

# CHAMBA HYDRO VENTURES

HOTEL ALPS RESORTS, PO & TEHSIL DALHOUSIE DISTT. CHAMBA HP- 176304  
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Ref.No: CHV/PCA/214/26

Dated 12/5/26

To,  
Divisional Forest Officer  
Bharmour Forest Division  
Bharmour Distt. Chamba HP


**Subject:-** Diversion of 3.7463 Hectare of forest land in favour of Chamba Hydro Ventures, Hotel Alps Resorts, PO and Tehsil Dalhousie, District Chamba HP for the construction of Ghator Top SHEP (4.98 MW) with the jurisdiction of Bharmour Forest Division Distt. Chamba HP (Online proposal No. FP/HP/HYD/155608/2022).

**Reference No.:-** MoM of 3<sup>rd</sup> (of 2026) REC of the REC-Chandigarh held on 12.03.2026


Dear Sir,

Kindly find enclosed here the reply to observation in favour of Ghator Top SHEP (4.98MW) Mw in Distt. Chamba under above reference as below

| SR. NO. | OBSERVATIONS                                                                                                                                                                                                                                                                                                                                               | REPLY                                                                                                                                                                                                                                                                                                                                                            |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.      | The State Government is required to submit complete details of the trees standing within the proposed muck dumping sites along with the photographs of the dumping sites, authenticated by the concerned DFO. In addition, the State Government need to submit an undertaking stating that no trees will be felled within the proposed muck dumping sites. | There are no trees standing in the proposed Dumping sites I to VI of Ghator To SHEP (4.98MW) as the report from the concerned officials has been attached here. The photographs of all proposed Dumping has been uploaded in PDF format in the reply. The undertaking regarding no tree will be felled in the proposed muck Dumping site has also been attached. |
| 2.      | The State Government is also required to clarify the approach proposed for accessing the dumping sites. Details of approach road to access the proposed dumping sites need to be submitted.                                                                                                                                                                | In this regard it is submitted that the Ghator Top small Hydro Power Project (4.98MW) is a high head scheme in which small components has been proposed by adopting the technical specifications. Most of the mucking will be done manually. All the Dumping sites proposed are lying with the                                                                   |

Chamba Hydro Ventures  
  
Authorized Signatory


|    |                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                                                                                                                                                                                                                                                                                                                                           | <p>the muck Dumping out of which IV Dumping sites are along the proposed Project components i.e road and Power House etc. So there is no need of specific access to these Dumping sites. Whereas the remaining II Dumping sites are accommodating those components where all the work will be executed manually and mucking will also be done manually and theses Dumping sites are also adjoining the components i.e W/Site, HRT, D-Tank and forebay etc. where no need of specific access. The access plan to the Dumping sites has been attached here for your ready reference Please.</p> |
| 3. | <p>The State Government needs to submit a comprehensive report detailing with the bioengineering measures proposed to prevent the rolling of muck into the nallah, along with a clear statement of the financial outlay. The report shall also specifically include proper and scientific protection measures for safeguarding existing green standing trees, if any.</p> | <p>Regarding this submitted that in the proposed Dumping sites there is no vegetation and trees standing but to minimize the ecological impact in the area safety measures are required and to implemented. Keeping in view this to prevent the rolling of Muck in to the nala during construction and post construction of project some necessary bioengineering measures are mandatorily required and a comprehensive report regarding this issue has been attached with the reply.</p>                                                                                                     |
| 4. | <p>The State Government needs to revise the canopy density of the forest diversion area in accordance with the actual ground realities and update the same under S.N-3, Part-II of the proposal. Consequently, the NPV bill/calculation sheet may be updated, if required.</p>                                                                                            | <p>The matter pertains to your kind office Please.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. | <p>To ensure the extent of forest area proposed for diversion is barest minimum, the State Government needs to revisit the area proposed for diversion (including all the components) and ensure that no area has been proposed in the local Karam unit, detail in this regard, duly</p>                                                                                  | <p>The area proposed for diversion in extant proposal has been proposed in hectares i.e 3.7463 Hectares which is barest minimum. No area for diversion has been proposed in Karam unit but proposed in hectares as the component wise requirement of land in hectares</p>                                                                                                                                                                                                                                                                                                                     |

  
 Authorized Signatory

|    |                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                      |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | authenticated by DFO concerned need to be submitted in the area proposed for diversion.                                                                                                                                                                                                                                                                  | has been attached. In Distt. Chamba KARAM is measurement unit of revenue department used for all revenue related works as the letter from Deputy Commissioner Chamba has been attached. All the components of the Project has been proposed in meters and hectares and acquired minimum land. The component wise requirement/breakup of proposed land in meters and hectares has been attached here. |
| 6. | State Govt. needs to submit the detailed Geologist report along with recommendations/comments duly authenticated by competent authority.                                                                                                                                                                                                                 | The detailed report of geologist in favor of Ghatot Top SHEP (4.98MW) has been attached.                                                                                                                                                                                                                                                                                                             |
| 7. | State Govt. needs to submit the detailed Evacuation Plan of the instant proposal.                                                                                                                                                                                                                                                                        | The detailed evacuation Plan has been uploaded in additional information detail column as well as in this reply.                                                                                                                                                                                                                                                                                     |
| 8. | State Govt. needs to submit the revised DGPS map of the diversion area in legible format showing lat/ long of the components.                                                                                                                                                                                                                            | The DGPS map of the diversion area has been uploaded in legible format.                                                                                                                                                                                                                                                                                                                              |
| 9. | State Govt. need to revisit the proposed CA area for its suitability for plantation and submit the exact details of CA along with the requisite documents of the CA viz. KML, Comprehensive CA scheme, DGPS/Toposheet Map, Land suitability certificate etc. duly authenticated by DFO concerned. Also, update the details of CA in S.No-13(i), part-II. | The matter pertains to your kind office Please.                                                                                                                                                                                                                                                                                                                                                      |

So this is for your kind information and necessary action Please.

Thanks & Regards

Chamba Hydro Ventures  
  
 Chamba Hydro Ventures  
 Authorized Signatory


Authorized Signatory

## CERTIFICATE FOR NO TREES ON DUMPING SITES

This is to be certify that there are not any standing trees standing in the proposed Dumping sites for the execution of Ghator Top SHEP being executed by Chamba Hydro ventures . Hotel Alps resorts, Tehsil Dalhousie, Distt. Chamba HP.

Chamba Hydro Ventures

Authorized Signatory

  
Divisional Forest Officer  
Forest Division Bhamidour  
Bhamidour Distt. Chamba

# CHAMBA HYDRO VENTURES

HOTEL ALPS RESORTS, PO & TEHSIL DALHOUSIE, DISTT. CHAMBA HP- 176304  
Mob. No. 9418080340 Email Id—ranjan.upmanyu@gmail.com

Ref.No.- CHV/FQA/211/26


Dated 17/4/26

## UNDERTAKING FOR NO TREES FEELING

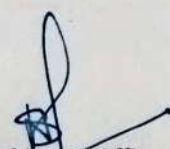
I Rajeev Kumar Upmanyu authorised signatory of M/S Chamba Hydro Ventures , hereby undertake that the no trees will be felled in the proposed Muck Dumping sites for the construction of Ghator Top (4.98MW) SHEP in the jurisdiction of Bharmour Forest Division Distt. Chamba HP.

