Initial Environmental Examination (IEE) Form for Forestry Projects -2017

Note 1:	In accordance with section 47 of the Regulation for Environmental Clearance of Projects 2016, consent must be obtained from individual or juristic person if activity has direct impact on a property.
Note 2:	The completed IEE form shall be submitted to the relevant Competent Authority.
Note 3:	The completed IEE form shall be the basis to determine the requirement of Environmental Impact Assessment (EIA). If EIA is required, applicant will be notified to submit Terms of Reference for the project.
Note 4:	The application shall be subjected to Fee Schedules to cover the cost of administering the Environmental Assessment Act, 2000.

1. General Information:

a) Name of the project, tick as appropriate:

I. ☐ FMU
II. ☐ Sand-dredging
III. ☐ Surface Collection
IV. ☐ Ropeways
V. ☑ Others-**Dredging**

b) Project Type (Tick as appropriate): ☑ New ☐ Expansion/modification

c) Applicant Details: ***(To be filled up by the winning bidder)***

I. Name of the applicant:
II. Address:
III. Post Box No.:
IV. Contact No.:
V. Fax No.:
VI. Email:
VII. Name and contact details of Environmental Focal Person:

2. Project Location:

   I. Dzongkhag/Thromde: **Samtse**
   II. Gewog: **Phuntshopelri**
   III. Village: **Kalapani**
   IV. Name of the project site: **Upper Kalapani**

3. Project Cost (Nu.):.....***(To be filled up by the winning bidder)***

4. Project area, tick as appropriate:

   a) ☑ State Reserve Forest: **14.0**
   b) ☐ Private: **0 ares**
   c) ☐ Others: **0 acres**
   d) Total area required: **14.0 ares**

5. Terrain characteristic at the project site:

   a) Elevation (meter): **200**
   b) Aspect (direction): **North-south**
   c) Slope (degree/%): **5-10%**

6. Presence of any of the following within and 50 meters buffer of the project area. If yes tick and mention name, wherever applicable:

   a) ☑ River/spring/stream: **Kalapani seasonal stream**
   b) ☐ Protected Area: **No**
   c) ☐ Catchment area: **No**
   d) ☐ Wetland: **No**
   e) ☐ Community forest: **No**
   f) ☐ Private forest: **No**
   g) ☐ Tsamdro: **No**
   h) ☐ Sokshing: **No**
   i) ☐ Agriculture land: **No**
   j) ☐ Heritage site: **No**
   k) ☐ Hospital: **No**
   l) ☐ School/institution: **No**
   m) ☑ Roads: **Samtse-Gomtu farm roads**
   n) ☐ Industries: **No**

o) ☐ Settlements: **No**

p) ☐ Presence of religious site: **No**

q) ☐ Archaeological site: **No**

r) ☑ Others: **Overburden dumpyard**

7. Project Details (attached in a separate sheet):

a) Project objective: **The dredging activity is proposed to reduce the riverbed level as a mitigation measure to the nearby community.**

b) Methods of storing materials: **The materials shall be collected using excavators, loaded into trucks and hauled to the crushing plants. The wastes shall be properly dumped at the designated dumpyard.**

c) Source of water and total requirement -m^3/day: **N/A**

d) Source of energy, tick as appropriate:

- ☐ Electricity, if yes, Tapping point: **No**
- ☐ Coal: **No**
- ☐ Fossil fuel: **No**
- ☐ Solar: **No**
- ☐ Wood: **No**
- ☐ Others: **No**

8. Ancillary activities, tick as appropriate:

a) ☐ Power line: **No**

b) ☐ Approach road: **No**

c) ☑ Others: **Overburden dumpyard**

Note: For ancillary activities, fill up relevant IEE forms and submit along with these IEE forms.

9. List type of wastes under each category and its quantity per annum, tick as appropriate:

a) ☐ Solid: **No**

b) ☐ Liquid/effluent: **No**

c) ☐ Air/Gaseous: **No**

10. Provide maximum noise level at the project boundary during operation, if applicable:

11. Environmental Management Plan (attached in a separate sheet):

Briefly describe mitigation measures to address impacts including sections 9 and 10

12. List of documents to be attached with this IEE form:

1	Public consultation records verified by the concerned local authority
2	Layout plan and KMZ file depicting entire layout plan
3	Forest Management Plan for Forest Management Unit and Working Schemes

Name and signature of the project proponent:

Address:

Date:

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

FOR

DREDGING ACTIVITY

AT

UPPER KALAPANI, SAMTSE

DEPARTMENT OF GEOLOGY & MINES

MoENR, THIMPHU

June 2025

1. INTRODUCTION

The Environmental Management Plan (EMP) is a site-specific plan developed to ensure that the project or an activity is carried out in an environmentally sustainable manner and understand the potential environmental risks arising from the proposed activity and take appropriate actions to minimize those risks. The EMP also ensures that the project implementation is carried out in accordance with the approved plan by taking appropriate mitigation measures to adverse environmental impacts during activities. The key benefit of the EMP is that it provides the organization with means of managing its environmental performance thereby allowing it to contribute to improved environmental quality.

The main objective of the preparation of the Environmental Management Plan (EMP) is to identify and determine the likely environmental impacts due to dredging activities and how to address and minimize such impacts through adoption of proper mitigation measures.

