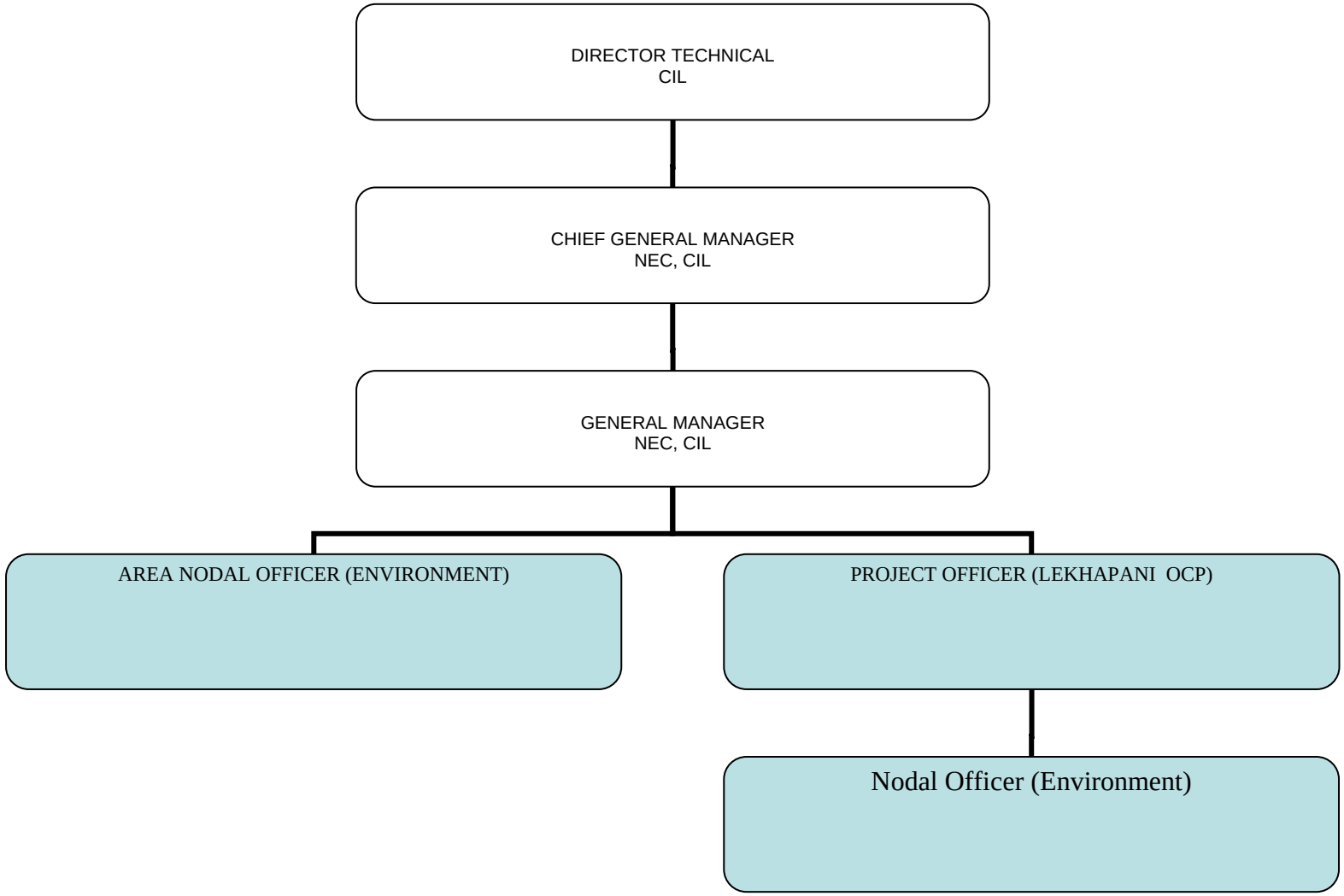
10.2 IMPLEMENTING ORGANISATION

North Eastern Coalfields Limited, the owner of this project has already set-up an Environmental Cell headed by a General Manager at its HQs. The cell provides necessary support that is required for Environmental Management of various projects and mines under the jurisdiction of the company.