Date---

Place--- Bharmour

  
Chamba Hydro Ventures  
For Chamba Hydro Ventures,  
Authorized Signatory  
Authorized Signatory

Countersigned By:-

  
Divisional Forest Officer  
Forest Division Bharmour  
Distt. Chamba HP (H.P.)

DUMPING SITE NO. 4 (NEAR WEIR SITE)



DUMPING SITE NO. 6 (FOREBAY & HRT)





DUMPING SITE-V (POWER  
HOUSE & S. YARD





DUMPING SITE-I (ROAD)





DUMPING SITE-II (ROAD)



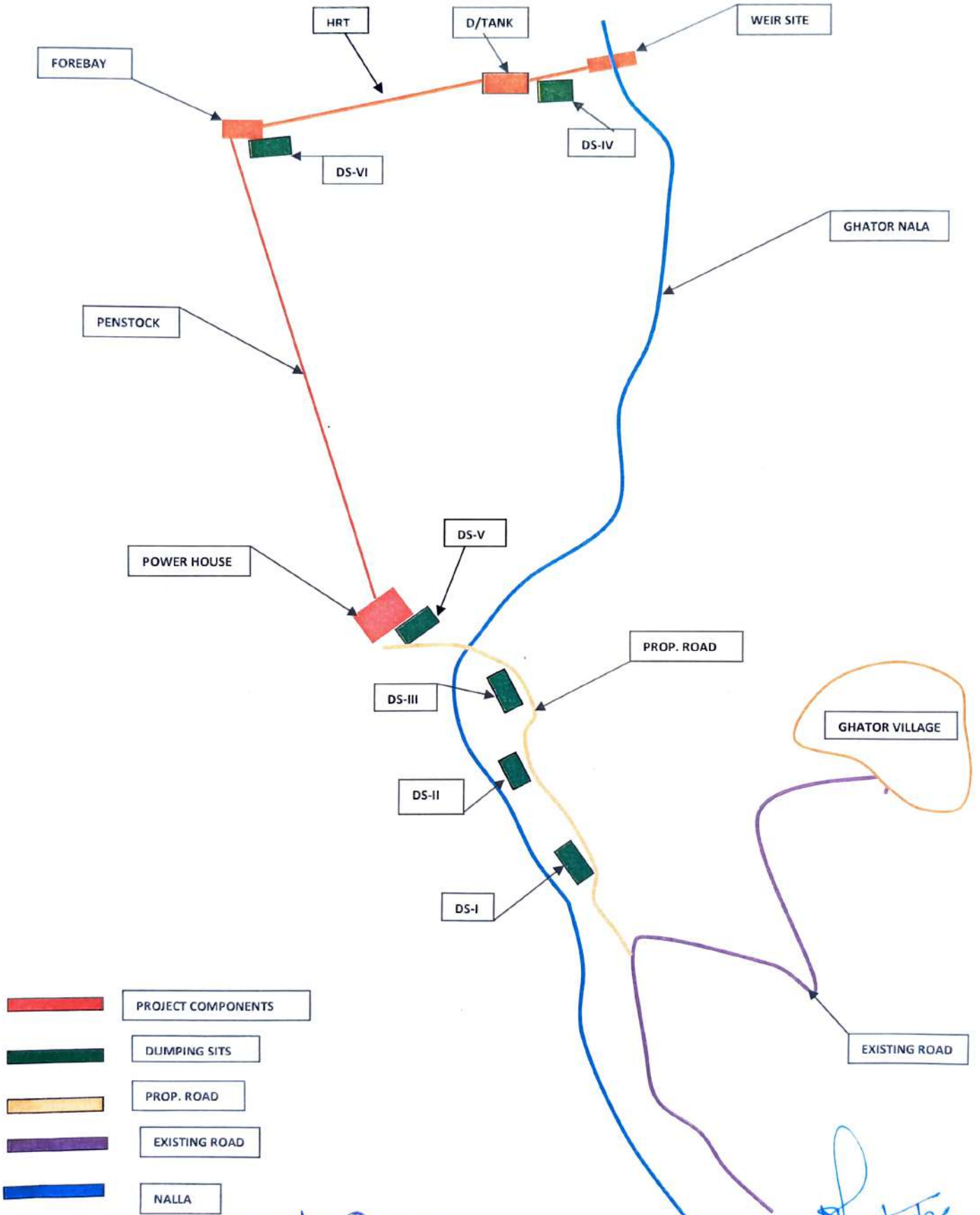


DU MPING SITE-III (ROAD)





ACCESS PLAN FOR GHATOR TOP SHEP 4.98MW



- PROJECT COMPONENTS
- DUMPING SITS
- PROP. ROAD
- EXISTING ROAD
- NALLA

**Chamba Hydro Ventures**  
*[Signature]*  
**Authorized Signatory**

*[Signature]* 11/05/26  
 Director, Projects  
 Bhamour Chamba (H.P.)

# COMPREHENSIVE REPORT ON MUCK DUMPING

Muck generated from excavation of any project component is required to be disposed in a plan manner so that it takes a least possible space and is not hazardous to the environment. The muck disposal site cause increased sedimentation in the rivers/Nala (though in significant compared to natural sedimentation) and totally spoils the visual aesthetics of the area. It is of prime importance that these sites will have to be rehabilitated as soon as the disposal sites are full.

Proposed Dumping sites for the execution of Ghator Top SHEP (4.98MW) in Distt. Chamba within the jurisdiction of Bharmour Forest Division there are I to VI dumping sites has been proposed for muck dumping. On these dumping areas no vegetation and trees standing. As per proposal about the project will generate the total of muck 9409.4 Cubic Meters which after applying 45% soil factor is become 13643.63 Cubic meters. Out of this total app. 5293 Cubic meters muck will be utilized locally in leveling, filling and behind retaining/Breast walls etc. The remaining 8350.29 cubic meters muck will required safe disposal for which Six numbers of dumping sites have been identified. The capacity of these dumping sites has been calculated as 8411.9 Cubic meters which will be sufficient for holding the quantity of muck to be disposed off. The muck generated will be utilized either locally as fillings in retaining/Bwalls, Crate works and leveling of ground or will be dumped in the designated dumping sites for six numbers.

To minimize the ecological impact in the proposed area safety measures are required and to be implemented. Keeping in view this to prevent the rolling of Muck in to the nala during construction and post construction of project some necessary bioengineering measures as well as Engineering measures are mandatorily required as detailed below

## **1. Methodology of Muck Disposal**

The main objectives of process of muck dumping and restoration of these muck disposal sites are:

- *To protect and control soil erosion*
- *To create greenery in the muck disposal areas*
- *To improve and develop the sites in to recreational sites*
- *To ensure maximum utilization of muck for the construction purpose*
- *To develop the muck dumping sites / dumping yards to blend with the surrounding landscape and to minimize damage due to the spoilage of muck in the project area.*

During identification of the dumping sites above mentioned aspects have to be kept in mind. All possible alternate sites have to be inspected and examined before rejecting or selecting any site. All the dumping sites should adhere to following points:

- All the dumping sites have minimum possible forest cover.
- At all the dumping sites, the settlement areas are for away from the identified dumping site so as to have least impact on human life.
- The proposed dumping sites are located at a distance varying from 20 Mtrs to 30 Mtrs away from the HFL (Highest Flood level) of rivers/nala.
- Muck disposal sites are close to the sites from weir muck is to be generated to avoid hazards related to transport of muck to long distances.