Various activities are likely to have some impact on the environmental attributes during its operation of dredging works. The likely environmental impact due to dredging activity and proposed mitigation measures is tabulated in **Table 1**. Adequate environmental management measures will be incorporated during the operation of dredging activity to minimize any adverse environmental impact and assure sustainable development of the area.

2. Environmental Impacts and Mitigation Measures

The dredging of low-grade dolomite, dolo-dust, stones and boulders at Upper Kalapani involves multiple activities that can potentially impact various components of the environment. These impacts, if not adequately managed, may lead to air and water pollution, soil contamination, noise disturbances, alteration of river dynamics, and poor waste management. This section outlines the major environmental risks associated with each component and describes the proposed mitigation strategies as detailed in **Table 1**. A total estimated budget of **Nu. 490,000** is required to carry out reclamation and mitigation activities.

2.1. Air Environment

Air quality may be compromised during the dredging operation due to dust emissions from site operation, movement of heavy machinery, and transportation of dredged materials. These activities, particularly on dry and windy days, can contribute significantly to airborne particulate matter. To minimize these impacts, regular sprinkling of water on exposed surfaces and access roads will be carried out to suppress dust. Additionally, all vehicles and machinery used in excavation and transport will be well-maintained to reduce exhaust emissions. Transport vehicles will also be covered with tarpaulin during transportation to prevent dust from escaping into the atmosphere. These measures will help maintain acceptable air quality levels and reduce environmental and health-related risks.

2.2. Water Environment

The operation may affect the water environment through increased turbidity and potential contamination of surface water bodies. Dredging can disturb river sediments, causing suspended particles to enter the water column and reduce water quality. There is also a risk of accidental spillage of petroleum, oil, and lubricants, which can further contaminate the aquatic environment.. Excavation will be carried out systematically to limit the release of suspended solids. Proper handling and storage of fuel and lubricants will be ensured, with all materials

stored in designated areas away from riverbanks. These precautions aim to preserve water quality and prevent ecological disturbances.

2.3. Soil Environment

Soil contamination may result from improper storage and handling of petroleum products such as diesel and lubricants. Leakage or spillage in operational areas poses a threat to the surrounding soil and groundwater quality. To prevent soil pollution, all fuel and lubricant storage will be confined to designated zones equipped with containment features. Handling procedures will be carefully managed, particularly in proximity to the river, to avoid accidental discharge. With these control measures, the risk of soil degradation will be significantly minimized, ensuring that land resources remain uncontaminated.

2.4. Noise Environment

Noise generation is another environmental concern during dredging operations. The use of heavy machinery and frequent vehicle movement can lead to elevated noise levels, which may disrupt nearby communities and local wildlife. To address this, all equipment and vehicles will be routinely maintained to reduce mechanical noise. Furthermore, dredging activities will be restricted to daytime hours to avoid disturbing residents during sensitive nighttime periods. These steps will help keep noise within acceptable limits and reduce potential health impacts associated with prolonged exposure.

2.5. River Flow and Hydrology

Dredging can cause unintended changes to the river's natural flow, especially if the riverbanks are destabilized or material is removed unevenly. Such changes could alter the course of the river and increase the risk of erosion or flooding. To maintain the natural hydrological regime, the river channel will be reinforced through proper excavation of the site as shown in the plan. These structures will help guide the river flow and prevent unplanned diversions. This ensures that the river's ecological and physical functions remain intact. Further, a gabion wall will be constructed along the riverbank as per the drawing attached to prevent the diversion of the river channel, mitigate further erosion of the surrounding land, and safeguard the Kalapani community from potential impacts.

2.6. Dumpyard Management

The development and use of a designated dumpyard present risks such as dust generation, spillage of dredged material, and visual pollution. If not properly managed, the dumpyard can become an environmental liability. To counter these risks, a retention wall, where necessary, will be constructed as per engineering specifications to contain material and prevent runoff. Dredged materials will be systematically dumped as per approved plan and drawings in a controlled manner to prevent scattering and aesthetic degradation. Additionally, all waste handling at dredging sites will follow standardized procedures to ensure safety and environmental compliance. These practices will help maintain the site in an orderly and environmentally sound manner.

3. SOCIO-ECONOMIC IMPACTS

One of the primary socio-economic benefits of the dredging activity at Upper Kalapani is the

mitigation of flood risks during the monsoon season through proper channelization of the river and stabilization of its banks. This will help protect nearby settlements, infrastructure, and agricultural land from potential damage. In addition, the project will create short-term employment opportunities for local residents, including operators, drivers, and laborers involved in excavation and transportation. The development and maintenance of access roads may also improve local connectivity. Further, the winning bidder shall not disrupt the normal traffic in Gomtu-Samtse farm road during the operation. Although minor disturbances such as noise and dust may occur during operation, these are manageable through the implementation of appropriate mitigation measures.

4. Roles & Responsibilities for successful operation of dredging & implementation of EMP

The winning bidder shall ensure following personnel are deployed in the site to oversee the smooth operation of surface collection:

4.1. Project Manager (PM)

The Project Manager's responsibilities are as follows:

i. Delegate specific responsibilities and accountabilities to all field management staff and ensure all functions are carried out as per the EMP.
ii. Liaise with DGM/local government/ relevant agencies, etc.
iii. Ensure all the operations are done as per the standards and in a safe environment.
iv. Review safety performance, safety topics, and safety activities on a regular basis.
v. Report on the collection works periodically to the relevant government agencies.
vi. Ensure that the river is channelized properly.

