Environmental Monitoring Report

#2 Semiannual Report
July–December 2016
Project Number: 43448-013

Nepal: Bagmati River Basin Improvement Project

Prepared by the Ministry of Urban Development for the Government of Nepal and the Asian Development Bank.

Environmental Monitoring Report

Second Semi-Annual Report
July – December 2016

NEP: Bagmati River Basin Improvement Project

ADB Loan No.:3057-NEP (SF) & TA 8500-NEP

Prepared by Bagmati River Basin Improvement Project (BRBIP) Additional Financing or the Government of Nepal and the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 30 December 2016)

Currency unit	–	Nepalese Rupee (NRs)
NRs.1.00	=	$ 0.00926
$1.00	=	NRs. 107.93

ABBREVIATIONS

ADB	–	Asian Development Bank
BoQ	–	Bill of Quantity
BRBIP	–	Bagmati River Basin Improvement Project
CFUG	–	Community Forest Users Group
DDC	–	District Development Committee
DDR	–	Due Diligence Report
DOI	–	Department of Irrigation
DPR	–	Detail Project Report
EA	–	Executing Agency
EMP	–	Environmental Management Plan
GoN	–	Government of Nepal
GRC	–	Grievance Redress Committee
HPCIDBC	–	High Powered Commission for Integrated Development for Bagmati Civilization
IEE	–	Initial Environmental Examination
MoFSC	–	Ministry of Forest and Soil Conservation
MoUD	–	Ministry of Urban Development
NRs	–	Nepali Rupees
PCMU	–	Project Management Unit
PCU	–	Project Coordination Unit
PMCS	–	Project Management and Construction Supervision Consultant
SD	–	Safeguard Desk

NOTES

(i) The fiscal year (FY) of the Government of Nepal and its agencies ends on 16 July. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY 201 6 ends on 1 6 July 201 7.

(ii) In this report, "$" refers to US dollars.

Background

The BRBIP is a project being implemented by loan and grant from ADB with the objective of enhancing the environmental conditions of sacred river Bagmati. The main outputs of the project during the first phase for which the report is being written includes:

(i) Rural incomes uplifting through increased employment, skills training and improved access to credit for the rural poor,
(ii) Capacity building and decentralized governance, including addressing corruption concerns and
(iii) Fostering rural transport connectivity and complementary community infrastructure investments.

Ministry of Urban Development (MoUD) is the Executing Agency (EA) while the Implementing Agency responsibility is segregated between High Powered Commission for Integrated Development for Bagmati Civilization (HPCIDBC) and Department of Irrigation (DOI). On one hand HPCIDBC is the IA for River Improvement works of upper Bagmati and hosts the Project Management Unit (PCMU) which is supported also by Project Management and Construction Supervision Consultant (PMCS). While on the other hand DOI is the IA for the design and construction of increased water storage capacity in the Shivapuri Nagarjun National Park.

Environmental Safeguards for BRBIP

Environmental Assessment is the primary administrative tool to integrate environmental considerations into decision-making to ensure that proposed development intervention will have minimal environmental impacts. BRBIP falls in “A” category project according to ADB.

Safeguard Policy Statement, 2009 Therefore, Environmental Impact Assessment (EIA) for the projects under BRBIP is mandatory in order to assess the environmental consequences of the construction activities as well as operation and suggest appropriate, practical and site specific mitigation and enhancement measures. In this context, EIA report has been prepared for the project in accordance with the environmental regulations (Environmental Protection Act, 1997 and Environmental Protection Rule, 1997) of GoN and also satisfying the ADB environmental procedures.

Environmental Monitoring is an important tool for ensuring compliance of mitigation and measures and implementation of EMP. The construction works have not started yet but selection of labor camp site and permission for has been received from National Park. Commissioning of site camp construction also started at the dhap location started from November 27, 2016. The foundation of the employer’s facilities and contractor’s site camp/office has been completed. In addition to this tagging of trees to be cut along the access road and inundation area has been done. The request has been sent to concerned ministry for the permission to cut the required number of tagged trees of the Dhap dam Inundation area and Access road to dam area. Survey of Dam Area and drilling for soil and geological investigation has been carried out. The maintenance and upgrading of access road to the site has started since November 17, 2016 and is continuous till now. Survey of the access road has been started since December 05, 2016 and is continuous at the site

The Environmental Management Plan for the river training/beatification work from Gokarna to Sinamanga had been prepared and submitted to the client for the approval from the concerned

ministry for tits implementation. Similarly, the contractor (KALIKA-RANKEEN-LAMA JV) had been awarded and mobilized for the river training/beatification work from Gokarna to Sinamangal. They have just recently commenced the work from the Gokarna Bridge. They have also submitted the Construction Environmental Management Plan to the consultation which have been reviewed by us and forwarded with comments and suggestion for further improvement.