## **2. Implementation:-**

The proposal will be implemented by the user agency itself at its own cost as detailed in this plan . The implementation of the plan will be supervised by the forest department from time to time and the progress will be periodically monitored. In case of default sanction of diverted land may be revoked with suitable penalty as decided by the State Govt./Govt.of India

### 3. Safety Measures for Muck Disposal

#### A) Engineering Measures

**Retaining Wall/ Wire Crate wall** - for stacking of dumped material retaining wall/Wire crate wall is proposed to be built before dumping of any material on to the sites. In addition, leveling would also be done after dumping the material on every cycle and simultaneously improving the drains of the disposal site. The approach road to power house structures will be constructed by employing the methodology recommended by the state highway authority of HP with minimal environmental damage. The methodologies consist in developing the formation with id half cutting and half filling, so that the materials obtained from cutting are utilized in filling. The excavation on hill side will be done to get a stable slope for the materials encountered. At place B/Wall, gabion wall shall be done in natural slope to retain filled material, particularly where there is problem of retaining the hill slope.

**To minimize the environmental damage, construction material** i.e stones, sand etc. required for the construction of road will be obtained mostly from the excavated material. In the streams box culverts will be provided to prevent the erosion of nala bed. In addition, stone/Concrete work on the downstream area will also be provided at vulnerable places to minimize erosion.

**Compaction and leveling-** Compaction is an engineering measures, which would reduced bulk density of the muck thereby optimizing the use of muck disposal area and would make it suitable for the plantation and other biological measures. Top surface would be leveled and graded to make the alternative use. The muck will be spread in 50cm thick layers. Top surface would be leveled and graded to make the alternative use. on top a layer of soil would be spread to make the land suitable for plantation.

- *R/Wall /Wire Crate wall*
- *Boulder Crate wall*
- *RCC*
- *Catch water Drain*

#### B) Biological Measures

Top surfaces and slopes of all dumping area would be left. These areas will be treated for the purpose of plantations. Vegetation cover controls the hydrological and mechanical effects on soils and slopes therefore, biological measures to stabilize the loose slope are essential. In order to implement the biological measures in dumping areas the following activities would be taken into account. The biological measures include the following:

- Soil Treatment-** Muck dumped at various sites is not considered to be nutrient rich as it is excavated from Tunnels and other components. In order to make it suitable for the plantation it will be provided bio treatment. The work plan will be formulated for re-vegetation of the dumping sites through integrated biotechnological approach.
- Fencing-** Fencing is a bio-engineering measure. After rehabilitation of muck the dumping areas need protection for some time from disturbing by human and domestic animals.
- Plantation-** The selected species will be planted after their nurseries have been developed. The dumping areas are very small therefore: separate nursery would not be required. In order to stabilize the stacked dumped material, vegetation cover would be provided to for dumped material over a period of time. Followings steps are envisaged:
  - *Plantation of suitable tree species and soil binding species.*
  - *Turfing of the exposed area and improvement of environment with ornamental species.*
  - *Protection with mechanical support i.e Barbed wire fencing*

#### **4. Assessment of Slope Stability:**

- We acknowledge that steep slopes pose a significant challenge for muck dumping, especially regarding the potential for erosion and instability. In response to this, we have initiated a detailed geotechnical survey of the proposed sites to assess the stability of the slopes. This will help us determine the maximum permissible slope for dumping activities and whether any corrective measures, such as terracing, soil reinforcement, or slope stabilization, are needed.
- We are prepared to adjust the site layout or consider alternative measures, such as reinforcing the slopes with retaining walls or erosion control methods, to ensure the safety and stability of the dumping sites to prevent the rolling of muck into the nala.

#### **5. Impact on Dense Vegetation:**

- In the proposed dumping sites there is no vegetation or trees standing But We are aware of the dense vegetation on the surrounding the proposed Dumping sites, which could be affected by the muck dumping. The ecological impact of disturbing these areas will be closely monitored. In consultation with our environmental experts, we will explore options to minimize vegetation loss, such as relocating or transplanting affected plant species, and enhancing the overall biodiversity of the site post-closure.
- Additionally, we are developing a comprehensive vegetation management plan to mitigate the environmental impact. This plan will include measures for replanting, maintaining ecological balance, and ensuring the stability of the site after the muck has been deposited.

#### **6. Erosion Control Measures:**

- To prevent soil erosion and ensure the long-term stability of the site, we will implement appropriate erosion control measures stated above , such as:
  - *Installation of silt fences or barriers.*
  - *Applying soil binders or mulch to prevent surface runoff.*
  - *Planting ground cover vegetation to stabilize the slopes.*
- Regular monitoring of the site will be undertaken to assess the effectiveness of these measures, especially after rainfall or other weather events that could affect the slopes.

#### **7. Ongoing Monitoring and Management:**

- We commit to continuous monitoring during and after the muck dumping process. This will include regular site inspections to assess slope stability, vegetation health, and the effectiveness of the erosion control measures in place.

If any issues or concerns arise during the monitoring phase, corrective actions will be taken promptly to address them.

#### **8. Comprehensive Monitoring and Maintenance Plan:**

Post-implementation, we will establish a comprehensive monitoring and maintenance plan to assess the effectiveness of the proposed erosion control measures. This will include regular site inspections to identify any issues related to slope stability, soil erosion, or the performance of the contour trenches and other stabilization methods.

If necessary, corrective actions will be taken to address any emerging issues, ensuring the long-term success of the closure and aftercare activities. By incorporating these additional measures into the proposal, we can mitigate the risks associated with the rolling out the muck into the nala and ensure the success of safe muck dumping.

**DETAILED ESTIMATE  
DUMPING SITE NO. 1**

For Reclamation & Rehabilitation of Dumping (Muck) Site

|                           |                             |
|---------------------------|-----------------------------|
| User Agency:              | Chamab Hydro Ventures       |
| Project Name:             | Ghator Top (4.98MW)         |
| Location:                 | Ghator DPF                  |
| Name of the Duping Site : | Dumping Site-I              |
| Area Involved:            | 0.0146 Hectares /146 Sqmtrs |
| Range / Beat:             | Swai/Ghator                 |
| Maintenance Period:       | 1 to 5 Years                |
| Financial Year:           | 2026-27                     |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to project activities by the user agency. The treatment includes slope stabilization, earth work, drainage management, soil improvement, plantation and protection measures to restore the site as per Forest Clearance conditions.

