

# **ROYAL GOVERNMENT OF BHUTAN**

MINISTRY OF COMMUNICATIONS

DEPARTMENT OF ROADS



## **ENVIRONMENTAL CODES OF PRACTICE**

HIGHWAYS AND ROADS

Urs Schaffner & Karma Jimba, Thimphu,

April 2000

# **ENVIRONMENTAL CODES OF PRACTICE**

## **HIGHWAYS AND ROADS**

This draft living document (ECP) is commissioned by the Division of Roads under The World Bank and the Netherlands Development Organization Technical Assistance

**Urs Schaffner & Karma Jimba, Thimphu**

**February 2000**

## ACRONYMS

ADB	Asian Development Bank
DoP	Division of Power
DoR	Division of Roads
DYT	Dzongkhag Yargye Tshogchung
EA	Environmental Assessment
ECP	Environmental Codes of Practice
FSD	Forestry Services Division
GSoB	Geological Survey of Bhutan
GYT	Geog Yargye Tshogchung
IEE	Initial Environmental Examination
MoC	Ministry of Communications
MoHA	Ministry of Home Affairs
NA	Not Applicable
NEC	National Environmental Commission
PIU	Project Implementation Unit
RGoB	Royal Government of Bhutan
RoW	Right of Way
RSTA	Road Surface Transport Authority
SMEC	Snowy Mountain Engineering Company
SoB	Survey of Bhutan
ToR	Terms of Reference
WB	The World Bank

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# **ENVIRONMENTAL DISCHARGE STANDARD**

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



དཔལ་ལྷན་འབྲུག་གཞུང་།  
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 EAAct 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.

  
18.8.2004

Nado Rinchen  
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## 1 Environmental Standard for Water<sup>1</sup>

For specific industries discussed below, the standards mentioned under each table should be followed. However, for parameters not covered under each specific industry, the standards of general industry will be applied.

*Table 1-1: Discharge standard for cooling Tower*

Parameters	Maximum value	Unit
Chlorine	0.5	mg/L

*Table 1-2: Discharge standard for Food Industry*

Parameters	Maximum value	Unit
Ammonia (as N)	15	mg/L
Pesticide residuals	0.05	mg/L

*Table 1-3: Discharges standard for Textile and Carpet Industry*

Parameters	Maximum value	Unit
Copper	0.5	mg/L
NH <sub>3</sub> as N	8.0	mg/L
Phenol	0.5	mg/L
Sulfide	0.2	mg/L

*Table 1-4: Discharge standard for Fibreboard Industry*

Parameters	Maximum value	Unit
Formalin	No acceptable level	No acceptable level
NH <sub>3</sub> as N	8.0	mg/L
Phenol	0.5	mg/L

*Table 1-5: Discharge standard for Electric Arc Furnace wastewater stream*

Parameters	Maximum value	Unit
Arsenic	0.1	mg/L
Chromium (VI)	0.1	mg/L
Lead	0.1	mg/L
Mercury	0.001	mg/L

<sup>1</sup>The standard for drinking water is derived from the World Health Organization (WHO) standard.

*Table 1-6: Discharge standard for Industries (general)*

<b>Parameters</b>	<b>Maximum value</b>	<b>Unit</b>
pH	6-9	
Temperature increase	<3	oC
Total suspended solids	50.0	mg/L
Oil and grease	10.0	mg/L
BOD5	50.0	mg/L
COD	250.0	mg/L
Coliforms	400	Mpn/100mL
Ammonia (as N)	50.0	mg/L
Arsenic	0.25	mg/L
Benzine	0.1	mg/L
Cadmium	0.1	mg/L
Chromium total	0.5	mg/L
Copper	3.0	mg/L
Cyanide	0.2	mg/L
Iron	3.5	mg/L
Lead	0.8	mg/L
Mercury	0.005	mg/L
Nickel	3.0	mg/L
Phenol	2.0	mg/L
Sulphide	10.0	mg/L
Zinc	5.0	mg/L
Total metals	10.0	mg/L

*Table 1-7: Discharge standard for Mining*

<b>Parameters</b>	<b>Maximum value</b>	<b>Unit</b>
pH	6-9	
Total suspended solids	50	mg/L
Oil and grease	10	mg/L
Cyanide (total)	0.2	mg/L
Arsenic	0.1	mg/L
Cadmium	0.1	mg/L
Chromium (VI)	0.1	mg/L
Iron	3.5	mg/L

Copper	0.5	mg/L
Lead	0.1	mg/L
Mercury	0.001	mg/L
Nickel	0.5	mg/L
Nitrate (explosive residual)	2.0	mg/L
Total metals	10	mg/L
Zinc	2.0	mg/L

## 2 Environmental Standard for Air

*Table 2-1: Emission standard for Industry at Stack*

Parameters	Standard	Unit
Particulates	300-400	mg/Nm <sup>3</sup>
Volatile organic compounds (VOCs)	20	mg/Nm <sup>3</sup>
Oxides of Nitrogen (NOX)	470	mg/Nm <sup>3</sup>
Oxides of sulphur (SOX)	1,000	mg/Nm <sup>3</sup>
Carbon Monoxide (CO)	5,000	mg/Nm <sup>3</sup>
Hydrogen Sulphide (H <sub>2</sub> S) 140	mg/Nm <sup>3</sup>	
Ammonia	35	mg/Nm <sup>3</sup>
Arsenic	20	mg/Nm <sup>3</sup>
Cadmium	0.05	mg/Nm <sup>3</sup>
Chlorine	30	mg/Nm <sup>3</sup>
Copper	30	mg/Nm <sup>3</sup>
Fluoride	25	mg/Nm <sup>3</sup>
Lead	30	mg/Nm <sup>3</sup>
Mercury	3	mg/Nm <sup>3</sup>

