

**APPLICATION FOR
ENVIRONMENTAL CLEARANCE
GUIDELINE FOR
HIGHWAYS AND ROADS**

**National Environment Commission
Royal Government of Bhutan
August 2004**



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རྒྱལ་ཡོངས་མཐའ་འཁོར་གནས་སྤངས་ལྷན་ཚོགས་ཡིག་ཚང་།
ROYAL GOVERNMENT OF BHUTAN
NATIONAL ENVIRONMENT COMMISSION SECRETARIAT

FOREWORD

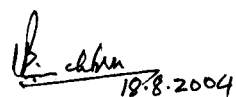
In 1999, the National Environment Commission with technical and financial assistance from the Asian Development Bank (ADB) published six sectoral environmental assessment guidelines for the mining, roads, industries, hydropower, transmission lines and forestry sectors. Several stakeholder consultation 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.



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1. GLOSSARY

Affected people: individuals, groups or communities, or other organisations, whose interests may be directly affected by the location, construction and operation of the project

Agency: a ministry, department, municipality established under the Bhutan Municipal Act, 1999 or any autonomous body of the Royal Government of Bhutan

Applicant: a person seeking an Environmental Clearance from a Competent Authority or from the National Environment Commission Secretariat

Competent Authority. Any agency of the Royal Government that has the power to issue an Environmental Clearance for a project

Cultural Heritage: tradition or culture that should be preserved for future generations

Development Consent: the approval that is issued or renewed by a Competent Authority in the form of a licence, lease or permit for land use or construction. The Development Consent can only be obtained after the Environmental Clearance has been issued

Distribution line: power lines with voltages below 66 kilovolts

Environmental Assessment: all procedures required under Bhutanese law to identify means to ensure that the activities of a project are managed in an environmentally sound and sustainable way

Environmental Clearance: the decision issued under Chapter III of the Environmental Act, 2000, that is issued in writing by the National Environment Commission or the Competent Authority, to let a project proceed. The Environmental

Clearance includes terms and conditions which the Applicant or Holder of the Environmental Clearance must abide by to ensure that the project is managed in an environmentally sound and sustainable way

Environmental Management Plan: a plan which addresses the ways of mitigating and monitoring the impacts that have been identified by the environmental assessment. The Environmental Management Plan may comprise part of the conditions of the Environmental Clearance that is issued either by the Competent Authority or by the National Environment Commission

Environmental Parameter: A component of the surrounding environment which may be altered by a project activity. This includes physical interventions or releases to air, water and soil which may in turn affect vegetation, wildlife, human and aquatic communities

Environmental Terms: the requirements and conditions that a project must comply with, as stated in the Environmental Clearance issued either by the NEC or the CA

Environmental Unit: a management unit that is established within a project structure that is responsible for implementing, monitoring and reporting on the environmental terms attached to the Environmental Clearance

Forest: any land or water body, whether or not under vegetative cover, in which no person has acquired a permanent and transferable right of use and occupancy, whether such land is inside or outside the forest boundary pillars, and includes land registered in a person's name as Tsamdo (grazing land) or Sokzhing (woodlot for collection of leaf litter)

Holder: the recipient of an Environmental Clearance under Chapter III of the EA Act, 2000

Formation width: the constructed width of the road which includes the pavement width and the shoulder width

Land acquisition: the acquisition of any land, constructions or other property in accordance with the procedures established under the Land Act, 1979 (or successor legislation)

Monitoring: a program of systematic measurement or observation of environmental and social parameters. Monitoring requirements includes regular reporting and specifies action to be taken if non-compliance occurs. Monitoring requirements are specified in the Environmental Terms which is attached to the Environmental Clearance. Monitoring consists of *Baseline monitoring* which is carried out prior to commencement of a project. Baseline monitoring measures the existing environment and this is compared to later monitoring which establishes the effects caused by the project. *Compliance monitoring* refers to a system of regular measurements which compares releases from an activity to those that have been specified in the Environmental Terms. The permitted releases are established in environmental discharge standards, 2004

Municipal Corporation: a Corporation incorporated under the Bhutan Municipal Act, 1999, to implement the provisions of that Act for the benefit of the residents of a community classified as a Municipality by the Royal Government

Non-listed project: all projects that are not listed in Annex 2 of the Regulation for the Environmental Clearance of Projects, 2002 including its most recent update