4.2. Environment and Safety Focal

A dedicated Environment and Safety Officer shall be deployed to discharge following responsibilities:

i. Advice management on the measures to be taken in the interest of health, safety & environment of persons employed therein.
ii. Advise operators and drivers to follow EMP to mitigate the environment damages in the process of the excavation and transportation.
iii. Ensure all dredging activities are done in accordance with the EMP and existing laws.
iv. Maintain record of the collection and submission to the management for onward submission to the relevant agencies.
v. Monitor the implementation of the Security Procedure.
vi. Carry out the environmental monitoring at site on a regular basis.

4.3. Operators & Driver

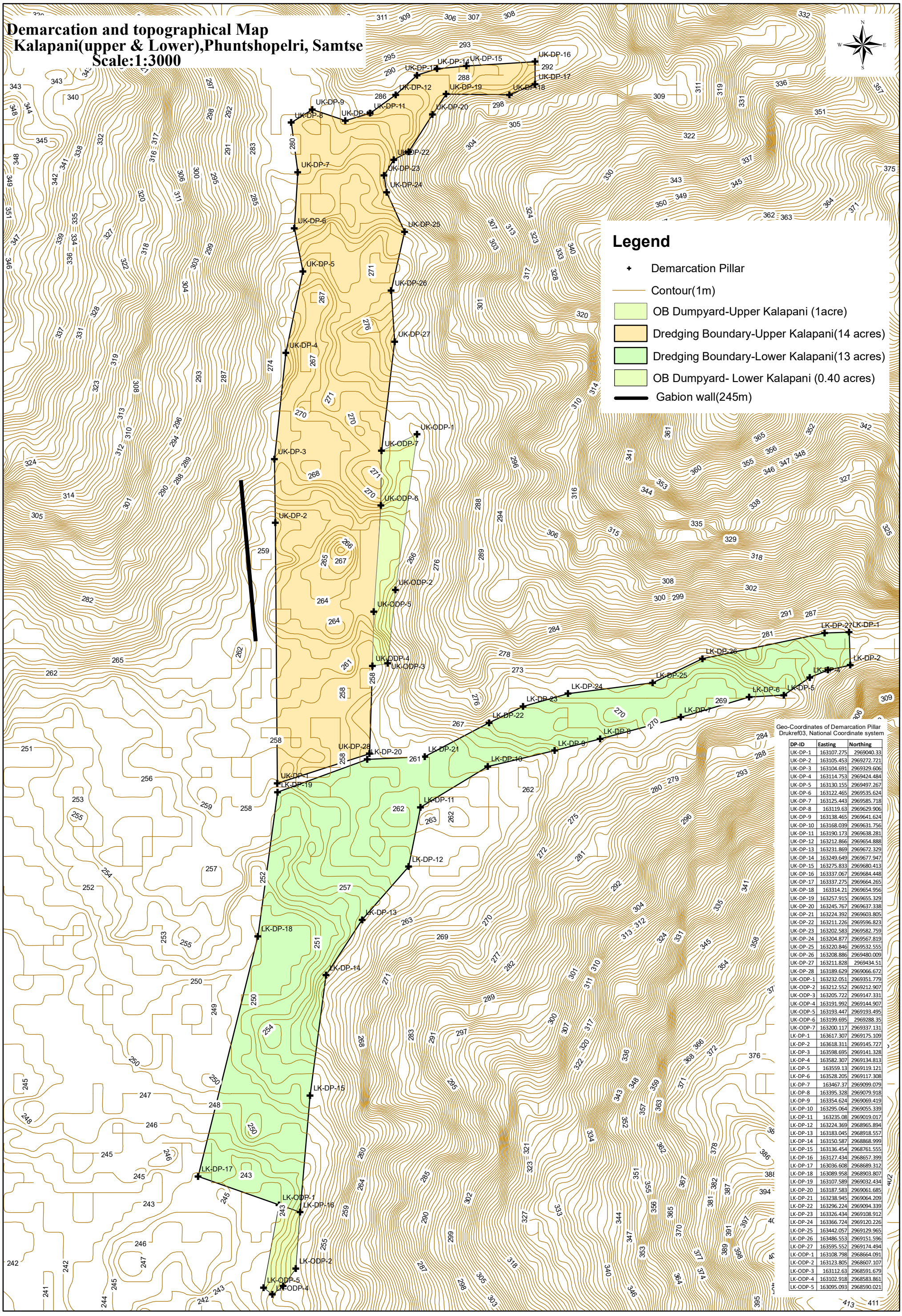
The Operators/Drivers shall adhere to the instructions of Project Manager, Environment Officer and regulatory officials and abide to work in compliance to the environmental management plan.