ToR for the Independent Environmental Consultant hah been prepared and submitted to ABD office for it implementation.

Overall Environmental Safeguard Status
No work has started at the project site.

Compliance Status with Environmental Covenants
None of the three project components have started from July to December.

Institutional Arrangement
Grievance Redress Committee has not been formed. It will be form once the contractors commence their work with the permission of concerned stakeholders.

Compliance with Environmental Safeguard Measures
No construction works have been informed to have started. However, based on tagging of trees 2,279 trees will be felled at the inundation area and 2,797 at the access road that is being on approval process by the Ministry of forest and Soil Conservation. These trees will be compensated in a ratio of 1:25 and manage it for 5 years. Major Species found in the area includes Kholme, Phalat, Angeri, Rghuchandan, Kankiya, Kalikath, Malli, Bhalayo, Losso, Rtomme, Locho, Gurans, Kamali, Mel, Ghigano and Hiswa at inundation area. While at the access road the species observed includes Uttis, Kholme, Raghuchandan, Khosre, Katush, Payun, Ghigano, Kafal, MelSallo, Hadiwel, Chilaune, Sami, Saur and Phalant. The probable sites for compensatory plantation are suggested to be along the slope stabilization area along the road as well as along the river corridors. Moreover, suggestion will be taken from the park authority for it.

Activities for so includes

1. Forest Clearance
2. Compensatory Plantation
3. Spoil Management
4. Drainage and Erosion Control for Access Road
5. Drinking Water Supply and Sewerage
6. Construction work timings to mitigate disturbance to wildlife
7. Demobilization
8. Drainage Management
9. Management of Pollution caused by transportation of construction materials
10. Solid Waste Management
11. Slope Stabilization
12. Landslide Control while shifting access road
13. Management of Soil from excavation at dam
14. Mitigation measures for Pollution created by Crusher Plant
15. Management of Deterioration of Water Quality released downstream of Dam
16. Control of spill of toxic materials
17. Quarry Site Management

18. Camp Site Management
19. Management and Safeguarding in conditions of findings of any structures of archaeological or cultural importance during construction
20. Occupational Health and Safety
21. Grievance Address
22. Information Center
23. EMP implementation and reporting

Issues and Way Forward

Construction work is yet to progress

Monitoring parameters/indicators and methods based on the monitoring plan/program previously agreed upon with ADB

For monitoring of environmental parameters and indicators, the environmental safeguard checklist and Forms and formats as been prepared as in attached Annex 1 & 2.

Plan for Further Construction Activities of Dap Dam Components

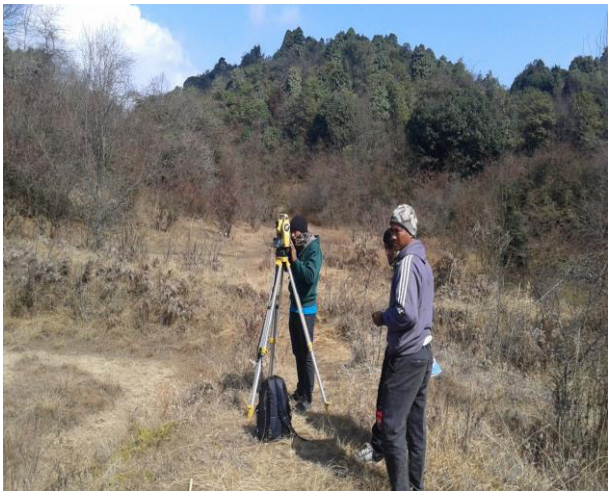
SN	Planned Activity	Planned Start Date	Planned Completion Date	Status
1	Site Camp Establishment	1-Sep-16	30-Sep-16	Ongoing
2	Permission for site clearance and tree cutting		August 31, 2016 (expected date)	Waiting for Final Approval from Ministry
3	Start of site clearance and tree cutting	7-Sep-16	Nov-16	Waiting till approval
4	Establishment of Crusher Plant	15-Nov-16	31-Dec-16	Not yet started
5	Borrow area and Quarry area development	5-Dec-16	15-Jan-17	
6	Construction of Main Dam and Saddle dam	Feb-17	Apr-18	
7	Construction of Spillway	Mar-18	May-18	

Photographs

Access Road Maintenance and Upgrading by the Contractor

Site Camp Location with Completed Foundation

Survey Of Access Road to Dam area by the Contractor



Topographic Survey Works by the Contractor

Drilling Works for Soil Investigation by the Contractor

Joint Site Visit of DoI, Park Representative, Consultant and Contractor to Dam area.