*Table 2-2: Motor vehicle emission standard*

Parameter	Measuring system	Maximum permissible limit (%)	Unit
Diesel vehicle	Bosch	80	Hertz Smoke Unit (HSU)
Gasoline vehicle	Normal	5.0	Volume CO

### 3 Environmental Standard for Noise

*Table 3-1: Noise standard as per land use category<sup>2</sup>*

Land use Category	Max Leq		
	Day <sup>3</sup>	Night <sup>4</sup>	Unit
Industrial	75	70	Db (decibel)
Commercial	65	55	DB
Rural/Residential	55	45	DB

<sup>2</sup> Noise levels to be achieved at the plant boundary

<sup>3</sup> Day time equals 6AM - 9PM

<sup>4</sup> Night time equals 9PM - 6AM

*COPY*

# **Environmental Assessment of Drujegang – Balung Road Dagana**

**Rural Access Project,  
Department of Roads, MOWHS  
Thimphu: Bhutan**

April, 2006

**Final Report**



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スコーピング結果一覧表

環境項目	ラフカー橋	パンチュ橋	ニヤラチュ橋	ブリチュ橋	チャンチャー橋	ローリン橋	課題(対策等)
橋梁現況写真							
	該当なし	該当なし	該当なし	該当なし	森林局用地の一部収用	該当なし	国有地の移転手続必要
	灌漑水路道路橋断あり	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	灌漑用水保全対策の検討
	仮設橋工事による交通遮断	工事に伴う通行制限	工事に伴う通行制限	工事に伴う通行制限	工事に伴う通行制限	工事に伴う通行制限	交通制限の最小化対策および関係者への周知
	仮設橋工事による交通遮断	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	交通遮断の最短化及び関係者への周知
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	工事中のゴミ発生あり	工事中のゴミ発生あり	工事中のゴミ発生あり	工事中のゴミ発生あり	工事中のゴミ発生あり	工事中のゴミ発生あり	発生抑制と適正処理検討
	廃材・残土発生あり	廃材・残土発生あり	廃材・残土発生あり	廃材・残土発生あり	廃材・残土発生あり	廃材・残土発生あり	再利用、再生利用検討
	大雨災害のリスクあり	大雨災害のリスクあり	大雨災害のリスクあり	大雨災害のリスクあり	大雨災害のリスクあり	大雨災害のリスクあり	工事時期と防災対策
自然環境	軽微な地形変更あり	軽微な地形変更あり	軽微な地形変更あり	軽微な地形変更あり	軽微な地形変更あり	軽微な地形変更あり	橋梁位置と設計による改変最小化対策検討
	工事中表土流出可能性有り	工事中表土流出可能性有り	工事中表土流出可能性有り	工事中表土流出可能性有り	工事中表土流出可能性有り	工事中表土流出可能性有り	流出防止対策検討
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	該当なし	該当なし	該当なし	該当なし	該当なし	該当なし	
	影響の可能性なし	環境保全地域に位置し、影響の可能性あり	影響の可能性なし	影響の可能性なし	影響の可能性なし	環境保全地域に位置し、影響の可能性あり	工事時期の検討、騒音抑制、発破・夜間作業禁止
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	景観に配慮したデザイン
	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事時期の選定と濁水対策工法の検討
公害	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	影響の可能性なし	
	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	工事期間中に発生の可能性あり	低騒音建機使用、低騒音工法の検討
	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	
	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	
	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	発生の可能性なし	
	ダム工事との調整、周辺農家集落への配慮必要						モニタリングとフォローアップ調査の計画・実施
	環境承認の取得が必要	環境承認の取得が必要	環境承認の取得が必要	環境承認の取得が必要	環境承認の取得が必要	環境承認の取得が必要	IEE調査後申請手続中
	B	B	B	B	B	B	当初判定のまま据え置き
その他のインパクト							
IEE, EIA の必要性							
環境カテゴリー判定							







འབྲུག་རྒྱལ་ཁབ་། དཔལ་ལྷན་འབྲུག་གཞུང་།  
**ROYAL GOVERNMENT OF BHUTAN**  
**MINISTRY OF WORKS & HUMAN SETTLEMENT**  
**DEPARTMENT OF ROADS**  
**INVESTIGATION AND DEVELOPMENT DIVISION**

Ref. no. DoR/I&D/Env/2006-07/12/ ༩༥༨

Date: 24.10.2017

To

The Chief Planning Officer  
Planning and Policy Division  
Ministry of Works & Human Settlement  
Thimphu

**Sub: Forwarding of Checklist for Environmental Clearance.**

Madam,

Enclosed please find herewith the checklist for processing environmental clearance for the replacement of 6 existing bridges proposed under the Japan International Cooperation Agency (JICA), Project for Reconstruction of Bridges (Phase III) on the Wangdue - Sar pang Highway (National Highway No. 5).

In this regard it would be appreciated if you could kindly issue environmental clearance.

Yours faithfully,

(Phuntsho Wangdi)

Director,

DoR: Thimphu

Cc:

1. The Hon'ble Secretary, Ministry of Works & Human Settlement, Thimphu for kind information.
2. The Head, Technical Division, NECS, Thimphu for kind information.
3. The Chief Engineer, Bridge Division, DoR.
4. The Chief Engineer, Roads Division, DoR.
5. The Executive Engineers, Field Division, Lobesa and Sarbang.

# CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER LAWAKHA CHU

## 1. GENERAL INFORMATION

### 1) Location of the Bridge:

- |             |                |
|-------------|----------------|
| a) Village  | : Lawakha      |
| b) Geog     | : Gasa Tshowom |
| c) District | : Wangdue      |

- |  |                                       |
|--|---------------------------------------|
| 2. Purpose and Need of the Bridge                  | : Replacement of old existing Bridge. |
| 3. Bridge over Perennial or seasonal stream/ river | : Perennial                           |
| 4. Name of the Bridge                              | : Lawakha Bridge                      |
| 5. Type of Bridge                                  | : Steel Bridge                        |
| 6. Single or Multiple Bridge span                  | : Single                              |
| 7. Total Bridge Span (feet)                        | : 124 Feet (38 m)                     |
| 8. Bridge Width (m)                                | : 6.0 m                               |
| 9. Loading Capacity (Tonne)                        | : 40 tonnes                           |
| 10. Sidewalk Width (m)                             | : -                                   |
| 11. Bridge Designer/Address                        | : JICA                                |
| 12. Name of the Construction Company               | : NA                                  |
| Address  | : NA                                  |
| 13. Time frame of the project                      | :                                     |
| Project start date                                 | :                                     |
| Project completion date                            | :                                     |

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division, and Department of Forestry Services is required as per EA Act 2000.

**=> No, the proposed bridge does not pass through protected areas/national parks/wildlife corridor.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> No**

- a) Type of blasting technique :
- b) Type of explosives :
- c) Amount of explosives required :

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> Irrigation Channel lies in the vicinity of the bridge site for paddy field below the road.**

- 6) How would the debris (spoil soil and rocks) from the excavation works would be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The spoil soil and rocks from the excavation is very minimal and this will be utilized as back filling in abutment walls and embankment works.**

- 7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The excavated materials will be prevented from getting into the water by providing boulder barriers and walls if necessary.**

- 8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No**

- 9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> No**

- 10) Impact from laborers/worker:

- a) Number of laborers (both expatriate and local) :

**=> NA**

- b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc. (Use additional Sheet)

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

- 11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC from NCCA.

**=> No**

- 12) Environmental Management plan:

- 1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

a) Environmental impacts : **Pressure on fuel wood, air pollution due to Garbage pollution**

b) Social impacts : **- No -**

c) Cultural impacts : **- No -**

- 2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

**=> Restoration of labour camp site after completion of works. Construction of labour camp as per conditions laid down in the ECoP (Roads & Highways).**

3) Who will manage the mitigation measures?

**=> The mitigation measures shall be managed by the Field Division, DoR, Lobesa and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

1) Who will monitor the above activities?

**=> The Field Division, DoR, Lobesa and the Department of Roads.**

2) What is the monitoring schedule?

**=> The monitoring schedule will be carried out as per the ECOP and as per the terms & conditions of the contract agreement.**

3) Contact address of the Environmental focal person:

Name	: Sonam Choki
Designation	: Deputy Executive Engineer
Organization/Agency	: Environmental Unit, Investigation & Development Division, DoR
Telephone No.	: 321571/105
Fax No.	: 335344



# CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER BASOCHU

## 1. GENERAL INFORMATION

### 1) Location of the Bridge:

- |    |          |                     |
|----|----------|---------------------|
| a) | Village  | : Basochu           |
| b) | Geog     | : Daga/Gasa Tshowom |
| c) | District | : Wangdue           |

- |  |  |
|--|--|
| 2. Purpose and Need of the Bridge                  | : Replacement of old existing Bridge.  |
| 3. Bridge over Perennial or seasonal stream/ river | : Perennial  |
| 4. Name of the Bridge                              | : Basochu Bridge   |
| 5. Type of Bridge                                  | : Steel Bridge   |
| 6. Single or Multiple Bridge span                  | : Single   |
| 7. Total Bridge Span (feet)                        | : Option I - 147 Feet (45 m)<br>Option II - 130 Feet (40m)<br>Option III - 98 Feet (30m) |
| 8. Bridge Width (m)                                | : 6.0 m  |
| 9. Loading Capacity (Tonne)                        | : 40 tonnes  |
| 10. Sidewalk Width (m)                             | : -  |
| 11. Bridge Designer/Address                        | : JICA   |
| 12. Name of the Construction Company               | : NA   |
| 13. Time frame of the project                      | : NA   |
| Address  | : NA   |
| Project start date                                 | :  |
| Project completion date                            | :  |

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division, and Department of Forestry Services is required as per EA Act 2000.

**=> No, the proposed bridge does not pass through protected areas/national parks/wildlife corridor.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> No**

- a) Type of blasting technique :
- b) Type of explosives :
- c) Amount of explosives required :

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> No.**

- 6) How would the debris (spoil soil and rocks) from the excavation works would be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The spoil soil and rocks from the excavation is very minimal and there will be the construction materials from the demolition of the foundation of the old bridge which will be utilized as back filling in abutment walls and embankment works.**

7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The excavated materials will be prevented from getting into the water by providing boulder barriers and walls if necessary.**

8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No**

9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> There will be no significant impacts on air and noise in and around the project area, the surface water quality will not be affected as long as the debris , grease and fuel are protected from flowing into the river during construction.**

10) Impact from laborers/worker:

a) Number of laborers (both expatriate and local) :

**=> NA**

b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc.

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC from NCCA.

**=> No, there aren't any historical and cultural sites in the vicinity of the project Area.**

12) Environmental Management plan:

1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

- |                          |  |
|--------------------------|--|
| a) Environmental impacts | : Pressure on fuel wood, garbage oil and grease Pollution. |
| b) Social impacts        | : There are no settlements near the project area           |
| c) Cultural impacts      | : - No -   |

2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

**=> The labour camp site will be restored to its original position at the end of the project. To minimize the pressure on fuel wood the laborers are to be provided with fuel for consumption.**

3) Who will manage the mitigation measures?

**=> The mitigation measures shall be managed by the Field Division, DoR, Lobesa and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

1) Who will monitor the above activities?