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                        |
|------------------------|------------------------|
| • Total Dump Area:     | 0.0146 Hect/146 Sqmtrs |
| • Slope Category:      | Gentle Slope           |
| • Approx. Dump Height: | 2.45 Mtrs.             |
| • Soil Type:           | Mixed                  |
| • Accessibility:       | Approachable           |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhhal      | Lamu Nry       | Dumping sites consist of loose and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stablizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration,improves soil quality, and enhances the overall environmental condition of the area.Being a cost effective and sustainable method, bio-engineering plantation is essential for long -term stabilization and protection of dumping sites. |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 4. DETAILED COST ESTIMATE (BOQ)

(Rates as per latest approved HP Forest SOR 2012-13 onward)

**1st YEAR PLAN****A. EARTH WORK & SITE SHAPING**

| Sr. No.                | Item Description             | Unit           | Qty. | Rate(₹) | Amount (₹)     |
|------------------------|------------------------------|----------------|------|---------|----------------|
| 1                      | Dressing and grading of muck | Cum            | 26   | 81.19   | 2110.94        |
| 2                      | Spreading & leveling of muck | Cum            | 12   | 120     | 1440           |
| 3                      | Bench formation/terracing    | Cum            | 8    | 250     | 2000           |
| 4                      | Manual compaction of muck    | Cum            | 15   | 60      | 900            |
|                        |                              |                |      |         | <b>6450.94</b> |
| <b>Sub Total (A)=₹</b> |                              | <b>6450.94</b> |      |         |                |

**B. RETAINING & DRAINAGE STRUCTURES**

| Sr. No.                | Item Description           | Unit          | Qty. | Rate(₹) | Amount (₹)    |
|------------------------|----------------------------|---------------|------|---------|---------------|
| 5                      | Dry Stone masonry toe wall | Cum           | 3.5  | 2100    | 7350          |
| 6                      | Gabion wall/crate wire     | Cum           | 27.5 | 3500    | 96250         |
|                        |                            |               |      |         | <b>103600</b> |
| <b>Sub Total (B)=₹</b> |                            | <b>103600</b> |      |         |               |

**C. SOIL IMPROVEMENT & BIO ENGINEERING**

| Sr. No.                | Item Description              | Unit        | Qty. | Rate(₹) | Amount (₹)  |
|------------------------|-------------------------------|-------------|------|---------|-------------|
| 7                      | Application of FYM            | Qtl         | 0.3  | 1000    | 300         |
| 8                      | Mulching through chil needles | Sqm         | 132  | 35      | 4620        |
| 9                      | Grass Turfing                 | Sqm         | 130  | 20      | 2600        |
|                        |                               |             |      |         | <b>7520</b> |
| <b>Sub Total (C)=₹</b> |                               | <b>7520</b> |      |         |             |

**D. PLANTATION WORK**

| Sr. No.                | Item Description                                                | Unit            | Qty. | Rate(₹) | Amount (₹)       |
|------------------------|-----------------------------------------------------------------|-----------------|------|---------|------------------|
| 10                     | Digging of Pits 45x45x45cm                                      | %No.            | 26   | 3375    | 877.5            |
| 11                     | Filling of Pits 45x45x45cm                                      | No.             | 26   | 964.51  | 250.7726         |
| 12                     | Carriage of Plants from Nry.with loading and unloading by trp . | Trip            | 1    | 800     | 800              |
| 13                     | Planting of P/Bag Plants                                        | %No.            | 26   | 771.73  | 200.6498         |
| 14                     | Planting of Bio-Engg. Plants                                    | %No.            | 90   | 494.9   | 445.41           |
| 15                     | Preparation of Path                                             | Rmt.            | 5    | 38      | 190              |
| 16                     | Carriage of RCC Fence Post to work site                         | Trip            | 1    | 600     | 600              |
|                        |                                                                 |                 |      |         | <b>3364.3324</b> |
| <b>Sub Total (D)=₹</b> |                                                                 | <b>3364.332</b> |      |         |                  |

**E. PROTECTION Work**

| Sr. No. | Item Description                           | Unit  | Qty. | Rate(₹) | Amount (₹)      |
|---------|--------------------------------------------|-------|------|---------|-----------------|
| 17      | Preparation /digging of holes 20-30cm deep | %Nos  | 32   | 3206    | 1025.92         |
| 18      | Cost of RCC Fence Post                     | No.   | 32   | 500     | 160             |
| 19      | Fixing of RCC Fence Post                   | %Nos. | 32   | 2461    | 787.52          |
| 20      | Cost of Barbed Wire                        | Qtl.  | 0.3  | 9000    | 2700            |
| 21      | Stretching & fixing of b/wire              | Rmt.  | 168  | 16.75   | 2814            |
| 22      | cost of board for plantation               | No.   | 1    | 2000    | 5000            |
|         |                                            |       |      |         | <b>12487.44</b> |

**G. LABOUR COST**

| Sr. No. | Item Description                                                                        | Unit | Qty. | Rate(₹) | Amount (₹)         |
|---------|-----------------------------------------------------------------------------------------|------|------|---------|--------------------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September         |      |      |         |                    |
|         | 2027-28                                                                                 | Days | 180  | 562.5   | 101250             |
| 24      | Watch & ward for six months                                                             |      |      |         |                    |
|         | 2027-28                                                                                 | Day  | 180  | 562.5   | 101250             |
| 25      | Cost of cement and sand in cement masonry for retaining wall 3.00m(L)x 2.45m(H) 5no str |      |      |         |                    |
|         | Cement                                                                                  | Bag  | 11   | 550     | 6050               |
|         | Sand                                                                                    | Cum  | 2.3  | 2500    | 5750               |
|         | Stone                                                                                   | Cum  | 10   | 2000    | 20000              |
|         | Earth work                                                                              | Cum  | 2.5  | 350     | 875                |
|         |                                                                                         |      |      |         | <b>32675</b>       |
|         | <b>First Year Plan Total</b>                                                            |      |      |         | <b>368597.7124</b> |

**2nd YEAR PLAN**

**F. MAINTENANCE**

| Sr. No.                                                   | Particulars of works                                             | Unit  | Qty. | Rate(₹) | Amount (₹)         |
|-----------------------------------------------------------|------------------------------------------------------------------|-------|------|---------|--------------------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                  |       |      |         |                    |
| 26                                                        | Re-digging of pits 45x45x45 cm                                   | %Nos  | 8    | 1687.48 | 134.9984           |
| 27                                                        | Filling of Pits 45x45x45 cm                                      | % Nos | 8    | 964.51  | 77.1608            |
| 28                                                        | Planting of plants raised in P/bags                              | % Nos | 8    | 771.73  | 61.7384            |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1    | 500     | 500                |
| 30                                                        | Repair of Fencing                                                | Rmt   | 168  | 5.71    | 959.28             |
|                                                           | <b>1<sup>st</sup> year Total</b>                                 |       |      |         | <b>1733.1776</b>   |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants       | Each. | 1    | 5000    | 5000               |
| 32                                                        | Cost of Pipe                                                     | Meter | 25   | 120     | 3000               |
| 33                                                        | Preparation of Hut with benches                                  | No.   | 1    | 10000   | 10000              |
| 34                                                        | Weeding ,Hoeing & Watering work for six month April to September |       |      |         |                    |
|                                                           | 2028-29                                                          | days  | 180  | 593.75  | 106875             |
| 35                                                        | Watch & ward for six months                                      |       |      |         |                    |
|                                                           | 2028-29                                                          | day   | 180  | 593.75  | 106875             |
|                                                           | <b>2nd Year Plan Expenditure</b>                                 |       |      |         | <b>233483.1776</b> |