Bagmati River Basin Improvement Project

Annex 1: Environmental Safeguard Monitoring Formats

1. Labor Camp Establishment, Management & Decommission Plan
2. Contractor's Office, Workshop Camp Establishment, Management & Decommission Plan
3. Public Utilities/Existing Services Reinstatement Plan
4. Quarry/Burrow Pit Operation Plan
5. Surplus Earth Materials' Safe Disposal Plan
6. Support Structure Plan (Slope Retaining Wall, Breast Wall, Toe Wall)
7. Drainage Structure Installation Plan
8. Crusher Plant Operation Plan
9. Road Embankment Structure Installation Plan
10. Materials Stockpile Plan
11. Top Soil Saving and its Re-use Plan
12. Road Diversion Plan

Bagmati River Basin Improvement Project

Environment Format- 01

Labor Camp Establishment, Management & Decommission Plan

Prepared Date:

Project Section:

Contract Package:

Camp Site Location (Name):

Labor Deployed Type:	Local		Non-Local	
	Male		Female	
	Skilled		Unskilled	
Camp Site Type:	Hired House		Tented / Prefab Construction Camp	
Camp Site Ownership Type:	Public Land	Private Land	Waste Land (including flood Plains)	
Legal Use Status of Camp Site:	Agreement		Non-agreement	

Camp Site Facilities/Amenities:

Toilet Type:		Pit	Pan	Others	
Water Supply Source:	Pipeline	Spring/Well	Stream	Tanker	
Safety Measures: Helmet	Boots	Gloves	Masks	Others	
First Aid Kid:	Yes	No			

Firewood Supply Source: Private	Community	Public	Others	
Legal Status of Supply Source:	Agreement	Non-agreement		

Foreseeable Environmental Risks:

- Impairs campsite environment by the contractor's kitchen refuse, litters, dish washing ups etc, causing a potential source of diseases
- Potential risk of impairing water hole of downstream users
- Potential cases of illegal natural resources (e.g. fuel wood) usage by the labor force
- Potential cases of communicable diseases amongst labor force by their unsafe sexual contacts

Description of Site Conditions (including peripheral configuration in brief):

Mitigation Measure to Overcome Environmental Risks:

i. During campsite use

- Ensure laborforce's kitchen refuse, litters disposed onto designated pits only
- Ensure use of upstream water hole by the laborforce for washing ups well away from its natural course
- Restrict firewood supply source in contract agreement on legal basis – FUG, private owner etd
- Raise public awareness, especially amongst the laborforce about the communicable diseases

ii. After campsite decommission

iii. Clean up laborforce campsite all refuse to its original conditions

Verification of Agreed Mitigation Measures Practiced on Site (Date):

i. During campsite in use

ii. After campsite decommission

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format- 02

Contractor's Office, Workshop Camp Establishment, Management & Decommission Plan

Prepared Date:

Project Section:

Contract Package:

Camp Site Location (Name):

Labor Deployed Type:	Local		Non-Local				
	Male		Female				
	Skilled		Unskilled				
Camp Site Type:	Hired House		Fabricated Camp				
Camp Site Ownership Type:	Public Land	Private Land	Waste Land (including flood Plains)				
Legal Use Status of Camp Site:	Agreement		Non-agreement				
Camp Site Facilities/Amenities:							
Toilet Type:	Pit	Pan	Others				
Water Supply Source:	Pipeline	Spring/Well	Stream	Tanker			
Safety Measures:	Helmet	Boots	Gloves	Masks	Others		
Fire Safety Measures	Fire Extinguisher	Pick	Crowbar	Sledge Hammer	Buckets	Ropes	
First Aid Kid:	Yes	No					
Firewood Supply Source:	Private	Community	Public	Others			
Legal Status of Supply Source:	Agreement	Non-agreement					

Foreseeable Environmental Risks:

- Oil lubrications spillage caused by Automobile Workshop established for the maintenance of contractor's operating machine, vehicles etc
- Camp site sanitation impairment to cause by the careless kitchen running, dish clean up activity etc
- Down stream pollution to cause as a result of oil, lubrication spillage etc by the careless workshop operations
- Fire incidence at the workshop due to accidental use of igniting tool e.g. matches, lighter etc

Description of Site Conditions (including peripheral configuration in brief):

Mitigation Measure to Overcome Environmental Risks:

iv. During campsite use

- Appropriate mitigation – ditch or plastic sheet line - in place to catch spilled oil, lubricants refuse etc as well as accidental handling of workshop
- Appropriate mitigation – designated washing up site, refuse disposal site etc – against sanitation impairment
- Plastic line ditch in place to catch accidental oil, lubricants etc spillage while running workshop
- Full fire fighting gadgets in place in order to bring control of accidental fire

v. After campsite decommission

- Complete clean up of foreign materials including spilled oil, lubricants etc from contractor's office, workshop to its prior usage conditions