**=> The Field Division, DoR, Lobesa and the Department of Roads.**

2) What is the monitoring schedule?

**=> The monitoring schedule will be carried out as per table 2.41 of the ECoP for Highways and Roads and as per the terms & conditions of the contract agreement.**

3) Contact address of the Environmental focal person:

Name	: <b>Sonam Choki</b>
Designation	: <b>Deputy Executive Engineer</b>
Organization/Agency	: <b>Environmental Unit, Investigation &amp; Development Division, DoR</b>
Telephone No.	: <b>321571/105</b>
Fax No.	: <b>335344</b>

# **CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER NYARACHU**

## **1. GENERAL INFORMATION**

### **1) Location of the Bridge:**

- |             |            |
|-------------|------------|
| a) Village  | : Nyarachu |
| b) Geog     | : Patila   |
| c) District | : Tsirang  |

2. Purpose and Need of the Bridge : **Replacement of old existing bridge, the edge of the road has been washed away by the recent flood and due to the debris the water level has increased. A new bridge at a higher level with a longer span is proposed.**

3. Bridge over Perennial or seasonal stream/ river : **Perennial**

4. Name of the Bridge : **Nyarachu Bridge**

5. Type of Bridge : **Steel Bridge**

6. Single or Multiple Bridge span : **Single**

7. Total Bridge Span (feet) : **163 Feet (50 m)**

8. Bridge Width (m) : **6.0 m**

9. Loading Capacity (Tonne) : **40 tonnes**

10. Sidewalk Width (m) : **-**

11. Bridge Designer/Address : **JICA**

12. Name of the Construction Company : **NA**

Address : **NA**

13. Time frame of the project :

Project start date :

Project completion date :

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division and Department of Forestry Services is required as per EA Act 2000.

**=> Yes, the proposed bridge falls on the Black Mountain National Park.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No, A private Quarry is under operation next to the bridge site.**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> No**

- a) Type of blasting technique :
- b) Type of explosives :
- c) Amount of explosives required :

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> No.**

- 6) How would the debris (spoil soil and rocks) from the excavation works be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The spoil soil and rocks from the excavation is very minimal and this will be utilized as back filling in abutment walls and embankment works.**

- 7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The excavated materials will be prevented from getting into the water by providing boulder barriers and walls if necessary.**

- 8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No, there are no major land changes anticipated due to the construction of the bridge. The new bridge construction with longer span has positive impact on the flow of the river by allowing the natural flow of the river which has been controlled due to the shorter span of the old bridge.**

- 9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> No**

- 10) Impact from laborers/worker:

- a) Number of laborers (both expatriate and local) :

**=> NA**

- b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc.

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

- 11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC form NCCA.

**=> No**

- 12) Environmental Management plan:

- 1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

a) Environmental impacts : **Pressure on fuel wood, garbage oil and grease pollution.**

b) Social impacts : **- No -**

c) Cultural impacts : **- No -**

- 2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

**=> The labour camp site will be restored to its original position at the end of the project. To minimize the pressure on fuel wood the laborers are to be provided with fuel for consumption.**

**3) Who will manage the mitigation measures?**

**=> The mitigation measures shall be managed by the Field Division, DoR, Tsirang and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

**1) Who will monitor the above activities?**

**=> The Field Division, DoR, Tsirang and the Department of Roads.**

**2) What is the monitoring schedule?**

**=> The monitoring schedule will be carried out as per table 2.4.1 of the ECoP for Highways and Roads and as per the terms & conditions of the contract agreement.**

**3) Contact address of the Environmental focal person:**

<b>Name</b>	<b>: Sonam Choki</b>
<b>Designation</b>	<b>: Deputy Executive Engineer</b>
<b>Organization/Agency</b>	<b>: Environmental Unit, Investigation &amp; Development Division, DoR</b>
<b>Telephone No.</b>	<b>: 321571/105</b>
<b>Fax No.</b>	<b>: 335344</b>



# **CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER BURICHU**

## **1. GENERAL INFORMATION**

### **1) Location of the Bridge:**

- |             |           |
|-------------|-----------|
| a) Village  | : Burichu |
| b) Geog     | : Patila  |
| c) District | : Tsirang |

2. Purpose and Need of the Bridge : Replacement of old existing bridge, and also to avoid the sharp turn which makes the big vehicles and machineries difficult to enter the bridge and the rocky cliff.

3. Bridge over Perennial or seasonal stream/ river : Perennial

4. Name of the Bridge : Burichu Bridge

5. Type of Bridge : Steel Bridge

6. Single or Multiple Bridge span : Single

7. Total Bridge Span (feet) : 183 Feet (56 m)

8. Bridge Width (m) : 6.0 m

9. Loading Capacity (Tonne) : 40 tons

10. Sidewalk Width (m) : -

11. Bridge Designer/Address : JICA

12. Name of the Construction Company : NA

Address : NA

13. Time frame of the project :

Project start date :

Project completion date :

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division and Department of Forestry Services is required as per EA Act 2000.

**=> Yes, the proposed bridge falls on the Black Mountain National Park.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No.**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> No**

- a) Type of blasting technique :
- b) Type of explosives :
- c) Amount of explosives required :

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> No.**

- 6) How would the debris (spoil soil and rocks) from the excavation works would be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The spoil soil and rocks from the excavation is very minimal and this will be utilized as back filling in abutment walls and embankment works.**

- 7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The excavated materials will be prevented from getting into the water by providing boulder barriers and walls if necessary.**

- 8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No, there are no major land changes anticipated due to the construction of the bridge.**

- 9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> No**

- 10) Impact from laborers/worker:

- a) Number of laborers (both expatriate and local) :

**=> NA**

- b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc.

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

- 11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC from NCCA.