Table 1: Likely Impacts during Dredging Activity & Mitigation Measures

Environmental component	Activity	Likely Impact	Mitigation Measures	Implementor	Monitoring Agency	Mitigation Cost (Nu.)
Air	Site Clearance or Operation	Dust Pollution	• Sprinkling of water using a tanker with the frequency increased as needed during dry, windy conditions or periods of high activity.	Winning bidder	DGM	30,000
	Heavy Vehicle Maintenance/ Operation	Air Pollution & Dust Generation	• Vehicles & other conveyance used for transportation shall be regularly maintained. • Vehicles & other conveyance used for transportation of materials shall be covered with tarpaulin.	Winning bidder	DGM	
Noise	Heavy Machinery/ Vehicle Maintenance	Increased vehicular noise	• Machineries and vehicles involved in operation and transportation shall be regularly maintained. • The operation time shall restrict to only during day time.	Winning bidder	DGM	N/A
Water	Contamination of water body	Strain on local water sources	• Adequate measures will be taken to avoid contaminating the water body while carrying out dredging with machinery.	Winning bidder	DGM	20,000

Soil	Storage of Petroleum, High-Speed Diesel, lubricants	Pollution due to spillage of POL/ HSD	● Storage of petroleum and other lubricants in designated areas. ● Proper & careful handling of materials shall be ensured (such as handling away from the river banks).	Winning bidder	DGM	20,000
Flow of River Course	River course diversion due to dredging activity	Temporary alteration of natural flow of the river	● The main river course will be properly channelized to ensure smooth flow of the water as shown in the plan. ● A gabion wall will be constructed along the riverbank as per the drawing attached to prevent the diversion of the river channel, mitigate further erosion of the surrounding land, and safeguard the Kalapani community from potential impacts.	Winning bidder	DGM	370,000
Dumpyard	Development of dumpyard	Dust pollution, spillage & unaesthetic	● A retention wall, if required, will be constructed. ● Systematic dumping of the wastes as per plan and drawings. ● Proper handling of the wastes from the dredging sites.	Winning bidder	DGM	30,000
Access Road	Construction of access road	Dust generation.	● Dust shall be suppressed by sprinkling of water. Further, there is already an access road and requires minimal maintenance. ● Further, the winning bidder shall not disrupt the normal traffic in Gomtu-Samtse farm road during the operation.	Winning bidder	DGM	20,000
Total Mitigation Cost						**490,000**

Demarcation and topographical Map
Kalapani(upper & Lower),Phuntshopelri, Samtse
Scale:1:3000



Legend

- Demarcation Pillar
- Contour(1m)
- OB Dumpyard-Upper Kalapani (1acre)
- Dredging Boundary-Upper Kalapani(14 acres)
- Dredging Boundary-Lower Kalapani(13 acres)
- OB Dumpyard- Lower Kalapani (0.40 acres)
- Gabion wall(245m)