The responsibility for implementing Environmental Management Plan rests with the Chief General Manager of the Project, who gets proper assistance by a team of qualified and trained personnel. The Environmental Cell at the Project and Corporate level looks after the following functions for implementation and monitoring of pollution control measures and for overall environmental management. The responsibility for implementing environmental management plan would rest with the project officer of the project, who would be properly assisted by team of qualified and

trained personnel. Organisation for environmental management in Margherita,NEC will carry out the task and responsibility connected therewith.

- Generation of environmental data bank.
- Evolving micro environmental management plan for the project in collaboration with other agencies and consultants.
- Monitoring project implementation along with environmental control measures.
- Co-ordinate with other project activities to ensure timely implementation of the project.
- Co-ordination with Ministry of Environment & Forest, Central /State Pollution Control Board for prevention and control of pollution.


DIRECTOR TECHNICAL
CIL
CHIEF GENERAL MANAGER
NEC, CIL
GENERAL MANAGER
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AREA NODAL OFFICER (ENVIRONMENT)
PROJECT OFFICER (LEKHAPANI OCP)
Nodal Officer (Environment)

For effective implementation and mid term corrective measures (if required) monitoring and control of programme implementation is essential. For this purpose a time bound action programme for environmental management has been prepared.

The scope of environmental management includes plantation, surface drainage, industrial waste water treatment plant, air, water and noise pollution check etc.

For the purpose of land reclamation and afforestation, the Project shall interact with different Government departments like Department of agriculture, Forest Department etc. Guidelines and advice from Ministry of Environment and Forest also result in systematic approach towards environmental management and control.

10.2.1 Compensation to land losers

- Chief General Manager, NEC
- Project Officer, Lekhapani OCP
- Land Survey and Revenue Deptt. NEC(HQ)
- Represenative from State Govt.

10.2.2 Pollution Control Measures

- Chief General Manager, NEC
- Project Officer/Environmental Cell, Lekhapani OCP
- Environmental Cell, NEC HQ

10.2.3 Plantation/Green Belt Development

- Chief General Manager, NEC
- Project Officer/Environmental Cell, Lekhapani OCP
- Environmental Cell, NEC(HQ)

10.2.4 Land Restoration

- Chief General Manager, NEC
- Project Officer/Environmental Cell, Lekhapani OCP
- Environmental Cell, NEC(HQ)

An organisation chart showing the hierarchial levels for environmental control is given in above Figure.

10.3 Monitoring & Control

For effective implementation and mid term corrective measures (if required) monitoring and control of programme implementation is essential.

For this purpose a time bound action programme for environmental management has been prepared.

The scope of environmental management includes plantation, surface drainage, industrial water treatment plant, air, water and noise pollution checks etc.

For air, water and noise pollution control measures, samples will be collected and tested for all four seasons at strategic places representing all the categories of areas as indicated by CPCB. The implementation authority should be guided and advised as per the feed back data from these tests.

10.3.1 Monitoring Schedule

For air, water, noise and soil, quarterly monitoring is proposed. Following number of stations have been fixed for monitoring of environment for the proposed project.

Ambient Air	:	4 Stations (Quarterly)
Water	:	4 Stations (Quarterly for effluent & drinking water samples)
Noise	:	4 Stations (Quarterly)

10.3.2 Plantation Monitoring

The project authority at field level will continuously monitor the growth and survival/mortality rates of the plantations till the end of 3 years or so. Once trees attain desired growth, no further monitoring will be required.

10.3.3 Action Plan for Land Reclamation and Plantation

The action plan delineates the quantum of overburden to be excavated, backfilled, the plantation schedules etc. Interaction with different Government Departments like Department of Agriculture, Assam State forest department, Forest Research Institute would give additional technical guidelines. Guidelines from State and Central Ministry of Environment and Forest will be obtained for effective implementation of EMP.

10.3.4 Health Monitoring

A regular schedule will be programmed for monitoring health of the workers and staff associated with the mining operations and other connected industrial activities for identifying occupational diseases etc. in time and initiating remedial measures. Mobile ambulance will also be used for such programme to monitor the health of the population around the area.