**3rd year plan**

**2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :**

|    |                                                                  |       |     |         |                    |
|----|------------------------------------------------------------------|-------|-----|---------|--------------------|
| 36 | Re-digging of pits 45x45x45 cm                                   | %Nos  | 6   | 1687.48 | 101.2488           |
| 37 | Filling of Pits 45x45x45 cm                                      | % Nos | 6   | 964.51  | 57.8706            |
| 38 | Planting of plants raised in P/bags                              | % Nos | 6   | 771.73  | 46.3038            |
| 39 | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1   | 500     | 500                |
| 40 | Repair of Fencing                                                | Rmt   | 120 | 5.71    | 685.2              |
|    | <b>2<sup>nd</sup> year Total</b>                                 |       |     |         | <b>1390.6232</b>   |
| 41 | Weeding ,Hoeing & Watering work for six month April to September |       |     |         |                    |
|    | 2028-29                                                          | Days  | 180 | 625     | 112500             |
| 42 | Watch & ward for six months                                      |       |     |         |                    |
|    | 2028-29                                                          | Day   | 180 | 625     | 112500             |
|    | <b>3rd Year Plan expenditure</b>                                 |       |     |         | <b>226390.6232</b> |

### 4th Year Plan

#### 3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP) :

|                                  |                                                    |       |    |         |                 |
|----------------------------------|----------------------------------------------------|-------|----|---------|-----------------|
| 43                               | Re-digging of pits 45x45x45 cm                     | %Nos  | 3  | 1687.48 | 50.6244         |
| 44                               | Filling of Pits 45x45x45 cm                        | % Nos | 3  | 964.51  | 28.9353         |
| 45                               | Planting of plants raised in P/bags                | % Nos | 3  | 771.73  | 23.1519         |
| 46                               | Carriage of P/bag Plants i/c loading and unloading | Trip  | 1  | 500     | 500             |
| 47                               | Repair of Fencing                                  | Rmt   | 17 | 5.71    | 97.07           |
| <b>3<sup>rd</sup> year Total</b> |                                                    |       |    |         | <b>699.7816</b> |

|                                   |                                                                  |     |     |        |                    |
|-----------------------------------|------------------------------------------------------------------|-----|-----|--------|--------------------|
| 48                                | Weeding ,Hoeing & Watering work for six month April to September |     |     |        |                    |
|                                   | 2029-30                                                          | day | 180 | 656.25 | 118125             |
| 49                                | Watch & ward for six months                                      |     |     |        |                    |
|                                   | 2029-30                                                          | day | 180 | 656.25 | 118125             |
| <b>4th Year Total Expenditure</b> |                                                                  |     |     |        | <b>236949.7816</b> |

### 5th Year Plan

#### 4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP) :

|                       |                                                    |       |    |         |                 |
|-----------------------|----------------------------------------------------|-------|----|---------|-----------------|
| 50                    | Re-digging of pits 45x45x45 cm                     | %Nos  | 3  | 1687.48 | 50.6244         |
| 51                    | Filling of Pits 45x45x45 cm                        | % Nos | 3  | 964.51  | 28.9353         |
| 52                    | Planting of plants raised in P/bags                | % Nos | 3  | 771.73  | 23.1519         |
| 53                    | Carriage of P/bag Plants i/c loading and unloading | Trip  | 1  | 500     | 500             |
| 54                    | Repair of Fencing                                  | Rmt   | 17 | 5.71    | 97.07           |
| <b>4th year Total</b> |                                                    |       |    |         | <b>699.7816</b> |

|                                   |                                                                  |      |     |        |                    |
|-----------------------------------|------------------------------------------------------------------|------|-----|--------|--------------------|
| <b>5th year total</b>             |                                                                  |      |     |        | <b>699.7816</b>    |
| 55                                | Weeding ,Hoeing & Watering work for six month April to September |      |     |        |                    |
|                                   | 2030-31                                                          | Days | 180 | 687.25 | 123705             |
| 56                                | Watch & ward for six months                                      |      |     |        |                    |
|                                   | 2030-31                                                          | Day  | 180 | 687.25 | 123705             |
| <b>5th Year Total Expenditure</b> |                                                                  |      |     |        | <b>248809.5632</b> |

### ABSTRACT OF PLAN

|                                  |                    |
|----------------------------------|--------------------|
| <b>1st Year Plan Expenditure</b> | <b>368597.7124</b> |
| <b>2nd Year Plan Expenditure</b> | <b>233483.1776</b> |
| <b>3rd Year Plan Expenditure</b> | <b>226390.6232</b> |
| <b>4th Year Plan Expenditure</b> | <b>236949.7816</b> |
| <b>5th Year Plan Expenditure</b> | <b>248809.5632</b> |
| <b>Total Expenditure</b>         | <b>1314230.858</b> |
|                                  | 0                  |
|                                  | 0                  |
| <b>Grand Total</b>               | <b>1314230.858</b> |

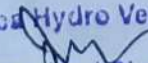
### 6. JUSTIFICATION

The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions.

### 7. CERTIFICATE

Certified that:

- The estimate has been prepared as per latest approved SOR.
- Quantities are based on site inspection and actual measurements.
- The proposed treatment is technically feasible and necessary.

Chamba Hydro Ventures  
  
 Authorized Signatory

Deputy Conservator of Forests  
 Bhamour Forest Division  
 Bhamour Chamba (H.P.)  


**DETAILED ESTIMATE****Site No -II****For Reclamation & Rehabilitation of Dumping (Muck) Site**

|                           |                            |
|---------------------------|----------------------------|
| User Agency:              | Chamab Hydro Ventures      |
| Project Name:             | Ghator Top (4.98MW)        |
| Location:                 | Ghator DPF                 |
| Name of the Duping Site : | Dumping Site-II            |
| Area Involved:            | 0.0099 Hectares /99 Sqmtrs |
| Range / Beat:             | Swai/Ghator                |
| Maintenance Period:       | 1 to 5 Years               |
| Financial Year:           | 2026-27                    |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to project activities by the user agency. The treatment includes slope stabilization, earth work, drainage management, soil improvement, plantation and protection measures to restore the site as per Forest Clearance conditions.