Geo-Coordinates of Demarcation Pillar
Drukref03, National Coordinate system

DP-ID	Easting	Northing
UK-DP-1	163107.275	2969040.33
UK-DP-2	163105.453	2969272.721
UK-DP-3	163104.691	2969329.606
UK-DP-4	163114.753	2969424.484
UK-DP-5	163130.155	2969497.267
UK-DP-6	163122.465	2969535.624
UK-DP-7	163125.443	2969585.718
UK-DP-8	163119.63	2969629.906
UK-DP-9	163138.465	2969641.624
UK-DP-10	163168.039	2969631.756
UK-DP-11	163190.173	2969638.281
UK-DP-12	163212.866	2969654.888
UK-DP-13	163231.869	2969672.329
UK-DP-14	163249.649	2969677.947
UK-DP-15	163275.833	2969680.413
UK-DP-16	163337.067	2969684.448
UK-DP-17	163337.275	2969664.265
UK-DP-18	163314.21	2969654.956
UK-DP-19	163257.915	2969655.329
UK-DP-20	163245.767	2969637.338
UK-DP-21	163224.392	2969603.805
UK-DP-22	163211.226	2969596.823
UK-DP-23	163202.583	2969582.759
UK-DP-24	163204.877	2969567.819
UK-DP-25	163220.846	2969532.555
UK-DP-26	163208.886	2969480.009
UK-DP-27	163211.828	2969434.51
UK-DP-28	163189.629	2969066.672
UK-ODP-1	163232.051	2969351.779
UK-ODP-2	163212.552	2969212.907
UK-ODP-3	163205.722	2969147.331
UK-ODP-4	163191.992	2969144.907
UK-ODP-5	163193.447	2969193.495
UK-ODP-6	163199.695	2969288.35
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LK-DP-1	163617.307	2969175.109
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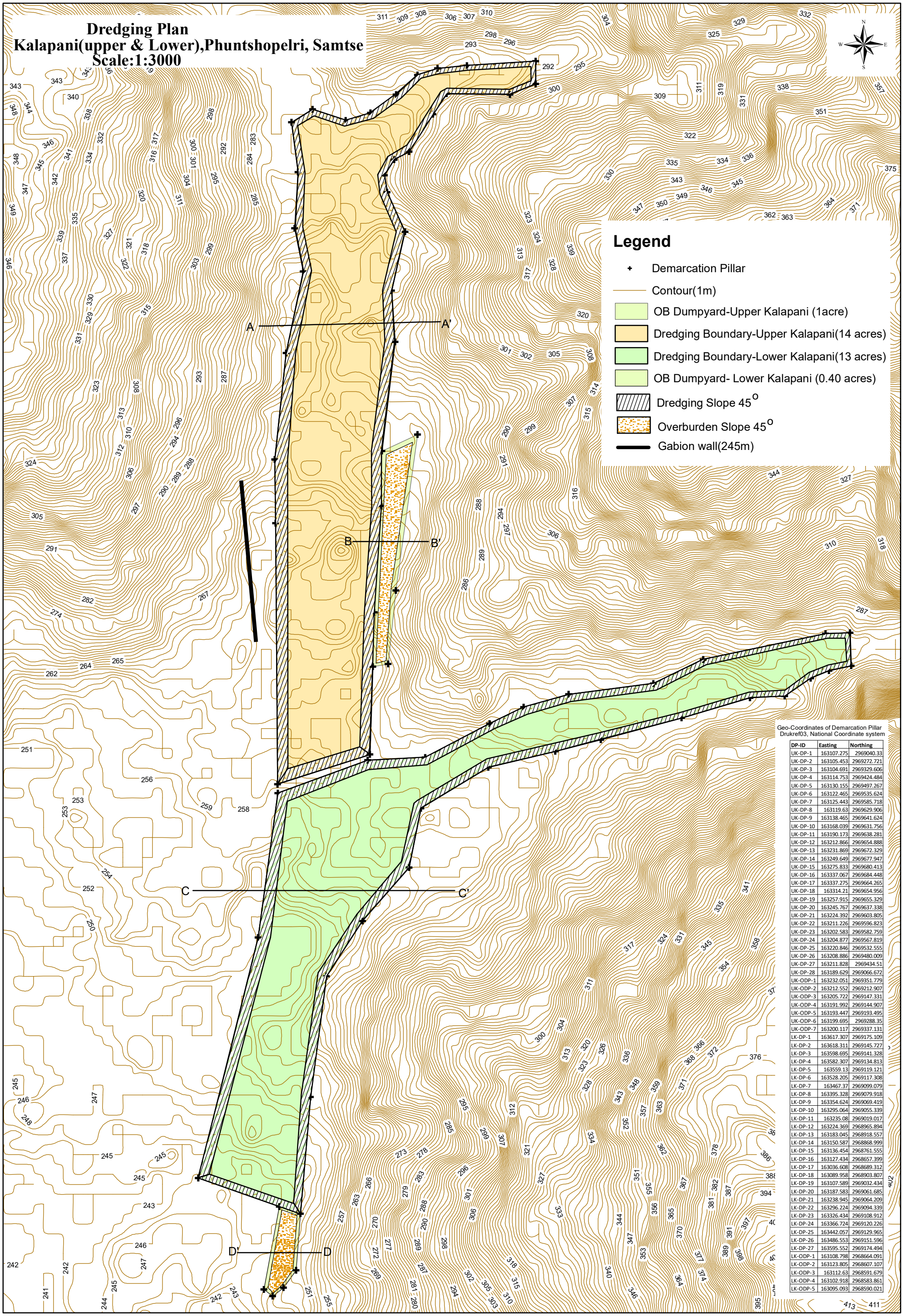
LK-DP-13	163183.045	2968918.557
LK-DP-14	163150.587	2968868.999
LK-DP-15	163136.454	2968761.555
LK-DP-16	163127.434	2968657.399
LK-DP-17	163036.608	2968689.312
LK-DP-18	163089.958	2968903.807
LK-DP-19	163107.589	2969032.434
LK-DP-20	163187.583	2969061.685
LK-DP-21	163238.945	2969064.209
LK-DP-22	163296.224	2969094.339
LK-DP-23	163326.434	2969108.912
LK-DP-24	163366.724	2969120.226
LK-DP-25	163442.057	2969129.965
LK-DP-26	163486.553	2969151.596
LK-DP-27	163595.552	2969174.494
LK-ODP-1	163108.798	2968664.091
LK-ODP-2	163123.805	2968607.107
LK-ODP-3	163112.63	2968591.679
LK-ODP-4	163102.918	2968583.861
LK-ODP-5	163095.093	2968590.021