Verification of Agreed Mitigation Measures Practiced on Site (Date):

iii. During campsite in use
iv. After campsite decommission

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format- 03

Public Utilities/Existing Services Reinstatement Plan
(Field Inventory and Reinstatement)

Prepared Date:

Project Section:

Contract Package:

Site Location by Chainage:

Type of Utilities/Services to be affected by Road Works:

Irrigation Canal Trail Water Supply Lines Others (……)

Description of Site Conditions (including peripheral configuration in brief and sketch map):

Foreseeable Environmental Risks:

- Causes disruption of existing services e.g. water supply, power supply, telephone etc by the road works
- Needs demolition of public utilities by road works

Provisional Measures to be practiced to ensure its Service in Continuity:

- Reinstate existing essential services, especially water supply and irrigation canals uninterrupted
- Re-establish public utilities – e.g. trails – in service

Permanent Measures to be practiced to ensure its Service in Continuity:

- Reinstate existing essential services - water supply, irrigation canals, power supply, telephone etc - to its original conditions by re-location, re-installation as appropriate to accommodate design standard need
- Re-establish public utilities – e.g. trails, chautara etc - to a previous conditions as road getting completion

Provisional Measures to be Effected/Practiced (date):

Permanent Measures to be Effected/Practiced (date):

Verification of Agreed Permanent Measures being Practiced (date):

i. Provisional measures effected

ii. Permanent measures effected

_____ _____

Contractor
Or Authorized Representative

Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-04

Quarry/Burrow Pit Operation Plan
(Field Identification, Extraction and Safe Closure)

Prepared Date:

Project Section:

Contract Package:

Site Location by Chainage:

Materials Type:

Description of Site Conditions (including peripheral configuration in brief):

Materials Quantity (to Extract) (in m^3)

Method of Extraction (Manual, Machine use etc):

Quantity of Quarry/Burrow pit Materials required for:

i. Contract length only ii. Other contract length as well

Foreseeable Environmental Risks:

- Induce or encourage hill slope to slide or collapse rock extractions
- Generate conducive conditions disrupting natural course given pit extracted along or by stream or rivers side
- Cause road stretch of rock extractions length in progress often densely littered with spoils, disturbing traffic
- Disrupt natural drainage, forcing at times it to land of private owners

Mitigation Measure to Overcome Environmental Risks (including access route to site, incidence of burial with impoverished materials etc)

Extraction Scheduled to Commence (Date):

Materials Ceased to Extraction (Closing Date):

Mitigation Measure to Practice for its Safe Closure (Description in brief):

i. During extraction in progress

- Use rock quarry site safely with appropriate measures e.g. toe wall, in place if required
- Restrict borrow pit activity in flood plain zones with its depth not exceeding 1m
- Strip off top soil - if any - from the upper rock surface prior to its extractions and stockpile safely for its reuse
- Ensure the natural drainage course reinstated in tact

ii. After extraction ceased

Verification of Agreed Mitigation Measure Practiced (Date):

i. During extraction in progress

ii. After extraction ceased

_____ _____

Contractor Resident Engineer
Or Authorized Representative

Bagmati River Basin Improvement Project

Environment Format-05

Surplus Earth Materials' Safe Disposal Plan

Prepared Date:

Project Section:

Contract Package:

Disposal Aimed to: Enhance Public Land Value
Enhance Private Land Value
Enhance Institution's Land Value (e.g. School Land)
Ensure Earth Materials Safe Disposal at Designated Location

Description of Site Conditions (including peripheral configuration in brief):

Quantity of Materials to be Disposed of (in m^3):

Method of Disposal to be Practiced: Tipping followed by levelling, Tipping with a toe-wall, simply side cast, side cast with a toe wall etc)

Foreseeable Environmental Risks:

- Causes valley side arable littered with spoil by uncontrolled disposal activity
- Induces or encourages valley side slope failure by virtue of spoil disposed over it
- Disrupt natural drainage if and when stream, khola is choked by the spoil disposed over it
- Causes turbidity in fresh water following sediments carried over by the run off spoil disposed

Mitigation Measure to Overcome Environmental Risks:

- Ensure spoil disposal activity taken place with full care and restriction in place so that no arable is littered
- Treat with bio-engineering over spoil disposed slope prior to pre-monsoon
- Restrict and refrain from spoil activity on natural drainage beds where possible

Materials Disposal Scheduled to Commence (Date):