Pavement width: the width of the formed pavement that is intended to carry traffic. The pavement may be either blacktopped or stone soling. A shoulder is located on either side of the pavement

Project: an activity which may have significant effects on the environment

Project area: The area that includes the immediate and the proximate area of a project that the project may have an environmental or social impact on

Protected Area: is an area which has been declared to be a national park, conservation area, wildlife sanctuary, wildlife reserve, nature reserve, strict nature reserve, research forest, critical watershed or other Protected Areas for the preservation of areas of natural beauty of national importance, protection of biological diversity, management of wildlife, conservation of soil and water and related purposes

Road: the entire surface of land designed for use by means of transportation, including road infrastructure and facilities. It includes all types of roads, whether paved or unpaved and mule tracks

Road Right of Way (RoW): the strip of land reserved for the road which also includes areas assigned for expansion of the road, central verge, pedestrian areas/sidewalks, roadside drains, and avenue plantations. It also includes space required for installation of public utilities and other relevant structures, facilities and equipment

Road shoulder: the two extreme strips of formation that remain on either side of the road pavement

Screening: the review process carried out by the National Environment Commission or by the Competent Authority of the Application with regard to whether the project may be (i) issued with an EC (ii) rejected or (iii) require further environmental assessment

Sustainability: development that recognises the need to raise the living standards of the present population without compromising the country's resource base, cultural integrity, historical heritage or the quality of life of future generations

Wildlife: includes all mammals, avians, reptiles, amphibians, fishes and invertebrates

2. Introduction

In 1999 the National Environment Commission (NEC) approved six sectoral environmental guidelines on (i) Forestry, (ii) Highways and Roads, (iii) Hydropower, (iv) New and Existing Industries, (v) Mines and Mineral Processing and (vi) Power Transmission Lines. In 2000, the National Assembly passed the Environmental Assessment Act and in 2002, the government approved the Regulation for the Environmental Clearance of Projects (the Regulation). Under the Regulation, both the National Environment Commission (NEC) and the designated Competent Authorities (CA), which are listed in Annex 2 of the Regulation, are authorized to issue Environmental Clearances for projects.

Applicants, CAs and the NEC found the six sectoral guidelines developed in 1999 cumbersome and difficult to comply with. This often led to delays in issuing environmental clearances and therefore the execution of projects. In order to ensure that these guidelines address the requirements of the *Environmental Assessment Act, 2000* and the *Regulation for the Environmental Clearance of Projects, 2002* while at the same time keeping them simple and easy to follow, the NEC, with financial and technical assistance from the Asian Development Bank (ADB), has revised the six guidelines and also developed two new sectoral guidelines: one for tourism and the other for urban development.

The NEC had the overall responsibility for coordinating the program, which was directed by Mr Karma C. Nyedrup of the Environmental Assessment Section. The assistance of numerous officers within the NEC and the following consultants; Karma_Jimba, Sonam Tobgay and Charles Adamson is gratefully acknowledged.

This guideline has been developed in close consultation with relevant agencies that are involved in road construction and maintenance with the intention of making it easier to use.

The guideline also integrates requirements needed by other agencies who are involved in approving the project.

Article 9 of the Environmental Act, 2000 states that if the activity is going to be implemented by a Competent Authority, then the Application for Environmental Clearance is to be forwarded to the NEC for approval.

3. INFORMATION REQUIRED FOR PREPARING AN APPLICATION FOR THE ENVIRONMENTAL CLEARANCE OF A PROJECT

The Application for Environmental Clearance (EC) of a project¹ is hereinafter referred to in this Guideline as the “Application.

- 1 Issuance of an Environmental Clearance is a prerequisite to the issuance of a Development Consent. (Ch II, article 8, Environmental Act, 2000)
- 2 The Competent Authority under the Ministry of Works and Human Settlement will issue the Environmental Clearance for projects that are defined in Annex 2 of the Regulation for the Environment Clearance of Projects, 2002²
- 3 The purpose of the Application is to assist the CA or the NEC review the project and to determine the level of environmental assessment required. It is therefore, important to provide concise and accurate information when completing the Application. When quantifying the environmental impacts, avoid using subjective statements such as “*the project will have minimal environmental impact*”

¹To establish a project without an Environmental Clearance, or to provide false, misleading or inaccurate information shall be an offence under Article 49 of the EA Act, 2000 and Section 36 and 37 of the Regulation for the Environmental Clearance of Projects, 2002.