Dredging Plan
Kalapani(upper & Lower),Phuntshopelri, Samtse
Scale:1:3000



Legend

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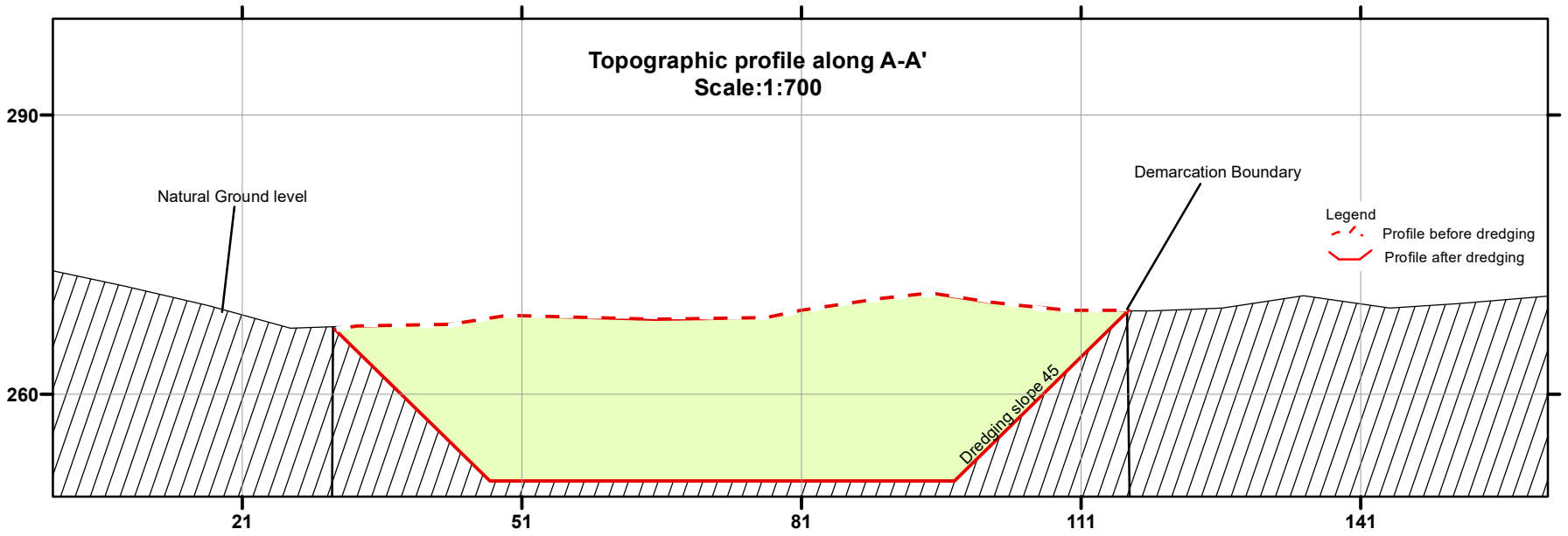
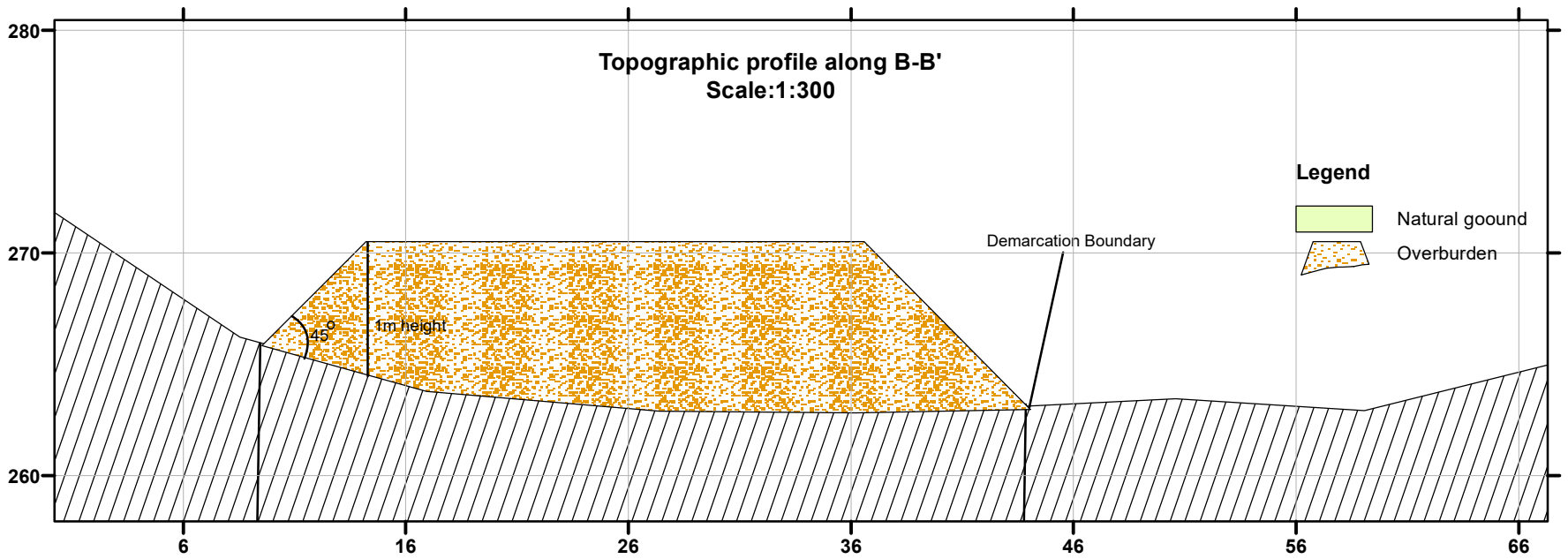
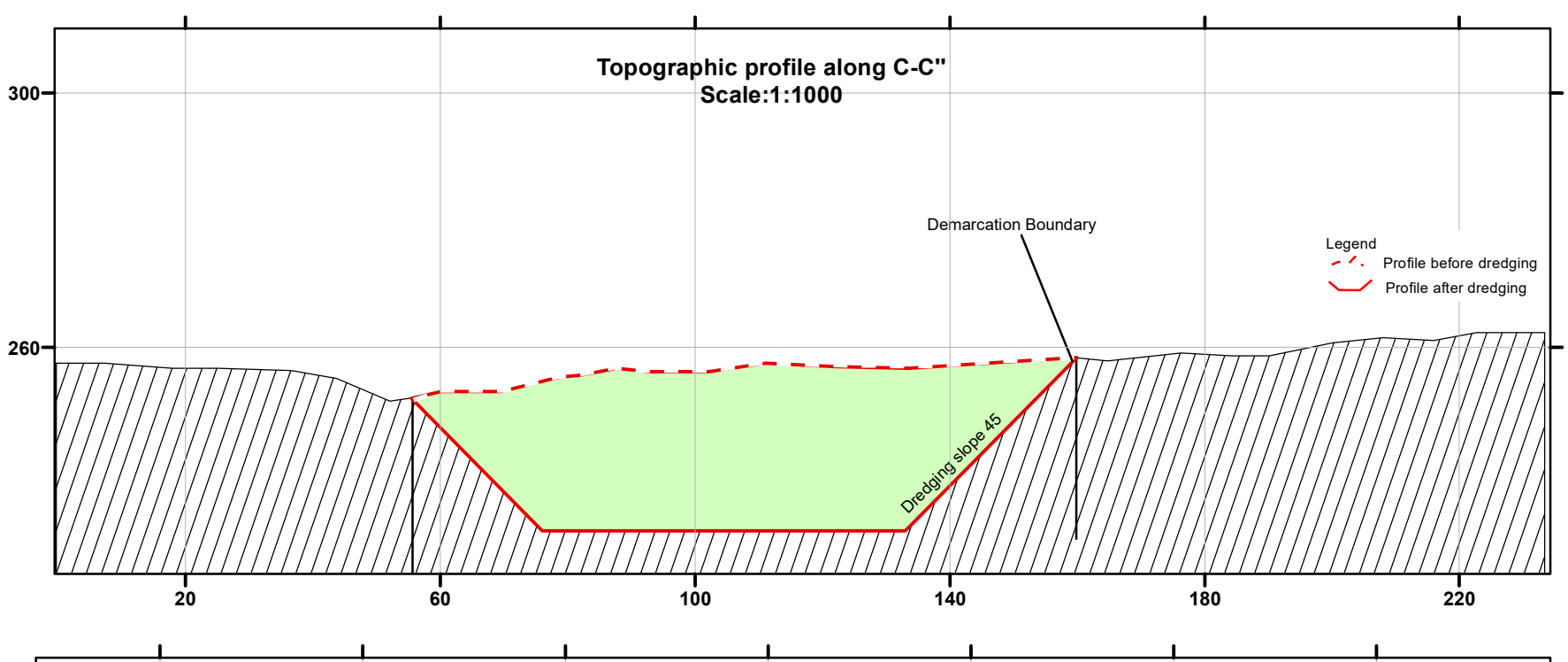
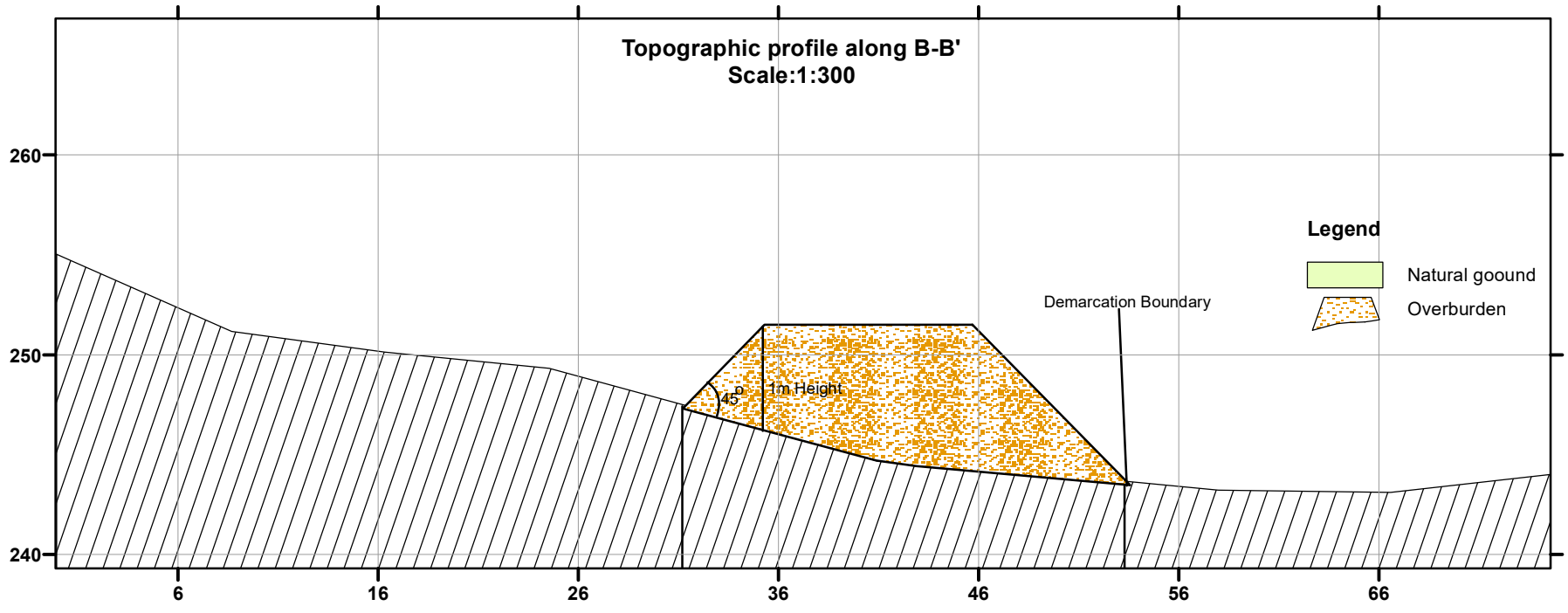
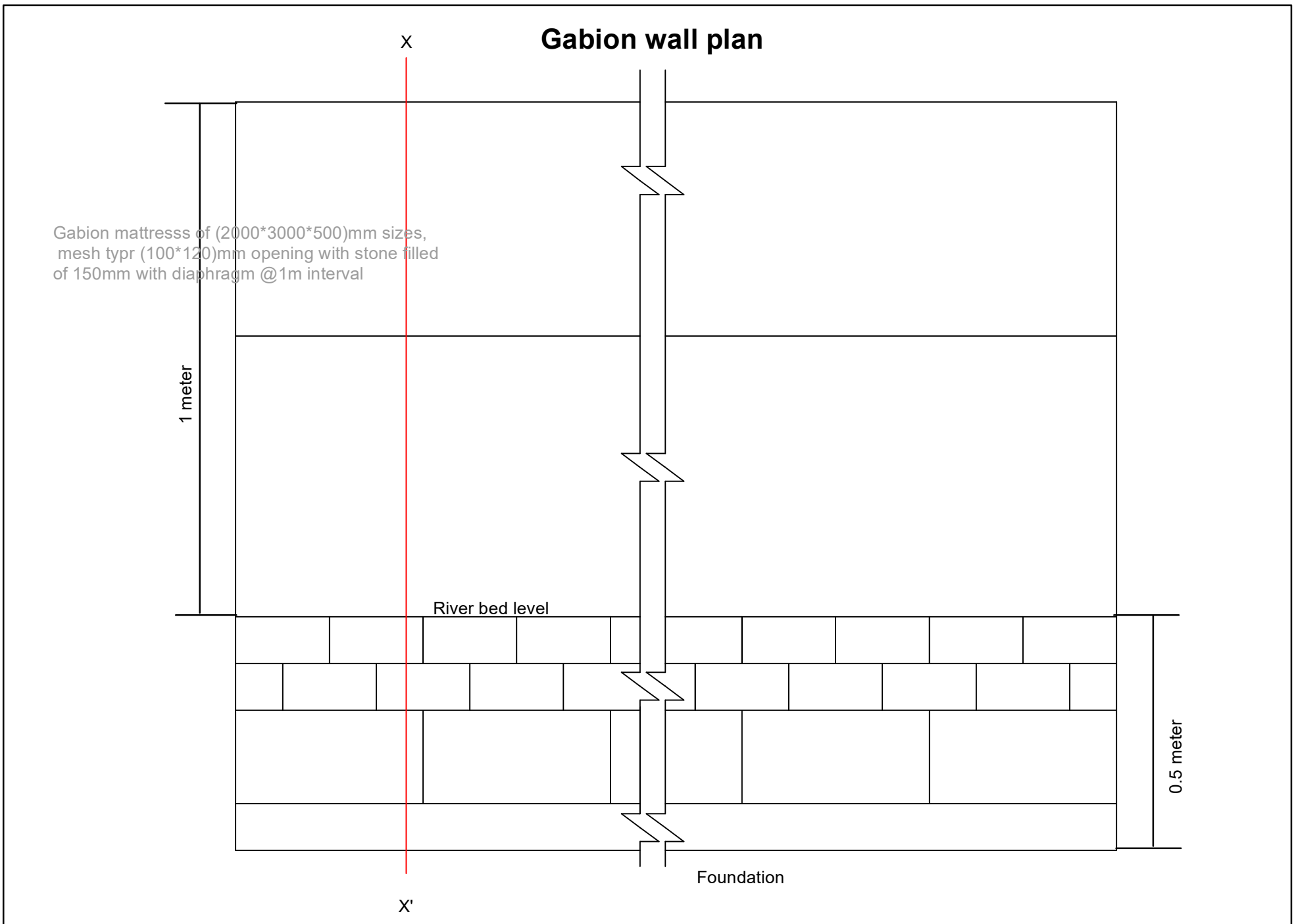

Topographic profile along A-A'
Scale:1:700
290
260
Natural Ground level
Demarcation Boundary
Legend
Profile before dredging
Profile after dredging
Dredging slope 45
21
51
81
111
141


Topographic profile along B-B'
Scale:1:300
280
270
260
Legend
Natural goound
Overburden
Demarcation Boundary
45°
1m height
6
16
26
36
46
56
66


Topographic profile along C-C"
Scale:1:1000
300
260
Demarcation Boundary
Legend
Profile before dredging
Profile after dredging
Dredging slope 45
20
60
100
140
180
220


Topographic profile along B-B'
Scale:1:300
260
250
240
Legend
Natural goound
Overburden
Demarcation Boundary
45°
1m Height
6
16
26
36
46
56
66

Gabion wall plan



Section X-X'