**=> No**

- 12) Environmental Management plan:

- 1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

a) Environmental impacts : **Pressure on fuel wood, garbage oil and grease pollution.**

b) Social impacts : **- No -**

c) Cultural impacts : **- No -**

- 2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

**=> The labour camp site will be restored to its original position at the end of the project. To minimize the pressure on fuel wood the laborers are to be provided with fuel for consumption.**

**3) Who will manage the mitigation measures?**

**=> The mitigation measures shall be managed by the Field Division, DoR, Tsirang and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

**1) Who will monitor the above activities?**

**=> The Field Division, DoR, Tsirang and the Department of Roads.**

**2) What is the monitoring schedule?**

**=> The monitoring schedule will be carried out as per table 2.4.1 of the ECoP for Highways and Roads and as per the terms & conditions of the contract agreement.**

**3) Contact address of the Environmental focal person:**

Name	: Sonam Choki
Designation	: Deputy Executive Engineer
Organization/Agency	: Environmental Unit, Investigation & Development Division, DoR
Telephone No.	: 321571/105
Fax No.	: 335344

# **CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER CHANGCHEY CHU**

## **1. GENERAL INFORMATION**

### **1) Location of the Bridge:**

- |             |             |
|-------------|-------------|
| a) Village  | : Changchey |
| b) Geog     | : Patila    |
| c) District | : Tsirang   |

2. Purpose and Need of the Bridge : Replacement of old existing bridge, and also to avoid the sharp turn which makes the big vehicles and machineries difficult to enter the bridge and the rocky cliff.

3. Bridge over Perennial or seasonal stream/ river : Perennial

4. Name of the Bridge : Changchey Bridge

5. Type of Bridge : Steel Bridge

6. Single or Multiple Bridge span : Single

7. Total Bridge Span (feet) : 173 Feet (53 m)

8. Bridge Width (m) : 6.0 m

9. Loading Capacity (Tonne) : 40 tonnes

10. Sidewalk Width (m) : -

11. Bridge Designer/Address : JICA

12. Name of the Construction Company : NA

Address : NA

13. Time frame of the project :

Project start date :

Project completion date :

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division and Department of Forestry Services is required as per EA Act 2000.

**=> No, the proposed bridge does not pass through protected areas/national parks/wildlife corridor.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No.**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> No**

- a) Type of blasting technique :
- b) Type of explosives :
- c) Amount of explosives required :

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> No, the bridge doesn't pass through any private property. However there is a Forest check office located near the bridge site which will not be affected but will have to inform them about the construction.**

- 6) How would the debris (spoil soil and rocks) from the excavation works would be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The stones from the foundation slab of the old bridge need to removed this will be reused this will be utilized as back filling in abutment walls, embankment works and soling of the road.**

7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The stone slabs will be prevented from getting into the water by proper removal and also by providing boulder barriers and walls if necessary.**

8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No, there are no major land changes anticipated due to the construction of the bridge.**

9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> No**

10) Impact from laborers/worker:

a) Number of laborers (both expatriate and local) :

**=> NA**

b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc.

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC from NCCA.

**=> No**

12) Environmental Management plan:

1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

a) Environmental impacts : **Pressure on fuel wood, garbage oil and grease pollution.**

b) Social impacts : **- No -**

c) Cultural impacts : **- No -**

2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

**=> The labour camp site will be restored to its original position at the end of the project. To minimize the pressure on fuel wood the laborers are to be provided with fuel for consumption.**

3) Who will manage the mitigation measures?

**=> The mitigation measures shall be managed by the Field Division, DoR, Tsirang and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

1) Who will monitor the above activities?

**=> The Field Division, DoR, Tsirang and the Department of Roads.**

2) What is the monitoring schedule?

**=> The monitoring schedule will be carried out as per table 2.4.1 of the ECoP for Highways and Roads and as per the terms & conditions of the contract agreement.**

3) Contact address of the Environmental focal person:

Name	: Sonam Choki
Designation	: Deputy Executive Engineer
Organization/Agency	: Environmental Unit, Investigation & Development Division, DoR
Telephone No.	: 321571/105
Fax No.	: 335344



# **CHECKLIST TO PROCESS FOR ENVIRONMENTAL CLEARANCE FOR REPLACEMENT OF BAILEY BRIDGE OVER LORING CHU**

## **1. GENERAL INFORMATION**

### **1) Location of the Bridge:**

- |             |           |
|-------------|-----------|
| a) Village  | : Loring  |
| b) Geog     | : Loring  |
| c) District | : Tsirang |

2. Purpose and Need of the Bridge : Replacement of old existing bridge, and also to avoid the sharp turn which makes the big vehicles and machineries difficult to enter the bridge and also to avoid the shooting boulders on the existing bridge.

3. Bridge over Perennial or seasonal stream/ river : Perennial

4. Name of the Bridge : Loring Bridge

5. Type of Bridge : Steel Bridge

6. Single or Multiple Bridge span : Single

7. Total Bridge Span (feet) : Option I - 320 Feet (98 m)  
Option II – 277 Feet (85m)

8. Bridge Width (m) : 6.0 m

9. Loading Capacity (Tonne) : 40 tonnes

10. Sidewalk Width (m) : -

11. Bridge Designer/Address : JICA

12. Name of the Construction Company : NA

Address : NA

13. Time frame of the project :

Project start date :

Project completion date :

## 2. ENVIRONMENTAL & SOCIAL ASPECTS

- 1) Does the proposed Bridge Construction pass through protected areas/national parks/wildlife corridor. If "Yes" approval from Nature Conservation Division and Department of Forestry Services is required as per EA Act 2000.

**=> No, the proposed bridge does not pass through protected areas/national parks/wildlife corridor.**

- 2) Does the proposed Bridge construction involve quarrying activities? If "Yes" prior approval from the Department of Geology and Mines should be obtained.