10.4 MINE CLOSURE

OBJECTIVES OF CLOSURE

Mine closure planning needs to be done before the commencement of mine operation and requires periodic reviewing and modification, if needed, during its life cycle to ensure safety and to cope up with social & environmental challenges. Various objectives of the advance mine closure planning are as follows:

To allow productive and sustainable after-use of the site which is acceptable to the mine owner and the regulatory authorities.

To protect public health and safety.

To eliminate environmental damage and thereby encourage environmental sustainability.

To minimize adverse socio-economic impacts.

To protect the flora and fauna of the area.

Effective use of the assets.

MINE CLOSURE OBLIGATIONS

There is need to define the liabilities, responsibilities and authorities of the different agencies like the mine management, other regulatory bodies, Central and State Governments after mine closure. Some obligations pertaining to the Mine Management Companies are as follows:

Health & safety – Regulations 6,61,106,112, of Coal Mines Regulations, 1957and its related DGMS Circulars.

Environment - 1. Water (Prevention and Control of Pollution Act).

Air (Prevention and Control of pollution) act 1981.

Environment (Protection) Act, 1986 and Environment protection Rule.

DGMS Directives on noise and ground vibration.

Forest – forest (Conservation) Act, 1980.

Rehabilitation.

Decommissioning/asset disposal, etc.

IMPACT ASSESSMENT REMEDIAL MEASURES

Environmental impact on landscape, water source, air and noise pollution during mine life has been discussed in chapter 4. It is imperative that environmental monitoring may be continued after closure of mine in order to assess corrective measures to be implemented to bring pre-mining ecosystem and environment in the core and buffer zone to the extent possible.

STAKEHOLDERS INVOLVEMENT

Various agencies effected due to mine closure need to be identified and they may be as follows:

The Company : Employees, Management and agencies.

The Community : Local business and service providers, landholders, neighbours and nearby residents, local government, NGOs and community groups.

The State : the state Government, the Central Government and concerned Government agencies.

There is need of regular consultations between the agencies to evolve the role of the agencies and their involvement in the process.

CLOSURE ACTION PLAN

In case of Lekhapani OC, the mine is being planned up-to a certain depth for a specified life of the mine. If the decision for further extension of the mine is taken before closure of the proposed quarry, mine closure will be deferred as mining activities shall continue beyond present eastern limits.

In the event of no further extension beyond the proposed mine limits, mine closure plan becomes necessary and MOEF also desires the submission of such plan five years in advance of closure.

Closure planning is a life-of-mine exercise that begins with the commencement of mining operations and continues till post closure. The dynamic nature of closure planning requires regular and critical review to reflect changing circumstances as a result of any operational change, new regulation, new technology and remain flexible enough to cope with unexpected events.

Following steps have to be undertaken in relation to Mine Closure Planning:

(a) Dense forest consists the leasehold area of the project, so the ecological aspects of mine closure should be duly taken care of. Study with regards to impact on Flora & Fauna due to mining activity shall be taken up.

(b) In order to identify potential impact necessary hydrogeological studies into post-mining groundwater recharge has to be done. The void of the mine can be proposed as a water resource to be utilized for aquaculture.

(c) As a detailed component of the Closure Plan, a Decommissioning Plan is to be developed towards the final stages preferably 5 years prior to tentative closure of mine. Once established, it may be updated annually.

PROTECTIVE MEASURES TO BE TAKEN

Protective measures must include the following:

(a) The protection of mine boundary, buildings and other structures of the project site against access by unauthorized persons.

(b) The maintenance of all mechanical, hydraulic and waste management systems.

(c) The continuation of all monitoring programs.

(d) The control of all contaminated effluents.

(e) The securing of all petroleum products, chemicals and waste.

(f) The rendering of all tailings, dams and piles of earth, rock and waste resulting from work done on the project site in a stable and safe condition.

CLOSURE COSTS

The cost of implementing the closure plan to eliminate or reduce the impact identified above has to be estimated. Although no statutory guidelines exist on financial provisioning for mine closure activities as yet, financial provisions of **Rs. 2.50/t** for closure cost are proposed to be provided from revenue expenditure in order to undertake mine closure activities. This closure cost may be reviewed under the changing circumstances and new legislative requirements.