End Conditions of Materials Disposed Site (including in Sketch and or drawing where applicable):

Verification of Agreed Earth Materials Disposal Method Practiced on Site (Date):

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-06

Road Support Structure Plan
(Retaining Wall, Breast Wall, Toe Wall)

Prepared Date:

Project Section:

Contract Package:

Location by Chainage:

Road Structure Aimed to: Support a road carriageway, which may collapse in its absence
Provide a road width, its shoulders and side drains according to design
Support hillside slope that has failed or likely to fall
Support cut slope that would otherwise require a low, uneconomical angle of cut etc

Type of Road Structure: Retaining Wall, Breast Wall, Toe Wall

Nature of Wall: Gabion Box, Rock Mortar Wall, Dry Wall, Composite Wall

Quantity of Materials Need (m^3): Rock (……..), Sand (……..)

Materials Supply Source: Quarry Site, Road Crossing Stream, Local, Others (specify)

Description of Site Conditions (including peripheral configuration in brief):

Foundation Excavation Site Conditions: Bed Rock (level – even or uneven), Soil / Rock Mix, Others (specify)

Foundation Excavation Need: Trees Removal (yes or no)
(if yes, refrain from trees removal but work out best by site condition)
Levelling Uneven Bed Rock (yes or no)
(if yes, refrain from breaking uneven bed rock but level it with rock mortar instead)

Quantity of Foundation Excavation Works (FEW) (m^3):

Quantity of Reusable FEW Materials (m^3):

Quantity of Materials to be Disposed of (m^3):

Site of Surplus Materials' Safe Disposal: Refilling, Local, Others (specify)

Method of Disposal to be Practiced: Tipping followed by levelling, Tipping with a toe-wall, simply side cast, side cast with a toe wall etc)

Foreseeable Environmental Risks: Localized concentration of run-off induced scour caused by the sides of wall
Susceptible to sheet erosion on dumped materials, especially valley side
Structure collapse due to non-compliance of proper compaction of refill materials

Structure hanging caused by the lateral scouring as well as due to non-compliance of proper treatment of its outside physical conditions - slope including disposed materials

Others (specify)

Mitigation Measure to Overcome Foreseen Environmental Risks:

Tie up sides of wall with dry rocks matching local site conditions, eliminating likely scour

Eliminate scouring possibilities and smoothen up materials disposed site, especially outside structure so that sheet erosion is limited or eliminated

Ensure proper compaction of refill materials undertaken so that no threat of structural failure exists

Others (specify)

Road Structure Installation to Commence (Date):

Materials Disposal Scheduled to Commence (Date):

End Conditions of Road Structure Installed Site (including in Sketch and or drawing where applicable):

Verification of Agreed Road Structure Installed on Site (Date):

1. During Road Structure Installation in Progress
2. After Road Structure Installation Completed

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-07

Drainage Structure Installation Plan

Prepared Date:

Project Section:

Contract Package:

Location by Chainage:

Drainage Structure Aimed to: Control road surface and side drain run-off
Collect and remove surface water from the immediate vicinity of road
Prevent any sub-surface water from adversely affecting the road pavement structure
Allowing transport vehicle over the natural drainage course origination from the hill slope and crossing the road section afterwards etc

Type of Drainage Structure: Side drain, Catch pit (in-fall), culvert (cross fall), drift, cascade (valley side - outfall)

Nature of Drainage Structure: Rock mortar (Side drain, Catch pit), Pipe culvert (Cross - fall), Concrete Culvert (cross – fall), Gabion Mattress (Out – fall), Concrete Slab (Out – fall)

Quantity of Materials Need (m^3): Rock (……..), Sand (……..)

Materials Supply Source: Quarry Site, Road Crossing Stream, Local, Others (specify)

Description of Site Conditions (including peripheral configuration in brief):

Foundation Excavation Site Conditions: Bed Rock (level – even or uneven), Soil / Rock Mix, Others (specify)

Foundation Excavation Need: Trees Removal (yes or no)
(if yes, refrain from trees removal but work out best by site condition)
Levelling Uneven Bed Rock (yes or no)
(if yes, refrain from breaking uneven bed rock but level it with rock mortar instead)

Quantity of Foundation Excavation Works (FEW) (m^3):

Quantity of Reusable FEW Materials (m^3):

Quantity of Materials to be Disposed of (m^3):

Site of Surplus Materials' Safe Disposal: Refilling, Local, Others (specify)

Method of Disposal to be Practiced: Tipping followed by levelling, simply side cast, side cast with a toe wall etc)

Foreseeable Environmental Risks: Surface run-off caused by the precipitation over the road surface as well as over the hillside of road alignment
Susceptible to sheet erosion on road surface as well as on the valley side