**=> No.**

- 3) Does the proposed project involve use of explosives? If "Yes" specify:

**=> Yes, silent blasting is required to remove the rock on the edge of the road to lay foundation base of the new bridge.**

- |    |                               |                   |
|----|-------------------------------|-------------------|
| a) | Type of blasting technique    | : Silent Blasting |
| b) | Type of explosives            | : Aconex          |
| c) | Amount of explosives required | :                 |

Also provide evidence that the personnel involved in blasting works are properly trained and that proper handling /storage of blasting explosive materials are in place.

- 4) Are there any listed species of flora & fauna in the vicinity of the project area (Forest & Nature Conservation Act of 1995, Schedule 1)?

**=> No**

- 5) Does the bridge pass through any private property? If "Yes" NOC should be obtained from the affected parties.

**=> No, the bridge doesn't pass through any private property.**

- 6) How would the debris (spoil soil and rocks) from the excavation works would be disposed off? Specify if there is any identified site for disposal of these debris or other ways of proper disposal.

**=> The spoil soil and rocks from the excavation is very minimal and this will be utilized as back filling in abutment walls, embankment works and rocks for soling of the road.**

- 7) Are there enough mitigation measures to avoid the excavated spoil materials from getting into the water body?

**=> The excavated materials will be prevented from getting into the water by providing boulder barriers and walls if necessary.**

- 8) Are there any major Land use changes anticipated due to the construction of the bridge with the secondary development that will occur due to the bridge construction?

**=> No, there are no major land changes anticipated since it is the replacement of the existing bridge.**

- 9) Would there be significant impacts on the Air, Noise and surface water quality in and around the project area due to the proposed project?

**=> No**

- 10) Impact from laborers/worker:

- a) Number of laborers (both expatriate and local) :  
**=> NA**

- b) Waste Management Plan for all kinds of waste generated such as spent fuel from machineries (grease & oils) , human waste etc.

**=> Proper sanitary facility such as pit latrines are to be provided to the laborers involved at the site along with borrow pits for dustbin. The glass, pet bottles and the tin cans are to be collected and sold to the local dealers.**

- 11) Are there any historical and cultural sites (Lhakangs, monasteries) in the vicinity of the project area? If "Yes" obtain NOC from NCCA.

**=> No**

- 12) Environmental Management plan:

- 1) From the above information, what potential environmental, social and cultural impacts are foreseen as a result of the Bridge Construction?

- a) Environmental impacts : **Pressure on fire wood, pollution due to Garbage, fuel and grease**

- b) Social impacts : **- No -**

c) Cultural impacts : - No -

2) What are the proposed mitigation measures to avoid or minimize the potential impacts?

=> **The labour camp site will be restored to its original position at the end of the project. To minimize the pressure on fuel wood the laborers are to be provided with fuel for consumption.**

3) Who will manage the mitigation measures?

=> **The mitigation measures shall be managed by the Field Division, DoR, Sarbang and the contractor as per the conditions laid down in the ECOP.**

### **3. ENVIRONMENT MONITORING PLAN**

1) Who will monitor the above activities?

=> **The Field Division, DoR, Sarbang and the Department of Roads.**

2) What is the monitoring schedule?

=> **The monitoring schedule will be carried out as per table 2.4.1 of the ECoP for Highways and Roads and as per the terms & conditions of the contract agreement.**

3) Contact address of the Environmental focal person:

Name	: Sonam Choki
Designation	: Deputy Executive Engineer
Organization/Agency	: Environmental Unit, Investigation & Development Division, DoR
Telephone No.	: 321571/105
Fax No.	: 335344



**Royal Government of Bhutan**  
**Ministry of Works & Human Settlement**  
**Department of Roads**

Bridge Division  
*"Enhancing Productivity & Professionalism"*

DoR/BD/ 28 /2007-2008/ 185

8/01/2008

To  
 The Resident Representative  
 JICA, Bhutan Office  
 Thimphu

**Sub: Environmental Clearance for reconstruction of 6 bridges under Phase-II, JICA Project**

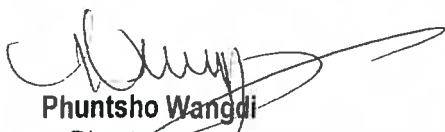
Sir,

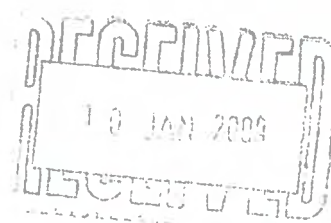
We are forwarding herewith a copy (in original) of the Environmental Clearance No.PPD/MoWHS/Env/01/2007-08/3231 dated 19<sup>th</sup> December 2007 issued by the Policy & Planning Division, Ministry of Works & Human Settlement, Thimphu for reconstruction of the following 6 bridges.

- i. Lawakha Bridge
- ii. Basochu Bridge
- iii. Nyarachu Bridge
- iv. Burichu Bridge
- v. Chanchey Bridge
- vi. Loring Bridge

This is for your kind information and necessary action please.

Yours faithfully,

  
**Phuntsho Wangdi**  
 Director



འབྲུག་རྒྱལ་ཁབ་ཀྱི་རྒྱུ་རྩུ་གཞི། འབྲུག་རྒྱལ་ཁབ་ཀྱི་རྒྱུ་རྩུ་གཞི། འབྲུག་རྒྱལ་ཁབ་ཀྱི་རྒྱུ་རྩུ་གཞི།



**ROYAL GOVERNMENT OF BHUTAN  
MINISTRY OF WORKS & HUMAN SETTLEMENT  
DEPARTMENT OF ROADS  
THIMPHU : BHUTAN**

No. DOR/I&D(I)/2007-08/04/ 1282

Date: 24/12/2007

To  
The Chief Engineer,  
Bridge Division,  
DoR : Thimphu

**Sub: Environmental Clearance for reconstruction of 6 bridges  
under Phase-III JICA Project**

Sir,

We are forwarding herewith a copy (in original) of the Environmental Clearance No. PPD/MoWHS/Env/01/2007-08/3231 dated 19<sup>th</sup> December 2007 issued by the Policy & Planning Division, Ministry of Works & Human Settlement, Thimphu for reconstruction of the following 6 bridges.