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                            |
|------------------------|----------------------------|
| • Total Dump Area:     | 0.0099 Hectares/99 Sqmtrs. |
| • Slope Category:      | Gentle Slope               |
| • Approx. Dump Height: | 2.45 Mtrs.                 |
| • Soil Type:           | Mixed                      |
| • Accessibility:       | Approachable               |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhal       | Lamu Nry       | Dumping sites consist of loose and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stabilizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration, improves soil quality, and enhances the overall environmental condition of the area. Being a cost effective and sustainable method, bio-engineering plantation is essential for long -term stabilization and protection of dumping sites |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| 4. DETAILED COST ESTIMATE (BOQ)                             |                                                                 |       |      |         |                               |
|-------------------------------------------------------------|-----------------------------------------------------------------|-------|------|---------|-------------------------------|
| (Rates as per latest approved HP Forest SOR 2012-13 onward) |                                                                 |       |      |         |                               |
| 1st YEAR PLAN                                               |                                                                 |       |      |         |                               |
| A. EARTH WORK & SITE SHAPING                                |                                                                 |       |      |         |                               |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty. | Rate(₹) | Amount (₹)                    |
| 1                                                           | Dressing and grading of muck                                    | Cum   | 22   | 81.19   | 1786.18                       |
| 2                                                           | Spreading & leveling of muck                                    | Cum   | 8    | 120     | 960                           |
| 3                                                           | Bench formation/terracing                                       | Cum   | 6    | 250     | 1500                          |
| 4                                                           | Manual compaction of muck                                       | Cum   | 9    | 60      | 540                           |
|                                                             |                                                                 |       |      |         | <b>4786.18</b>                |
|                                                             |                                                                 |       |      |         | <b>Sub Total (A)=₹ 4786.2</b> |
| B. RETAINING & DRAINAGE STRUCTURES                          |                                                                 |       |      |         |                               |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty. | Rate(₹) | Amount (₹)                    |
| 5                                                           | Dry Stone masonry toe wall                                      | Cum   | 2.5  | 2100    | 5250                          |
| 6                                                           | Gabion wall/crate wire                                          | Cum   | 21.5 | 3500    | 75250                         |
|                                                             |                                                                 |       |      |         | <b>80500</b>                  |
|                                                             |                                                                 |       |      |         | <b>Sub Total (B)=₹ 80500</b>  |
| C. SOIL IMPROVEMENT & BIO ENGINEERING                       |                                                                 |       |      |         |                               |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty. | Rate(₹) | Amount (₹)                    |
| 7                                                           | Application of FYM                                              | Qtl   | 0.2  | 1000    | 200                           |
| 8                                                           | Mulching through chil needles                                   | Sqm   | 92   | 35      | 3220                          |
| 9                                                           | Grass Turfing                                                   | Sqm   | 90   | 20      | 1800                          |
|                                                             |                                                                 |       |      |         | <b>5220</b>                   |
|                                                             |                                                                 |       |      |         | <b>Sub Total (C)=₹ 5220</b>   |
| D. PLANTATION WORK                                          |                                                                 |       |      |         |                               |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty. | Rate(₹) | Amount (₹)                    |
| 10                                                          | Digging of Pits 45x45x45cm                                      | %No.  | 18   | 3375    | 607.5                         |
| 11                                                          | Filling of Pits 45x45x45cm                                      | No.   | 18   | 964.51  | 173.6118                      |
| 12                                                          | Carriage of Plants from Nry.with loading and unloading by trp . | Trip  | 1    | 800     | 800                           |
| 13                                                          | Planting of P/Bag Plants                                        | %No.  | 18   | 771.73  | 138.9114                      |
| 14                                                          | Planting of Bio-Engg. Plants                                    | %No.  | 63   | 494.9   | 311.787                       |
| 15                                                          | Preparation of Path                                             | Rmt.  | 5    | 38      | 190                           |
| 16                                                          | Carriage of RCC Fence Post to work site                         | Trip  | 1    | 600     | 600                           |
|                                                             |                                                                 |       |      |         | <b>2821.8102</b>              |
|                                                             |                                                                 |       |      |         | <b>Sub Total (D)=₹ 2821.8</b> |
| E. PROTECTION Work                                          |                                                                 |       |      |         |                               |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty. | Rate(₹) | Amount (₹)                    |
| 17                                                          | Preparation /digging of holes 20-30cm deep                      | %Nos  | 18   | 3206    | 577.08                        |
| 18                                                          | Cost of RCC Fence Post                                          | No.   | 18   | 500     | 90                            |
| 19                                                          | Fixing of RCC Fence Post                                        | %Nos. | 22   | 2461    | 541.42                        |
| 20                                                          | Cost of Barbed Wire                                             | Qtl.  | 0.2  | 9000    | 1800                          |
| 21                                                          | Stretching & fixing of b/wire                                   | Rmt.  | 126  | 16.75   | 2110.5                        |
| 22                                                          | cost of board for plantation                                    | No.   | 1    | 2000    | 5000                          |
|                                                             |                                                                 |       |      |         | <b>10119</b>                  |

**G. LABOUR COST**

| Sr. No. | Item Description                                                                        | Unit | Qty. | Rate(₹) | Amount (₹)         |
|---------|-----------------------------------------------------------------------------------------|------|------|---------|--------------------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September         |      |      |         |                    |
|         | 2027-28                                                                                 | Days | 180  | 562.5   | <b>101250</b>      |
| 24      | Watch & ward for six months                                                             |      |      |         |                    |
|         | 2027-28                                                                                 | Day  | 180  | 562.5   | 101250             |
| 25      | Cost of cement and sand in cement masonry for retaining wall 3.00m(L)x 2.45m(H) 5no str |      |      |         |                    |
|         | Cement                                                                                  | Bag  | 11   | 550     | 6050               |
|         | Sand                                                                                    | Cum  | 2.3  | 2500    | 5750               |
|         | Stone                                                                                   | Cum  | 10   | 2000    | 20000              |
|         | Earth work                                                                              | Cum  | 2.5  | 350     | 875                |
|         |                                                                                         |      |      |         | <b>32675</b>       |
|         | <b>First Year Plan Total</b>                                                            |      |      |         | <b>338621.9902</b> |

**2nd YEAR PLAN**

**F. MAINTENANCE**

| Sr. No.                                                   | Particulars of works                                                            | Unit  | Qty. | Rate(₹) | Amount (₹)         |
|-----------------------------------------------------------|---------------------------------------------------------------------------------|-------|------|---------|--------------------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                                 |       |      |         |                    |
| 26                                                        | Re-digging of pits 45x45x45 cm                                                  | %Nos  | 6    | 1687.48 | 101.2488           |
| 27                                                        | Filling of Pits 45x45x45 cm                                                     | % Nos | 6    | 964.51  | 57.8706            |
| 28                                                        | Planting of plants raised in P/bags                                             | % Nos | 6    | 771.73  | 46.3038            |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading                              | Trip  | 1    | 500     | 500                |
| 30                                                        | Repair of Fencing                                                               | Rmt   | 126  | 5.71    | 719.46             |
|                                                           | <b>1<sup>st</sup> year Total</b>                                                |       |      |         | <b>1424.8832</b>   |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants                      | Each. | 1    | 5000    | 5000               |
| 32                                                        | Cost of Pipe                                                                    | Meter | 20   | 120     | 3000               |
| 33                                                        | Preparation of Hut with benches                                                 | No.   | 1    | 10000   | 10000              |
| 34                                                        | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September |       |      |         |                    |
|                                                           | 2028-29                                                                         | days  | 180  | 593.75  | 106875             |
| 35                                                        | Watch & ward for six months                                                     |       |      |         |                    |
|                                                           | 2028-29                                                                         | day   | 180  | 593.75  | 106875             |
|                                                           | <b>2nd Year Plan Expenditure</b>                                                |       |      |         | <b>233174.8832</b> |