Susceptible to road edge collapse caused by the surface run off allowed to anywhere as it like

Undermine arable land caused by the littering of impoverished materials carried over and or resulted by the faulty drainage site and or its absence

Conflict with the local stakeholders over the location of cross drainage site

Others (specify)

Mitigation Measure to Overcome Foreseen Environmental Risks:

Train road surface run-off flow to assigned side drain only

Collect accumulated road run-off out of side drain onto catch pit

Allow collected discharge to drain out of cross drainage onto cascade located on the valley side

Smoothen up materials disposed site, especially outside structure so that sheet erosion is limited or eliminated

Work out consensus with the local stakeholders over the proper location of cross drainage site, citing benefit that derive from the road services

Genuinely work out the drainage site so that no threat of undermining arable land with impoverished materials exists

Others (specify)

Drainage Structure Installation to Commence (Date):

Materials Disposal Scheduled to Commence (Date):

End Conditions of Drain Structure Installed Site (including in Sketch and or drawing where applicable):

Verification of Agreed Drain Structure Installed on Site (Date):

1. During Road Structure Installation in Progress
2. After Road Structure Installation Completed

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-08

Crusher Plant Operation Plan
(Site Identification, Plant Installation, Operation and Decommission)

Prepared Date:

Project Section:
Contract Package:
Site Location by Chainage:
Production Materials Type: Base Course Chips Fines Others (……)
Description of Site Conditions (including peripheral configuration in brief and layout sketch):

Production Materials Quantity (m^3): Base Course Chips Fines Others (……)

Quantity of Crushed Materials required for:
i. Contract length only ii. Other contract length as well

Foreseeable environmental risks:
Dust Blow Littering Arable Land Noise Others (……)

Mitigation Measures to Overcome Foreseeable Environmental Risks
(Indicate / Suggest Type of Mitigation Measure):

i. During crusher plant in operation
   a. Ensure pipelined water supply running along with crushed materials e.g. CRRM, fall off of conveyor
   b. Ensure appropriate measure e.g. toe wall, in place for restricting stockpiled materials spreading over to arable land
   c. Cover crushed materials e.g. CRRM, with poly sheets on site where it is likely to be mixed up deleterious materials e.g. leaves

ii. Crusher plant ceased its production
   a. Undertake full clean up of stockpiled crushed materials e.g. CRRM, site to its original conditions

Plant Operation to Commence (Date):

Materials Ceased to its Production (Date):

Cleaned up Measures to be practiced as Plant Production Ceased:

Verification of:
i. During crusher plant in operation
ii. Crusher plant ceased its production

_____ _____

Contractor Resident Engineer
or Authorized Representative

Bagmati River Basin Improvement Project

Environment Format-09

Road Embankment Structure Installation Plan

Prepared Date:

Project Section:

Contract Package:

Location by Chainage:

Embankment Structure Needed: To raise the road above the flood levels
To obtain a satisfactory by raising the ground with fillings
To cross the gullies
At the approaches to crossings – dry or wet

Type of Embankment Structure: Gabion Box, Rock Mortar Wall, Rock stacking

Quantity of Materials Need (m^3): Rock (road side) (……..), Fill Materials (e.g. spoil, earth cut surplus etc) (……..)

Materials Supply Source: Quarry Site, Local, Others (specify)

Description of Site Conditions (including peripheral configuration in brief):

Embankment Installation Site Conditions: Bed Rock (level – even or uneven), Soil / Rock Mix, Others (specify e.g. sub-surface recharge conditions imminence)

Foundation Excavation Need: Levelling Uneven Bed Rock (yes or no)
(if yes, refrain from breaking uneven bed rock but level it with rock mortar instead)

Quantity of Foundation Excavation Works (FEW) (m^3):

Quantity of Reusable FEW Materials (m^3):

Quantity of Additional Materials Need for Embankment Fillings (m^3):

Type of Fill Materials' Contains: Deleterious materials (e.g. decomposable organic), Susceptible to wind blow incidence, others (specify)

Embankment Installation Site: Stable or Unstable

Potential Indication of Embankment Instability: Range of slope failures, surface springs or patches of reeds, trees leaning at different angles on the hillside, live gullies

Cross Drain Need: Yes or No

Type of Drain: Culvert, Sub-surface drain etc

Foreseeable Environmental Risks: Obstruction and damming of discharge course originated out of hills
Change of discharge course
Side scourge(s) caused by the change discourse originated out of hills
Surface recharge induced by the obstruction of discharge course

Others (specify)

Mitigation Measure to Overcome Foreseen Environmental Risks:

