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ENVIRONMENTAL CODES OF PRACTICE FOR
Installation of Underground and
Overhead Utilities

National Environment Commission

Royal Government of Bhutan

August 2004



དཔལ་ལྷན་འབྲུག་གཞུང་།
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ROYAL GOVERNMENT OF BHUTAN
NATIONAL ENVIRONMENT COMMISSION SECRETARIAT

FOREWORD

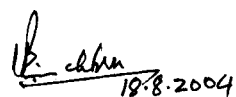
In 1999, the National Environment Commission with technical and financial assistance from the Asian Development Bank (ADB) published six sectoral environmental assessment guidelines for the mining, roads, industries, hydropower, transmission lines and forestry sectors. Several stakeholder consultation workshops and seminars were conducted before the guidelines were published. These guidelines were intended to guide different project proponents through the process of acquiring an environmental clearance for their projects. The Environmental Assessment 2000 (EA Act 2000) was passed by the National Assembly in 2000 and the Regulations under the Act were adopted two years later. Stakeholder feedback and our experiences in implementing the EA Act and the guidelines indicated that there was a need to revise the guidelines in order to make them more practical and relevant to the Bhutanese context and also to streamline them with the provisions of the EA Act 2000. It was also felt that there was a need for two more sectoral guidelines for urban development and tourism as rapid developments in these two sectors was becoming a concern for Bhutan. Therefore, in 2003 the NEC once again revisited these guidelines and revised and updated them to make them more practical and functional documents. Several Environmental Codes of Best Practices (ECOPs) have also been produced to support these environmental assessment guidelines.

The NEC is grateful to the ADB for being so forthcoming with technical and financial assistance to revise and update these guidelines. The revision and updating of these guidelines were accomplished through close consultation with all the various stakeholders. We would also like to express our gratitude and appreciation to all the line ministries and stakeholders for their active participation, support and inputs. We are confident that the revised guidelines will be more useful documents that facilitate and expedite the environmental clearance process as project proponents will now have a better understanding of what information must be provided in order to attain an environmental clearance.

In Bhutan, environmental conservation has been embraced as one of the four pillars of Gross National Happiness - the other three pillars being good governance, socio-economic development and cultural preservation. However, with the expansion of developmental activities in the country, it is becoming very difficult to strike a sustainable balance between environmental conservation and socio-economic development. The number of industries is on the rise every year

while the demand for rural access to market facilities in the form of farm roads and feeder roads is increasing with every Five Year Plan - in the 9th Five Year Plan alone there is a plan to develop 588kms of farm roads. Environmental issues such as waste disposal related to urbanization are also becoming serious concerns for Bhutan. Bhutan is lauded by the international community for its sound environmental policies and the political will to implement these policies. However, environmental problems are becoming more and more visible and instruments like the EA Act 2000 must be implemented effectively to support the government's sound environmental policies and to ensure that Bhutan remains clean and green.

The environmental assessment process endeavors to mitigate and prevent the undesirable impacts of developmental activities. It is in no way intended to hamper socio-economic development in Bhutan but to guide project proponents in making the right investments in land, manpower, technology and mitigation measures to ensure that their projects have the least possible impacts on the environment. With the revision and updating of the old guidelines and the publication of two new guidelines on Urban Development and Tourism and relevant ECOPs, the NEC is hopeful that the private sector, line ministries and competent authorities under the Regulations for Environmental Clearance of Projects find the guidelines more useful, practical, informative and easy to comply with. It is the sincere wish and hope of NEC that all the stakeholders, both public and private will make the best use of these guidelines, which in turn will help in protecting our fragile ecology. Sound implementation of these guidelines will go a long way in minimizing the negative impacts of developmental activities on Bhutan's environment.



Nado Rinchen
Deputy Minister for Environment

NECS, PO Box 466, Thimphu, Bhutan

Telephone: (975-2) 323384/325856/324323/326993

Fax: (975-2) 323385

Email addresses:

AED

admec@druknet.net.bt

Technical Division

EIA Section: eanec@druknet.net.bt

RMS Section: rnrnec@druknet.net.bt

ICO section: cunec@druknet.net.bt

Policy Coordination Division

Policy Analysis Section: ppdnec@druknet.net.bt

Legal Section: legalnec@druknet.net.bt

Abbreviations

CA	Competent Authority
EC	Environmental Clearance
ECOP	Environmental Codes of Practice
NEC	National Environment Commission

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1 Introduction

- 1.1.** This environmental code of practice (ECOP) is developed for the installation of underground and overhead utilities such as sewer lines, water supply pipelines and cabling for electricity, telephone and television. This ECOP has been prepared through a series of consultations with the relevant agencies executing the installation of these utilities. The code is available in hardcopy and in compact disk (CDs) as well. A copy of this code is also posted on the NEC website: www.nec.gov.bt

2 Purpose of the Code

- 2.1.** The purpose of this ECOP is to assist the Competent Authority in planning, regulating and monitoring the installation of utilities in urban areas by ensuring that environmental aspects are taken into consideration at the survey, design and installation stages. The Code is to be attached to the Contract document as a part of the Contract clause and is to be used in conjunction with other requirements of the Royal Government or Municipal Authority.