²Each year the NEC requests the various Competent Authorities to review and add projects to Annex 2. Thus while the Regulation was issued in 2002, Annex 2 has and will continue to be revised. The latest issue of the Regulation needs to be referred to for the most recent update of Annex 2.

- 4 One of the main reasons for delays in making a decision to either issue environmental clearance or reject the Application is lack of adequate information in the Application. If the required information is not provided in detail, the CA or the NEC will have to seek further clarification from the Applicant which extends the review process
- 5 If the Application is subject to further environmental studies, the Applicant will need to submit Terms of Reference for the subsequent detailed investigations to the NEC for approval (*Article 15, Env Act, 2002*)
- 6 If any section is not relevant to your project, explain why this is the case and proceed to the next section
- 7 The numbering of sections for the Application should start from 1. Persons completing the Application are not obliged to maintain the same numbering sequence as used in the Guideline

3.1 Applicant's Details

Information that should be provided are:

- (i) Name of the project
- (ii) Name of the Applicant
- (iii) Present mailing address including telephone number, fax, and email (if any)
- (iv) Name of the environmental focal person³
- (v) Qualification/designation of the focal person
- (vi) Telephone number of environmental focal person
- (vii) If a consultant prepares the Application, give the name and contact details for the company that prepared the Application.

³Section 23 of the Regulation for the Environmental Clearance of Projects, 2002, may require the Applicant to delegate a focal person to ensure compliance with the terms of the Environmental Clearance. While Section 24 of the Regulation, requires that depending on the size of the project, the may need to establish an environmental unit responsible for ensuring compliance with the terms of the Environmental Clearance.

3.2 Project Objectives

List the main objective/s of project in bullet form.

3.3 Relevance to Overall Planning

Government funded development programs or activities are normally part of the Five Year Plan. State whether the proposed road construction is in line with the Five Year Plan or whether it is an ad hoc project. If it is an urban road, provide information that identifies the road with a particular Urban Development Plan.

3.4 Funding and Costs

Who is funding the project? (A donor, RGOB, a company, a private person, etc).

Show the estimated project cost. Out of the total estimated cost, how much of is allocated for environmental management. Separate the environmental costs into two components as follows:

- I Environmental costs related to construction. This may include both material costs and labour and supervision costs. For example, if the focal person is supervising both project construction and the environmental requirements, the salary of environmental focal person can be split based on an estimate of the percentage of time the person is supervising either activity. Separate the amounts spent on (a) environmental materials and (b) the amount spent on supervision of environmental activities. Include both amounts as separate entries in the environmental management budget
- I The budget for the project's mitigation measures. This is based on the type and size of the impacts that need to be mitigated. The environmental cost of the project mitigation measures is determined in section 4.11. Include this cost as a separate item in the environmental management budget

3.5 Project Description

3.5.1 Project Location

Provide the name and location of the takeoff point for the road. If the place has no name, mention the name of the nearest place and identify the takeoff point as being e.g. *2.4 km west of xxxx*. Follow the same procedure for the termination point. Show the estimated length of the road either in meters or in kilometres.

Construct a Table similar to Table 1 specifying the road location by stating which *Dzongkhag, geog* and town the road is located in or passing through. The location must be specified in terms of road chainage. For example chainage 0+000 – 12+230, Wangdue Dzongkhag, Lobesa Geog. **12+230 should be read as 12 km and 230m.**

Table 1: Road location details by Dzongkhag and Geog

| 2. C Road Chainage | | Dzongkhag | Geog | Town/Village |
|--------------------|----|-----------|------|--------------|
| From | To | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Attach maps as below:

- I For a road longer than 5km, include a 1:50,000 scale topographic map that shows the proposed road alignment together with alternative options, the location of construction camps, quarry sites, excavated material dump sites and existing infrastructure. The map should also show rivers, existing roads, Protected Area boundaries, Dzongkhag HQ, important historical sites and other main towns - if these are located within the area of the road

For roads less than 5km, a sketch map should be provided showing the above details

3.5.2 Category of Road

Specify the (i) road category and (ii) road length (km).

There are various categories of roads. From the following list of definitions (adapted from the Road Act, 2004) choose the category that best describes the type of road that the Applicant is proposing to construct.