Provision and install appropriate cross drains – culvert (e.g. PCC pipe)
Provision and install appropriate civil structure to train discharge course
Others (specify)

Embankment Structure Installation to Commence (Date):

End Conditions of Embankment Structure Installed Site (including in Sketch and or drawing where applicable):

Verification of Agreed Embankment Structure Installed on Site (Date):

1. During Embankment Structure Installation in Progress
2. After Embankment Structure Installation Completed

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-10

Materials Stockpile Plan

Prepared Date:

Project Section:

Contract Package:

Materials Stock pile Aimed to:
- Ensure construction materials being stock piled without losing its quality - impairments
- Ensure construction materials stockpiled not at ad hoc condition but in concentrated and controlled way according to its type
- Ensure construction materials readily available according to work schedule
- Ensure construction materials not become a source nuisance to local residents

Description of Site Conditions (including peripheral configuration in brief):

Quantity of Materials to be stockpiled by Type (in m^3):

Location of Stockpile:
- well away from the local settlements
- Well away vegetation stands
- Not on the water hole

Method of Materials Stock pile to be practiced: Just Dumping, Dumping with a toe-wall, Dumping with plastic sheets over the materials to prevent its quality impairment by deleterious materials – plant leaves and or organic one

Foreseeable Environmental Risks:

- Undermine arable land value if stockpile site is arable type
- Litters valley side arable land if stock pile management is weak
- Impairs downstream water use if stock pile is located near the water hole and carelessly managed
- Causes turbidity in fresh water following sediments carried over by the run off originated out of stock pile site

Mitigation Measure to Overcome Environmental Risks:

- Undertake full clean up of residuals from materials stock pile site to a condition of crop growing
- Undertake materials handling in a standard and controlled way under good management
- Restrict material stock pile well away from the water hole

Materials Disposal Scheduled to Commence (Date):

End Conditions of Materials Disposed Site (including in Sketch and or drawing where applicable):

Verification of Agreed Earth Materials Disposal Method Practiced on Site (Date):

_____	_____	_____
Interested Party	Contractor	Resident Engineer

Bagmati River Basin Improvement Project

Environment Format-11

Top Soil Saving and its Re-use Plan

Prepared Date:

Project Section:

Contract Package:

Top soil Saving and its Re-use Aimed to:
- Insure nutrient rich soil stock for future needs
- Over laying nutrient deficient raw and fresh soil top along road sides – batters (road side / embankment)
- Ease plant root striking quicker and promote its growth faster

Description of Site Conditions (including peripheral configuration in brief):

Quantity of Top soil to be extracted of (in m^3):

Location of Top soil to stockpile:

Legal State of Stockpile Site: public land private land community land

Legal Agreement: yes no

Foreseeable Environmental Risks:

- Causes valley side arable littered with spoil if top soil is not extracted but left it used by segregation and instead allowed to be becoming a source of spoil
- Become a source of disposal concern to road builders
- Washes away top soil if stock pile site is in correctly located and mishandled

Mitigation Measure to Overcome Environmental Risks:

- Ensure only nutrient rich top soil is segregated from its extraction sites
- Stock pile top soil at safe location only so that it could be re-used for promoting cover crops on fresh cut batters
- Restrict and refrain from extraction activity from becoming it a source of spoil

Materials Top Extraction Scheduled to Commence (Date):

End Conditions of Top soil Stock piled Site (including in Sketch and or drawing where applicable):

Verification of Agreed Top soil Stock pile Practiced on Site (Date):

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Bagmati River Basin Improvement Project

Road Diversion Plan

Environment Format-12

Prepared Date:

Project Section:

Contract Package:

Location by Chainage:

Road Diversion Needed To: Ensure and maintain usual road traffic flow uninterrupted through the provision of diversion
Effect and facilitate road upgrading taking place as per work schedule

Type of Diversion: Along the road side Away from road side Others

Diversion Equipment / Signals: Flashing boards Speed breaker Road Dividers Others

Foreseeable Environmental Risks:

- Some delay in road travel time
- Obstruction in road usual traffic flow
- Dust nuisance to locals by vehicle plying over the diversion stretch
- Prompts unessential traffic to refrain from passing through diversion
- Degrade / devalue stretch following its use as road diversion unless fully restore
- Others (specify)

Mitigation Measure to Overcome Foreseen Environmental Risks:

- Provision and install traffic control signals – flashing boards, speed breakers, road dividers etc at appropriate locations according to a need
- Full restriction on road side parking anywhere in the vicinity but keep it free of parking vehicles
- Adequate water sprinkling effected over the diversion stretch – in the morning and afternoon
- Reinstate diversion stretch to its original value once its use longer require
- Others (specify)

Verification (periodic) of Road Diversion in operation (Date):