**3rd year plan**

**2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :**

|    |                                                                  |       |     |         |                    |
|----|------------------------------------------------------------------|-------|-----|---------|--------------------|
| 36 | Re-digging of pits 45x45x45 cm                                   | %Nos  | 4   | 1687.48 | 67.4992            |
| 37 | Filling of Pits 45x45x45 cm                                      | % Nos | 4   | 964.51  | 38.5804            |
| 38 | Planting of plants raised in P/bags                              | % Nos | 4   | 771.73  | 30.8692            |
| 39 | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1   | 500     | 500                |
| 40 | Repair of Fencing                                                | Rmt   | 25  | 5.71    | 142.75             |
|    | <b>2<sup>nd</sup> year Total</b>                                 |       |     |         | <b>779.6988</b>    |
| 41 | Weeding ,Hoeing & Watering work for six month April to September |       |     |         |                    |
|    | 2029-30                                                          | Days  | 180 | 625     | 112500             |
| 42 | Watch & ward for six months                                      |       |     |         |                    |
|    | 2029-30                                                          | Days  | 180 | 625     | 112500             |
|    | <b>3rd Year Plan expenditure</b>                                 |       |     |         | <b>225779.6988</b> |

| <b>4th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                                 |              |                    |         |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------|--------------------|---------|--------------------|
| <b>3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP):</b>                                                                                                                                                                                                                                                                                       |                                                                                 |              |                    |         |                    |
| 43                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                                  | %Nos         | 2                  | 1687.48 | 33.7496            |
| 44                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                                     | % Nos        | 2                  | 964.51  | 19.2902            |
| 45                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                                             | % Nos        | 2                  | 771.73  | 15.4346            |
| 46                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading                              | Trip         | 1                  | 500     | 500                |
| 47                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                               | Rmt          | 12                 | 5.71    | 68.52              |
| <b>3<sup>rd</sup> year Total</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              |                    |         | <b>636.9944</b>    |
| 48                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 | 2030-31 day  | 180                | 656.25  | 118125             |
| 49                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                                     |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 | 2030-31 days | 180                | 656.25  | 118125             |
| <b>4th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                                 |              |                    |         | <b>236886.9944</b> |
| <b>5th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                                 |              |                    |         |                    |
| <b>4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP):</b>                                                                                                                                                                                                                                                                                |                                                                                 |              |                    |         |                    |
| 50                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                                  | %Nos         | 2                  | 1687.48 | 33.7496            |
| 51                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                                     | % Nos        | 2                  | 964.51  | 19.2902            |
| 52                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                                             | % Nos        | 2                  | 771.73  | 15.4346            |
| 53                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading                              | Trip         | 1                  | 500     | 500                |
| 54                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                               | Rmt          | 12                 | 5.71    | 68.52              |
| <b>4th year Total</b>                                                                                                                                                                                                                                                                                                                          |                                                                                 |              |                    |         | <b>636.9944</b>    |
| <b>5th year total</b>                                                                                                                                                                                                                                                                                                                          |                                                                                 |              |                    |         | <b>636.9944</b>    |
| 55                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September                |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 | 2031-32 Days | 180                | 687.25  | 123705             |
| 56                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                                     |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 | 2031-32 Day  | 180                | 687.25  | 123705             |
| <b>5th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                                 |              |                    |         | <b>248683.9888</b> |
| <b>ABSTRACT OF PLAN</b>                                                                                                                                                                                                                                                                                                                        |                                                                                 |              |                    |         |                    |
| <b>1st Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              | <b>338621.9902</b> |         |                    |
| <b>2nd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              | <b>233174.8832</b> |         |                    |
| <b>3rd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              | <b>225779.6988</b> |         |                    |
| <b>4th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              | <b>236886.9944</b> |         |                    |
| <b>5th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                 |              | <b>248683.9888</b> |         |                    |
| <b>Total Expenditure</b>                                                                                                                                                                                                                                                                                                                       |                                                                                 |              | <b>1283147.555</b> |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 |              | 0                  |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                 |              | 0                  |         |                    |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                             |                                                                                 |              | <b>1283147.555</b> |         |                    |
| <b>6. JUSTIFICATION</b>                                                                                                                                                                                                                                                                                                                        |                                                                                 |              |                    |         |                    |
| The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions. |                                                                                 |              |                    |         |                    |
| <b>7. CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                          |                                                                                 |              |                    |         |                    |
| Certified that:                                                                                                                                                                                                                                                                                                                                |                                                                                 |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The estimate has been prepared as per latest approved SOR.                      |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | Quantities are based on site inspection and actual measurements.                |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The proposed treatment is technically feasible and necessary.                   |              |                    |         |                    |

Chamba Hydro Ventures  
 Authorised Signatory

Deputy Conservator of Forests  
 Bhermour Forest Division  
 Bhermour, Chamba, (H.P.)

**DETAILED ESTIMATE****Site No -III****For Reclamation & Rehabilitation of Dumping (Muck) Site**

|                           |                             |
|---------------------------|-----------------------------|
| User Agency:              | Chamab Hydro Ventures       |
| Project Name:             | Ghator Top (4.98MW)         |
| Location:                 | Ghator DPF                  |
| Name of the Duping Site : | Dumping Site-III            |
| Area Involved:            | 0.0113 Hectares /113 SqMtrs |
| Range / Beat:             | Swai/Ghator                 |
| Maintenance Period:       | 1 to 5 Years                |
| Financial Year:           | 2026-27                     |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                           |
|------------------------|---------------------------|
| • Total Dump Area:     | 0.0113 Hectares/113SqMtrs |
| • Slope Category:      | Gentle Slope              |
| • Approx. Dump Height: | 2.45 Mtrs.                |
| • Soil Type:           | Mixed                     |
| • Accessibility:       | Approachable              |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhhal      | Lamu Nry       | Dumping sites consist of loose and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stablizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration,improves soil quality, and enhances the overall environmental condition of the area.Being a cost effective and sustainable method, bio-engineering plantation is essential for long -term stabilization and protection of dumping sites |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## 4. DETAILED COST ESTIMATE (BOQ)

(Rates as per latest approved HP Forest SOR 2012-13 onward)

**1st YEAR PLAN****A. EARTH WORK & SITE SHAPING**

| Sr. No.                | Item Description             | Unit | Qty. | Rate(₹) | Amount (₹)    |
|------------------------|------------------------------|------|------|---------|---------------|
| 1                      | Dressing and grading of muck | Cum  | 24   | 81.19   | 1948.56       |
| 2                      | Spreading & leveling of muck | Cum  | 10   | 120     | 1200          |
| 3                      | Bench formation/terracing    | Cum  | 8    | 250     | 2000          |
| 4                      | Manual compaction of muck    | Cum  | 11   | 60      | 660           |
| <b>Sub Total (A)=₹</b> |                              |      |      |         | <b>5808.6</b> |

**B. RETAINING & DRAINAGE STRUCTURES**

| Sr. No.                | Item Description           | Unit | Qty. | Rate(₹) | Amount (₹)   |
|------------------------|----------------------------|------|------|---------|--------------|
| 5                      | Dry Stone masonry toe wall | Cum  | 3    | 2100    | 6300         |
| 6                      | Gabion wall/crate wire     | Cum  | 24.5 | 3500    | 85750        |
| <b>Sub Total (B)=₹</b> |                            |      |      |         | <b>92050</b> |

**C. SOIL IMPROVEMENT & BIO ENGINEERING**

| Sr. No.                | Item Description              | Unit | Qty. | Rate(₹) | Amount (₹)  |
|------------------------|-------------------------------|------|------|---------|-------------|
| 7                      | Application of FYM            | Qtl  | 0.25 | 1000    | 250         |
| 8                      | Mulching through chil needles | Sqm  | 110  | 35      | 3850        |
| 9                      | Grass Turfing                 | Sqm  | 98   | 20      | 1960        |
| <b>Sub Total (C)=₹</b> |                               |      |      |         | <b>6060</b> |