National Highway: This is a designated road that connects important centres of the country. This is the highest standard road in the country and is currently being maintained by the Department of Roads (DOR) and the Indian DANTAK Border Roads Organization

Road: These connect one or two Dzongkhag headquarters with each other. District Roads are blacktopped and maintained by (DOR)

Feeder Road: These roads link the Dzongkhag headquarters to villages. The road is generally constructed up to the water bound macadam (WBM) layer and not blacktopped. This road is also maintained by DOR

Farm Road: These roads link agricultural production areas to national highways and other roads including feeder roads, primarily to enable the transportation of inputs to the farm and agricultural produce to the market. The road may or may not have stone soling. Farm roads are currently constructed and maintained by the Ministry of Agriculture. This is being decentralized to the Dzongkhags

Forest Road: These roads are located within a designated forest area. The road is generally not blacktopped but stone soling is laid. The Forestry Development Corporation constructs and maintains these roads

Urban Road: Are roads that are located within a municipal boundary and are under the control of the Municipal Corporation. In municipal areas, road construction and maintenance is normally done by the municipalities in close collaboration with the DOR

Access Road or private road: Are roads that are built and used in business or for their own purposes by individuals, organisations and business enterprises. The road may have a variety of finishes ranging from blacktopping to earth

Temporary Road: This road is generally closed and reclaimed once the activity is completed

Other: If the Applicant is proposing to construct a road, which does not fit any of these categories, include the road under the category "Others"

3.5.3 Road Specifications

Prepare a table similar to Table 2 with the required specifications.

Table 2: Road Specification/Quantities

| Item | Unit | Specification/Quantity |
|--|----------------|--------------------------------|
| Road RoW width | m | |
| Formation width | m | |
| Pavement width | m | |
| Pavement material | | |
| Volume of excavated material | m ³ | |
| Maximum road gradient | % | From chainage: To chainage: |
| Cross drains (pipes) | no | |
| Box culverts | no | |
| Bridges | no | |
| Total length of bridges | m | |
| V-shape side drain dimensions (horizontal x vertical) | cm | |
| Total length of V shape drains | m | |
| Box shape side drain dimensions (length x breadth x height) | cm | |
| Total length of box drains | m | |

3.5.4 Excavated Materials

Briefly state how the excavated materials will be managed and how they will be safely disposed off so as to avoid landslides and loss of forests and agricultural land.

3.5.5 Explosives

If the project requires explosives, show the total quantity that will be required and state the blasting technique that will be adopted; e.g. silent blasting, single shot hole blasting, simultaneous blasting, etc.

3.6 Alternative/s

Describe the possible road alternatives as follows:

Project Alternatives: Explain why this project is chosen over other alternative/s, such as cableway, tunnelling etc. If this is not relevant to your project, mention NA

Alignment Alternatives: Explain why this alignment is chosen over other options. This should be further supported by a map or sketch marking the alternative alignment/s. If there are no alternative options, mention NA

3.7 Public Consultation

Provide details of public consultation⁴ held with affected people.

The Applicant must explain to the affected people the expected impacts of the development, where they will occur and how they will be mitigated. Provide a record of the meeting/s and attach a list of the names of the affected people together with the date of consultation/s, details of their Geog and village, issues raised by the people and the agreement/s arrived at between the Applicant and the people to resolve these issues. Provide signatures or other proof of consultation/s with the affected people. Describe issues that remain unresolved.

⁴As per the Article 16 of the EA Act 2000 and Section 31 of the Regulation for the Environmental Clearance of Projects 2002, Public Consultation is mandatory. Establish the Public Consultation by meeting the requirements shown in Section 31.

3.8 Project Site Physical Environmental Details

3.8.1 Topography and Geology

Prepare a table similar to Table 3 with the relevant details.

Table 3: Topography and observations along the road

| Chainage (km+m) | Distance (m) | Side Slope in percentage (% or degrees) | Observations on geology and possible problems arising from Required | Method of Slope the terrain stabilization Abov road Below road |
|-----------------|--------------|---|---|--|
| From To | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

In the column **observations** describe the area's geology and possible problems arising from the terrain, such as susceptibility to landslides.

3.8.2 Water Course Crossings

Prepare a Table similar to Table 4 and provide details on each perennial river or stream crossing. Also specify if there are any downstream water users along the watercourse that may be affected by work on the road or in the stream channel. If yes, explain what the water is used for.