3. During Diversion Stretch in Usage
4. As Diversion stretch no longer required

_____	_____	_____
Interested Party	Contractor or Authorized Representative	Resident Engineer

Annex 2: Environmental Safeguard Monitoring Checklist

SN.	Issues	Compliance Activities	Location	Compliance Status						Remark
				Design Phase	Construction Phase				Operation	
				1	2	3	4	5		
		Design and Pre-Construction Stage								
1	Landslides	Minimization of slope stability issues (using engineering, hydrological and bio-engineering techniques).Annual Monitoring after monsoon	Immediate and upper catchment of SNNP							
2	Erosion and Sedimentation	Daily monitoring of effectiveness of erosion and sedimentation controls	Immediate Catchment							
3	Tree Felling and Vegetation Clearance	Daily monitoring and number of trees cut and area of vegetation clearance.	Project Facilities and Around							
4	Spoil disposal	Daily monitoring of reuse of spoil, surplus disposed spoil and mechanism of disposal in the designated area.	At reservoir footprint and Dhap Dam site as well as Access Road.							
5	Waste Management	Daily monitoring for waste materials reused/recycled, adequate disposal options	Dhap, River Work sites, worker camp/sites and non-recyclable waste management.							
6	Water Quality	Monthly monitoring of Worker's camps drinking water quality (DO, BOD, COD, TSS, NO_3-N, NH_4-N, PO_4-P, Fecal Coli) at Dhap, Camp, Workers Sites, 500m downstream from dam site.	Workers Camps, Dhap, Camps, Workers Sites and 500m downstream from dam							
7	Air Quality	Daily monitoring of spraying of water and maintenance of equipment as per specification at Dhap and River work sites.	Dhap and River work sites.							
8	Air Quality	Quarterly monitoring of vehicular emissions tests as per GoN standard Dam Sites, tributaries	Dam Sites, tributaries							
9	Noise and Vibrations	Monthly monitoring of noise and vibrations at Dhap, access road sites and river work sites	Dhap, access road sites and river work sites							

SN.	Issues	Compliance Activities	Location	Compliance Status						Remark
				Design Phase	Construction Phase				Operation	
				1	2	3	4	5		
		Design and Pre-Construction Stage								
10	Noise and Vibrations	Regular site inspections for maintenance of equipment (in accordance to manufacturer's specifications), vehicular traffic management, control on blowing of horns, blasting and vibrations in association with noise pollution at all the project sites.	All the project sites.							
11	Workforce Management , Health and Safety	Fortnightly monitoring of meetings on environment/safety concerning workforce rules and regulation at Dhap, access roads and river works.	Dhap, access roads and river works.							
12	Workforce Management , Health and Safety	Daily monitoring of enforcement rules on safety, use of safety gears, grocery provisions, kerosene/gas for daily needs, first aid facilities, adequate and well maintained utility services or facilities at Dhap, Access Road and River Works Sites.	Dhap, Access Road and River Works Sites.							
13	Traffic and Access	Random inspections for enforcement of maintenance records, speed limits and placement of warning signs at Dhap, Access Road and River Works Sites.	Dhap, Access Road and River Works Sites							
14	Drainage	Weekly monitoring through direct observation of drainage conditions as well as state of operation at Dhap, Access Road and River Works Site.	Dhap, Access Road and River Works Site.							
15	Risks	Every four months monitoring of maintenance of warning signs and sirens at Dam Site	Dam Site							
16	Risks	Daily monitoring of physical obstructions to prohibited areas and appropriate labor safety gears at Dhap, Access Road and River Work Sites.	Dhap, Access Road and River Work Sites.							

SN.	Issues	Compliance Activities	Location	Compliance Status						Remark
				Design Phase	Construction Phase				Operation	
				1	2	3	4	5		
		Design and Pre-Construction Stage								
17	Risks	Monthly monitoring of safety training to laborers and others involved in construction at Dhap, Access Road and River Work Sites.	Dhap, Access Road and River Work Sites.							
18	Hazards	Weekly monitoring of storage of hazard materials (as per specification of manufacturers) in bounded areas as well as in guarded bunkers at Dhap, Access Road and River Training sites in relation to risks and hazards.	Dhap, Access Road and River Training sites							
19	Compliant	Monitoring as and when necessary for complaints received and replied for Dhap, Access Road and River Work Sites.								
20	Compliant	Monitoring as and when required for enforcement of accidental and emergencies response measures at Dhap, Access Road and River Work Sites.	Dhap, Access Road and River Work Sites.							
21	Accidental and emergencies handling	Monitoring at all times for maintenance of first aid facility with required facilities and staffs at Dhap.	Dhap.							