- i) Lawakha Bridge
- ii) Basochu Bridge
- iii) Nyarachu Bridge
- iv) Burichu Bridge
- v) Chanchey Bridge
- vi) Loring Bridge

This is for further necessary actions from your end.

Yours sincerely,

W  
21/12

(Kunzang Wangdi)  
Chief Engineer,  
Investigation & Development Division,  
DoR : Thimphu

Cc: The Director, DoR, Thimphu for kind information.

K. Tenzin  
Please see if we  
need to forward  
a copy to JICA.  
28/12



དཔལ་ལྷན་འབྲུག་གཞུང་། འབས་ཏྲི་ལྷན་ཁག། B T / PM - 020.4/5

ROYAL GOVERNMENT OF BHUTAN  
MINISTRY OF WORKS & HUMAN SETTLEMENT  
POLICY & PLANNING DIVISION  
THIMPHU: BHUTAN  
*"Towards Quality Infrastructure"*

PPD/MoWHS/Env/01/2007-08/3231

19<sup>th</sup> December 2007

Director  
Department of Roads  
Thimphu.

Sir,

**Subject: Environmental Clearance for re-construction of 6 bridges under JICA project (Phase III)**

The Ministry of Works and Human Settlement (MoWHS) issues the Environmental Clearance (EC) as per your letter no. DoR/I&D/Env/2006-2007/12/858 dated 24.10.07 for the re-construction of the following bridges under JICA project (Phase III): Lawakha bridge, Basochu bridge, Nyarachu bridge, Burichu bridge, Chanchey bridge and Loring bridge. The following terms and conditions apply:

1. The EC is valid for the re-constructions of the above mentioned bridges only.
2. All activities must be inline with Forest and Nature Conservation Act 1995 and Rules 2006.
3. No disturbance must be caused to public and religious sites due to the project activity.
4. Aesthetics of the valley and the river must be protected at all times.
5. A proper arrangement has to be made regarding the irrigation channel in the vicinity of the Lawakha bridge if the bridge construction activity interferes with the irrigation channel.
6. All the blasting works should be done in line with the guidelines from Ministry of Home and Cultural Affairs and Department of Geology and Mines. The blasting works should be executed strictly by trained professionals.
7. Indiscriminate dumping of excavated/waste materials into the river is an offense and is liable to penalty. It should be properly disposed in an appropriate disposal site.
8. Downstream effects must be monitored at all times to ensure that no damage is caused due to the project activity.
9. Waterways must be protected from any obstruction during and after the construction.
10. Occupational Health and Safety measures should be strictly observed at all times during the project activity.

Tele: 00975-2-327998/328173/326793/322182/325171

Fax: 00975-2-323144/322270/323122

Po Box: 791





དཔལ་ལྷན་འབྲུག་གཞུང་། འབྲུག་རྒྱལ་ཁབ་ལྷན་ཁག་། B T / GM - 020.5/5

ROYAL GOVERNMENT OF BHUTAN  
MINISTRY OF WORKS & HUMAN SETTLEMENT  
POLICY & PLANNING DIVISION  
THIMPHU: BHUTAN  
*"Towards Quality Infrastructure"*

11. A smooth flow of vehicular traffic should be maintained during the project activity.
12. Any dispute arising due to the above project activity shall be the responsibility of the project proponent (i.e Department of Roads).
13. Bio-engineering works shall be carried out wherever feasible to improve the aesthetics of the project area.
14. Copy of this EC must be maintained at all sites at all times during the construction activity for environment management and monitoring references.

Any violation of the terms and conditions specified in the EC is a violation of EA Act 2000 which will result in revocation of the EC without any liability on the part of this office. Incase of renewal of the EC, this office should be notified one month before the expiry of this Environmental Clearance.

**This Environmental Clearance is valid till 31<sup>st</sup> December 2010.**

Yours faithfully,

Sangay Tenzin  
Ofg.Chief Planning officer  
PPD, MoWHS

**Copy to:**

1. Hon'ble Secretary, MoWHS for kind information.
2. Head, EA Section, NEC, Thimphu for kind information.
3. Dy. EE, Environment Unit, I & D Division, DoR for kind information.

---

Tele: 00975-2-327998/328173/326793/322182/325171

Fax: 00975-2-323144/322270/323122

Po Box: 791



# 資料リスト(■収集資料/□専門家作成資料)

		プロジェクトID		調査団番号							
地域		アジア		第三次橋梁架け替え計画 予備調査		調査の種類又は指導 科目		予備調査		無償資金協力部	
国名		ブータン		配属機関名		現地調査期間又は 派遣期間		平成19年10月4日～10月30日		担当者氏名 坂部 英孝	

番号	資料の名称	形態(図書、 ビデオ、地図、 写真等)	収集資料	専門家 作成資料	JICA 作成 資料	注	発行機関	取扱区分	図書館記入欄
T-1	BHUTAN 2020, A Vision for Peace, Prosperity and Happiness	Original	*				Planning Commission	JR-CR( )・ SC	
T-2	Statistical Yearbook of Bhutan 2006	Original	*				National Statistics Bureau	JR-CR( )・ SC	
T-3	National Accounts Statistics 2000-2005	Original	*				National Statistics Bureau	JR-CR( )・ SC	
T-4	Road Safety & Transport Act 1999	Original	*				Road Safety & Transport Authority	JR-CR( )・ SC	
T-5	Roads Planning and Management Strengthening Project, June, 2002	Copy	*				Asian Development Bank TA 3470-BHU	JR-CR( )・ SC	
								JR-CR( )・ SC	
								JR-CR( )・ SC	
								JR-CR( )・ SC	
								JR-CR( )・ SC	