Table 4: Details of watercourses that will require crossing along the proposed road

| Chainage at which road crosses water course | Name of water course | Type of crossing | If bridge. Length of bridge (m) | Downstream water users– details | | |
|---|----------------------|------------------|---------------------------------|---------------------------------|------------------|-------------|
| | | | | Name community or Individual | House holds (no) | Type of use |
| | | | | | | |
| | | | | | | |

3.9 Project Site Ecological Description

3.9.1 Land Use/Vegetation

Prepare a Table similar to Table 5 to specify the type of land use the proposed road will pass through. Estimate the area needed to construct the road⁵ for each type of land use. The types of land use include; *Chushing, Kamshing, Tseri, Tsamdo, Sokshing*, Broadleaf forest, Coniferous forest, Scrubland, Wetland and others. In case of “others”, specify the type of land use. Should Mixed Forest (Broadleaf + Coniferous) occur allocate this to the Broadleaf category unless it is dominated by Coniferous Forest in which case allocate it to Coniferous Forest. Scrubland also includes disturbed areas of Broadleaf and Coniferous forest that have been recently logged and are now regenerating.

“Affected households” are those who own or occupy the area and are dependent on it for their livelihood. They may or may not be the actual landowner. The tenure can be private, community, monk body and government.

⁵This would be the road formation width plus the width of slope batters.

Table 5: Land use and forest clearance required for road construction

| Chainage from take off | | Land use | Area (m ²) | Tenure | Affected House holds (no) |
|------------------------|------|----------|-------------------------|--------|---------------------------|
| To | From | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Prepare a Table similar to Table 6 and use it to specify the area of land (m²) and type of land use required for each of the project facilities, which includes; labour camps, construction machinery parking and service areas, workshops etc.

Table 6: Areas Required for Project Facilities

| Facility | Land use | Area (m ²) | Tenure/ownership | Remarks (See Guideline) |
|--------------|----------|------------------------|------------------|-------------------------|
| Labour camp | | | | |
| Construction | | | | |
| camp | | | | |
| Others | | | | |

3.9.2 Protected Areas

Protected Areas include Wildlife Sanctuaries, National Parks, Nature Reserves, Conservation Areas and Biological Corridors.⁶ Information on Protected Areas can be obtained from the Nature Conservation Division, Ministry of Agriculture.

Provide information on the length of road that falls within the Protected area.

⁶Protected Areas are regulated by the Bhutan Forest and Nature Conservation Act, 1995.

A full environmental impact assessment is required for roads that pass through any part of a Protected Area⁷.

Using one or more of the methods shown below, the Applicant needs to collect information on the occurrence of flora and fauna (animals, birds and vegetation) which have special significance to Bhutan and to this area⁸. State whether the flora or fauna is rarely or commonly observed.

For roads which do not enter forestland, this may not be relevant.

- i. From the nearest Forest Office obtain a list of vegetation, animals and birds that exists in the project area and attach to this document
- ii. Conduct village interviews on the occurrence of vegetation, animals and birds in the project area and document the findings. Compare the findings to the list provided by the Forest Office. This finding must be attached to this document
- iii. During site visits, note the occurrence of vegetation types, animals and birds that occur along the road corridor. Provide a list of flora and fauna recorded along the road during these visits. Attach these findings to this document

Specify which of the methods was used to obtain the information.

⁷Section 62 of the Forest and Nature Conservation Rules, 2003 states that “...any construction, including motor roads, buildings, fences or any physical structures” is prohibited inside a Protected Area, except with a written permit or authorization, that would be issued by the Nature Conservation Division, Department of Forest.

⁸See Schedule 1 of the Forest and Nature Conservation Act, 1995, which lists Totally Protected Species.

3.10 Project Social Environment

3.10.1 Population

Using a Table similar to Table 7 show the number of households benefiting from the road project. When assessing the benefiting households, the applicant must count those households that are within two kilometres of either side of the proposed road. This applies to roads constructed by the Department of Roads and to farm roads. The source of the information must be cited. For example; own data collected through site assessment or data supplied by the *Gup*, etc.

Table 7: Project Beneficiaries. Households with possible access <2 km either side of the road

| Dzongkhag | Geog | Households (no) |
|-----------|------|-----------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| Total | | |

Source of information:

3.10.2 Loss of Houses, Services, Infrastructure and Cultural Heritage Sites

This section assesses, whether the siting of the road will create any adverse impacts (loss or disturbance) to any existing houses, infrastructure and cultural or heritage sites⁹. Provide details of the losses (either temporary disturbance or permanent loss) for facilities such as: (i) Services (ii) Houses (iii) Infrastructure (iv) Cultural or heritage site, etc.