3 Legal Aspects

- 3.1.** The basis for this code is the EA Act 2000, and the Regulations for Environmental Clearance of Projects, 2002. While implementing this Code, the applicants, Competent Authorities or the NEC must refer to Annex 2 of the Regulation.
- 3.2.** This code should form a part of the contract clause that the contractor must abide with during implementation of the work.

4 ECOP for Utilities that will be Installed Underground

4.1 Preparatory Phase

4.1.1. Survey: In this section, the proponent should:

Survey the route where the utility will be installed and at the same time, identify all other utilities that may be affected by the proposed activity.

In an appropriate map scale show the route of the utility to be installed and the location of existing utilities that will be affected.

4.1.2. Consultation: Once the existing utilities have been identified along the route: Inform the owner(s) or authorized representative(s) about the proposed activity and the possible disturbances that the activity may cause to the existing utilities.

Obtain additional information about the existing utility (ies) such as a layout plan, how deep the utility is buried, GIS coordinates for the layout, etc.

Discuss how best to proceed with the installation at each site where an existing utility is affected.

4.1.3. Design: Based on information obtained from the survey and from the consultation process the following should be considered in the design:

Determine suitable excavation procedures at each site where existing utility(ies) have been identified.

Determine mitigation measures in the event the existing utility(ies) need relocation.

4.2 Code for Construction Phase

4.2.1. Layout. The following should be observed during field layout:

Clearly locate the area where the trench is to be excavated and mark the layout with white paint.

Mark all stretches where existing utilities will be encountered (problem spot) with pegs.

A signboard identifying the existing utility(ies) along with the excavation requirements should be erected at each problem site.

Provide an opportunity to the existing utility(ies) owners to walk through the layout and flash out concerns.

4.2.2. Management of Excavated Material:

The following practices should be applied for managing excavated material:

Excavated material can only be retained at the work site if it does not cover or obstruct other utilities including drains, roads, footpaths, etc. Unwanted excavated material should be dumped at an approved site.

The holder will plan and direct the contractor to execute the work progressively so that the length of the open excavated trench is minimised in order to reduce possible accidents.

4.2.3. Warning and Safety Signs: In potential accident prone areas, the following protective measures and safety signs should be erected:

Open trenches should be cordoned by a barrier that is visible at night.

Reflective warning signs should be erected at adequate warning distances from the work site and should face on coming traffic.

The holder shall be liable for any claims arising from accidents that have occurred as a result of inadequate/improper attention to these safety measures.

4.2.4. Management of Construction Materials: The following practices should apply to handling construction materials:

Construction materials should be stored at an approved storage site (the approving authority shall ensure that the site selected is one that causes minimum obstruction to roads, footpaths, drains etc.).

Construction materials should only be transported to the worksite as and when required for construction.

Construction materials should only be stored and prepared on the site if they do not obstruct the road or any other public utility(ies).

(Refer to the guideline on storage and stacking of construction material, SQCA.)

4.2.5. Restoration of work site: Once the installation of the utility has been completed, the site should be restored. The following practices should be applied during site restoration:

All waste material, including rocks and boulders, which have been excavated, should be removed from the disturbed area and the area restored to its original state.

5 ECOP for Overhead Utilities

5.1. Overhead utilities include electric lines, telephone lines, and television cables. The improper stringing of these utilities not only create safety concerns but also is aesthetically unpleasing. This code applies to the overhead installation of these utilities.

5.2. Overhead Electric Lines:

Low Voltage (415 volts) Aerial Bundled Cable (ABC) should be used for overhead electric lines.

Distribution points should be carefully selected so that crisscrossing of overhead wires is minimized

Poles that are used for stringing ABC cables should be painted with damp proof paint.

5.3. Telephone Lines

No drop wires should be used in densely populated areas.

Bundled aerial cables with adequate capacity for meeting future subscriber needs should be installed.

From the distribution point, only one aerial cable should be used to connect an individual building. The cable should have sufficient capacity to meet the present and future requirements of the building.

Poles that are used for stringing ABC cables should be painted green.

5.4. TV Lines

With the exception of the existing buildings, where there are no provisions otherwise, cables should not be strung over walls and roofs.

Each building should have a single distribution point, which then feeds all consumers by an internal cable system.

6 Roles and Responsibilities

6.1. The roles and responsibilities of the different agencies that will be involved in implementing this ECOP are as follows.

6.2. Project Preparatory Phase: In this phase, the Project Applicant (Proponent) will be responsible for and will monitor the following activities:

Ensure that surveys are carried out and design parameters that are required in the Environmental Codes of Practice are included in the design.

Ensure that the ECOP is attached to the Contract Document as part of the Contract requirements.

6.3. Project Construction Phase: During this phase, the following monitoring is required:

Regular Monitoring: The Applicant must ensure that the Contractor understands the relevant sections of the ECOP. During construction the Contractor, will be responsible for regular monitoring to ensure that work is executed as per the terms and conditions of the contract document and the ECOP.

Compliance Monitoring: Compliance monitoring is the responsibility of the following three organisations: (1) The Project Proponent who has the overall responsibility for monitoring; (2) the Competent Authority and (3) the NEC. The latter two organisations may conduct spot checks at any time.