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	プロジェクトID	調査団番号	予備調査	
地域	アジア	調査の種類又は指導科目	予備調査	無償資金協力部
国名	ブータン	現地調査期間又は派遣期間	平成19年10月4日～10月30日	担当者氏名 坂部 英孝

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BR-1	Standard Specifications and Code of Practice for Road Bridges, Section: II, Loads and Stress, (Fourth Revision)	Copy	*				The Indian Roads Congress 2000	JR-CR( )・SC	
BR-2	Inventory of Motorable Bridges	Copy	*				Department of Roads, MMHS, September 2007	JR-CR( )・SC	
BR-3	Geological Map of Bhutan, Scale 1:500,000	Original	*				United Nations Publication, 1991	JR-CR( )・SC	
BR-4	Glaciers and GlacierLakes in Bhutan, Scale: 1:500,000	Original	*				Department of Survey and Land Records	JR-CR( )・SC	
BR-5	水理・水文データ (プナチャチュ川および支流)	Copy	*				hydromet Service Division, Department of Energy, MTI	JR-CR( )・SC	
			*					JR-CR( )・SC	
			*					JR-CR( )・SC	
			*					JR-CR( )・SC	
			*					JR-CR( )・SC	

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	プロジェクトID	調査団番号	予備調査	担当者氏名
地域	アジア	調査の種類又は指導科目	予備調査	無償資金協力部
国名	ブータン	現地調査期間又は派遣期間	平成19年10月4日～10月27日	担当者氏名 坂部 英孝

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	注	発行機関	取扱区分	図書館記入欄
E-1	Population & Housing Census of Bhutan 2005	Book	*				Royal Government of Bhutan Office of the Census Commissioner Thimphu, Bhutan	JR-CR( )・SC	
E-2	Dzongkhag Level Population and Housing Census Indicator Maps of Bhutan 2005	Book	*				Royal Government of Bhutan Office of the Census Commissioner Thimphu, Bhutan	JR-CR( )・SC	
E-3	Statistical Yearbook of Bhutan 2006	Book	*				National Statistics Bureau, Royal Government of Bhutan	JR-CR( )・SC	
E-4	The Middle Path, National Environment Strategy for Bhutan	Book	*				National Environment Commission, Royal Government of Bhutan	JR-CR( )・SC	
E-5	Regulation for the Environmental Clearance on Strategic Environmental Assessment	Book	*				National Environment Commission Secretariat, Royal Government of Bhutan	JR-CR( )・SC	
E-6	Application for Environmental Clearance Guideline for Highways and Roads	Book	*				National Environment Commission Secretariat, Royal Government of Bhutan	JR-CR( )・SC	
E-7	Developing Bhutan's Capacity to Meet Global Environmental Challenges A Brief Overview of Bhutan's National Capacity Self Assessment Report and Action Plan	Book	*				National Environment Commission Secretariat, Royal Government of Bhutan	JR-CR( )・SC	
E-8	Vision and Strategy for the Nature Conservation Division 2003	Book	*				Department of Forestry Services, Ministry of Agriculture Royal Government of Bhutan	JR-CR( )・SC	
E-9	Bhutan Biological Conservation Complex (Living in Harmony with the Nature)	Book	*				Nature Conservation Division, Department of Forestry Services, Ministry of Agriculture Royal Government of Bhutan	JR-CR( )・SC	
E-10	Geological Map of Bhutan Himalaya	Map	*				Mining Division, Dept. of Geology & Mines, Ministry of Trade & Minies	JR-CR( )・SC	

# 資料リスト(■収集資料/□専門家作成資料)

	プロジェクトID	調査団番号	予備調査	無償資金協力部
地域	アジア	第二次橋梁架け替え計画 予調査	予備調査	担当部課
国名	ブータン	現地調査期間又は 派遣期間	平成19年10月4日～10月27日	担当者氏名
				坂部 英孝

番号	資料の名称	形態(図書、 ビデオ、地図、 写真等)	収集資料	専門家 作成資料	JICA 作成資料	発行機関	取扱区分	図書館記入欄
E-11	Land Use Working Map 1/50000 78E/15, 78I/3, 78I/4, 78J/1, 78J/5,	Map	*			Land Use Planning Section, Planning and Policy Division, Ministry of Agriculture	JR-CR( )・ SC	
E-12	Environmental Discharge Standard	Copy	*			National Environmental Commission, Royal Government of Bhutan	JR-CR( )・ SC	
E-13	Environmental Cordes of Practice, Highways and Roads	Copy	*			Department of Roads, Ministry of Public works and Human Settlement, Royal Government of Bhutan	JR-CR( )・ SC	
E-14	Environmental Assessment of Drujegang - Balung Road Dagna, Rural Access Project April 2006	Copy	*			Department of Roads, Ministry of Public works and Human Settlement, Royal Government of Bhutan	JR-CR( )・ SC	
E-15	List of local consultants for EIA	Copy	*			Department of Roads, Ministry of Public works and Human Settlement, Royal Government of Bhutan	JR-CR( )・ SC	
E-16	気象データ (Wangdi RNRRC, Dampu A, Sarpang C)	Copy, Data File	*			Meteorology Section, Hydromet Services Division, Department of Energy, MTI	JR-CR( )・ SC	