⁹ Under the Rural Land Compensation Rates, 1996, sections KA-6(8) municipal areas and KA-6(9) rural areas, sets out procedures for the acquisition of land, rates of compensation for land and determining the valuation of houses, while Appendices C, D and E set out compensation rates for agricultural crops and fruit trees.

Services include: telephone, electricity, TV cabling, water supply and sewerage connections etc.

Houses can include shops and other buildings.

Infrastructure losses could include; roads, bridges, tracks, etc.

Cultural or heritage sites could include; *chortens*, *lhakhangs*, monuments, sacred sites (*ney*) etc. Where these sites may be disturbed by the proximity of the project, show the distance in metres from the cultural or heritage site to the project.

Mark these sites on the same map requested in Section 4.5.1.

Provide details of the losses using the format shown in Table 8.

Table 8: Loss or disturbance of existing services and infrastructure

| Type of Loss | (no) | Description of disturbance |
|-----------------|------|--------------------------------|
| Services (list) | | |
| Houses | | |
| Infrastructure | | |
| Cultural Sites | | Distance in m from disturbance |
| Heritage Sites | | Distance in m from disturbance |

3.10.3 Aesthetics

Assess the possible adverse visual impacts that may arise from the construction of the road such as whether the road may be highly visible from a settlement or scenic viewpoint. Another possible visual impact may be scarring from sliding debris.

3.11 Project Impacts and Mitigation Measures

From the information provided in the preceding sections, identify the impacts that will occur from these activities and list these in tabular format similar to that shown below. Impacts can occur from: (i) the *Location* of the project (ii) the *Design* of the project (iii) from *Construction* related activities and (iv) from *Operation* of the project. For each negative impact provide mitigation measures and the approximate cost required to implement the mitigation measure.

The applicant may use the following table.

| Type of Negative Impact | Possible Mitigation Measure/s | Estimated Mitigation Cost (Nu) |
|-------------------------|-------------------------------|--------------------------------|
| | | |

The Applicant will be responsible for ensuring that the Environmental Terms that are attached to the Environmental Clearance are carried out. These become the responsibility of the Holder of the Environmental Clearance. Where a Contractor is employed the Holder will be held responsible for ensuring the Contractor abides by the Environmental Terms. The Environmental Terms are to be attached to the Contract Document so that the Contractor has a clear understanding of the environmental requirements that are to be adhered to during construction. At the time of tendering, the Contractor will be required to prepare a Contractor's Site Environmental Management Plan (CSEMP) that shows how the Contractor will implement the Environmental Terms that are included as part of the Tender Specifications. The CSEMP is to be included as part of the Contract Documents and is to be evaluated as part of the overall tender. The NEC can assist with information in this area.

The Applicant will also have to provide the following plans if these are relevant. These are to be attached to the Application.

- i. The Land Compensation and Resettlement Plan
- ii. Worker Health and Safety Plan

3.12 Monitoring Program

Monitoring responsibilities including other provisions that the Applicant/Holder and Contractor will need to address at the time of submitting a tender for the work will be included as part of the Environmental Terms¹⁰ which will be attached to the Environmental Clearance.

Regular monitoring will be the responsibility of the Holder of the Environmental Clearance and will be detailed within the Environmental Clearance.

Either the CA or the NEC may conduct unannounced monitoring and checks.

3.13 Checklist for No Objection Certificate

In order to obtain an Environmental Clearance for the project, an NOC must be obtained from all relevant parties. Attach these documents to the Application. Below is a checklist of agencies from whom NOCs may be required.

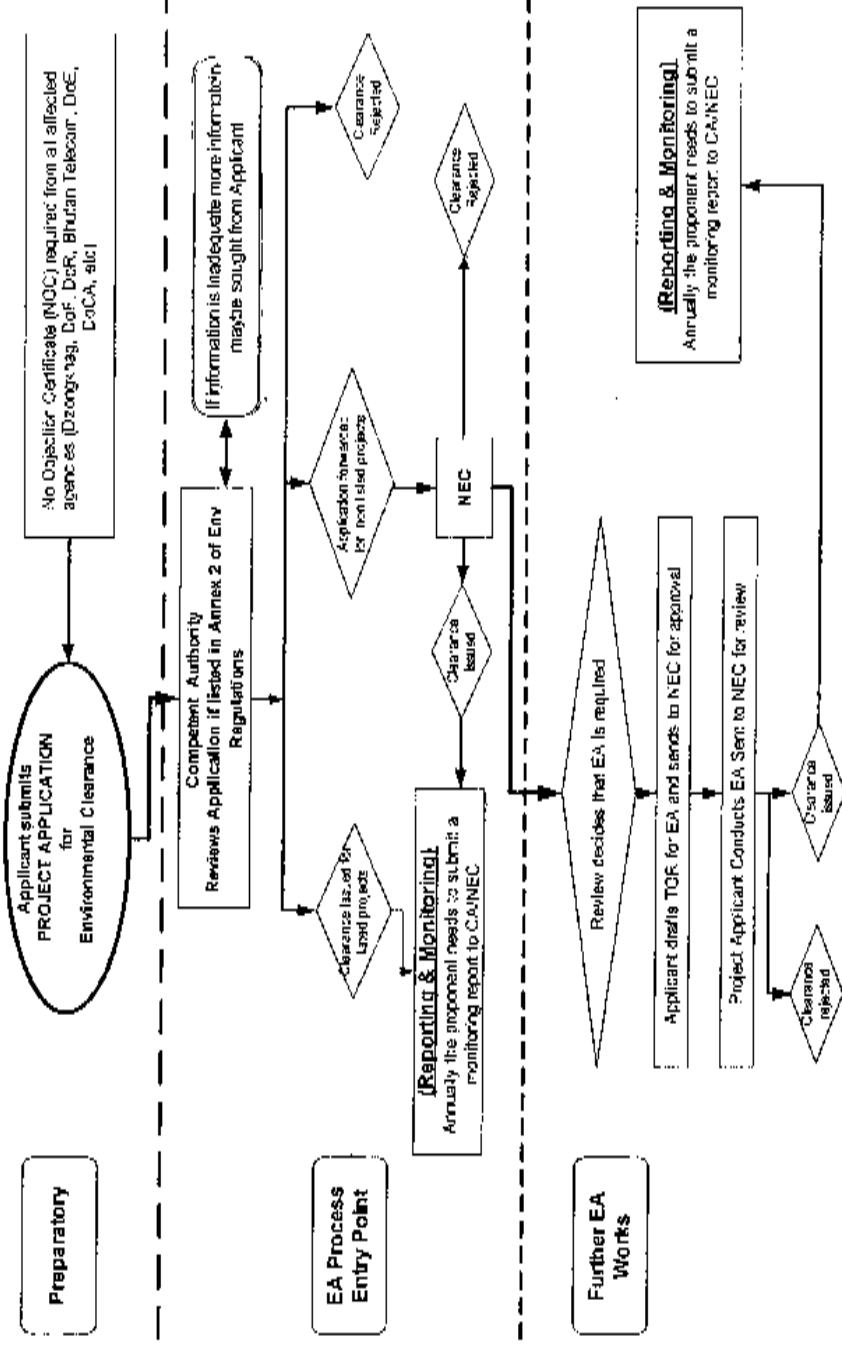
¹⁰Article 39 of the Environmental Act, 2000, establishes the need to attach environmental terms to the Environmental Clearance.

| Agency/concerned people to issue NOC | Why/when |
|---|--|
| Dzongkhag/City Corporation | Dzongkhag Administrative approval |
| DoF | Should the project damage or acquire <i>Tsamdo</i> |
| DoF | Should the project damage or acquire <i>Sokshing</i> |
| Department of Culture | Should the project be located within 50m of a cultural or religious site |
| Nature Conservation Division | within boundary of a Protected Area |
| Municipal Authority | within 50m of a public park |
| Private owner | within 50m of a human dwelling |
| Private property owners | Should the project need to acquire private property |
| Department of Health | within 50m of hospital |
| Department of Education | within 50m of school |
| Department of Energy | Should the project require the relocation of power transmission line |
| Bhutan Telecom Authority | Should the project require relocation of telephone lines |
| Department of Roads | Should the project require access from highways and feeder roads |

4 ENVIRONMENTAL ASSESSMENT PROCEDURES

A flowchart is attached showing how the Application for Environmental Clearance will be processed.

ENVIRONMENTAL ASSESSMENT PROCEDURE FOR ROAD AND HIGHWAY PROJECTS



Note: For environmental assessment timeline refer Annex 1 of the EA Regulation 2002