**D. PLANTATION WORK**

| Sr. No.                | Item Description                                                | Unit | Qty. | Rate(₹) | Amount (₹)       |
|------------------------|-----------------------------------------------------------------|------|------|---------|------------------|
| 10                     | Digging of Pits 45x45x45cm                                      | %No. | 22   | 3375    | 742.5            |
| 11                     | Filling of Pits 45x45x45cm                                      | No.  | 22   | 964.51  | 212.1922         |
| 12                     | Carriage of Plants from Nry.with loading and unloading by trp . | Trip | 1    | 800     | 800              |
| 13                     | Planting of P/Bag Plants                                        | %No. | 22   | 771.73  | 169.7806         |
| 14                     | Planting of Bio-Engg. Plants                                    | %No. | 77   | 494.9   | 381.073          |
| 15                     | Preparation of Path                                             | Rmt. | 8    | 38      | 304              |
| 16                     | Carriage of RCC Fence Post to work site                         | Trip | 1    | 600     | 600              |
| <b>Sub Total (D)=₹</b> |                                                                 |      |      |         | <b>3209.5458</b> |

**E. PROTECTION Work**

| Sr. No.                | Item Description                           | Unit  | Qty. | Rate(₹) | Amount (₹)     |
|------------------------|--------------------------------------------|-------|------|---------|----------------|
| 17                     | Preparation /digging of holes 20-30cm deep | %Nos  | 22   | 3206    | 705.32         |
| 18                     | Cost of RCC Fence Post                     | No.   | 22   | 500     | 110            |
| 19                     | Fixing of RCC Fence Post                   | %Nos. | 22   | 2461    | 541.42         |
| 20                     | Cost of Barbed Wire                        | Qtl.  | 0.25 | 9000    | 2250           |
| 21                     | Stretching & fixing of b/wire              | Rmt.  | 155  | 16.75   | 2596.25        |
| 22                     | cost of board for plantation               | No.   | 1    | 2000    | 2000           |
| <b>Sub Total (E)=₹</b> |                                            |       |      |         | <b>8202.99</b> |

**G. LABOUR COST**

| Sr. No. | Item Description                                                                        | Unit    | Qty. | Rate(₹) | Amount (₹)         |        |
|---------|-----------------------------------------------------------------------------------------|---------|------|---------|--------------------|--------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September         |         |      |         |                    |        |
|         |                                                                                         | 2027-28 | Days | 180     | 562.5              | 101250 |
| 24      | Watch & ward for six months                                                             |         |      |         |                    |        |
|         |                                                                                         | 2027-28 | Day  | 180     | 562.5              | 101250 |
| 25      | Cost of cement and sand in cement masonry for retaining wall 1.00m(L)x 2.45m(H) 5no str |         |      |         |                    |        |
|         | Cement                                                                                  | Bag     | 9    | 550     | 4950               |        |
|         | Sand                                                                                    | Cum     | 1.9  | 2500    | 4750               |        |
|         | Stone                                                                                   | Cum     | 8    | 2000    | 16000              |        |
|         | Earth work                                                                              | Cum     | 2.5  | 350     | 875                |        |
|         |                                                                                         |         |      |         | <b>26575</b>       |        |
|         | <b>First Year Plan Total</b>                                                            |         |      |         | <b>344406.0958</b> |        |

**2nd YEAR PLAN**

**F. MAINTENANCE**

| Sr. No.                                                   | Particulars of works                                                            | Unit    | Qty. | Rate(₹) | Amount (₹)         |        |
|-----------------------------------------------------------|---------------------------------------------------------------------------------|---------|------|---------|--------------------|--------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                                 |         |      |         |                    |        |
| 26                                                        | Re-digging of pits 45x45x45 cm                                                  | %Nos    | 7    | 1687.48 | 118.1236           |        |
| 27                                                        | Filling of Pits 45x45x45 cm                                                     | % Nos   | 7    | 964.51  | 67.5157            |        |
| 28                                                        | Planting of plants raised in P/bags                                             | % Nos   | 7    | 771.73  | 54.0211            |        |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading                              | Trip    | 1    | 500     | 500                |        |
| 30                                                        | Repair of Fencing                                                               | Rmt     | 155  | 5.71    | 885.05             |        |
|                                                           | <b>1<sup>st</sup> year Total</b>                                                |         |      |         | <b>1624.7104</b>   |        |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants                      | Each.   | 1    | 5000    | 5000               |        |
| 32                                                        | Cost of Pipe                                                                    | Meter   | 20   | 120     | 3000               |        |
| 33                                                        | Preparation of Hut with benches                                                 | No.     | 1    | 10000   | 10000              |        |
| 34                                                        | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September |         |      |         |                    |        |
|                                                           |                                                                                 | 2028-29 | days | 180     | 593.75             | 106875 |
| 35                                                        | Watch & ward for six months                                                     |         |      |         |                    |        |
|                                                           |                                                                                 | 2028-29 | day  | 180     | 593.75             | 106875 |
|                                                           | <b>2nd Year Plan Expenditure</b>                                                |         |      |         | <b>233374.7104</b> |        |
| <b>3rd year plan</b>                                      |                                                                                 |         |      |         |                    |        |
| <b>2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :</b> |                                                                                 |         |      |         |                    |        |
| 36                                                        | Re-digging of pits 45x45x45 cm                                                  | %Nos    | 5    | 1687.48 | 84.374             |        |
| 37                                                        | Filling of Pits 45x45x45 cm                                                     | % Nos   | 5    | 964.51  | 48.2255            |        |
| 38                                                        | Planting of plants raised in P/bags                                             | % Nos   | 5    | 771.73  | 38.5865            |        |
| 39                                                        | Carriage of P/bag Plants i/c loading and unloading                              | Trip    | 1    | 500     | 500                |        |
| 40                                                        | Repair of Fencing                                                               | Rmt     | 32   | 5.71    | 182.72             |        |
|                                                           | <b>2<sup>nd</sup> year Total</b>                                                |         |      |         | <b>853.906</b>     |        |
| 41                                                        | Weeding ,Hoeing & Watering work for six month April to September                |         |      |         |                    |        |
|                                                           |                                                                                 | 2029-30 | Days | 180     | 625                | 112500 |
| 42                                                        | Watch & ward for six months                                                     |         |      |         |                    |        |
|                                                           |                                                                                 | 2029-30 | Day  | 180     | 625                | 112500 |
|                                                           | <b>3rd Year Plan expenditure</b>                                                |         |      |         | <b>225853.906</b>  |        |

| <b>4th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                                |              |                    |         |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------|--------------------|---------|--------------------|
| <b>3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                                      |                                                                                |              |                    |         |                    |
| 43                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                                 | %Nos         | 2                  | 1687.48 | 33.7496            |
| 44                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                                    | % Nos        | 2                  | 964.51  | 19.2902            |
| 45                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                                            | % Nos        | 2                  | 771.73  | 15.4346            |
| 46                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading                             | Trip         | 1                  | 500     | 500                |
| 47                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                              | Rmt          | 16                 | 5.71    | 91.36              |
| <b>3<sup>rd</sup> year Total</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              |                    |         | <b>659.8344</b>    |
| 48                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoing , Watering , Watch & Ward work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                | 2030-31 day  | 180                | 656.25  | 118125             |
| 49                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                                    |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                | 2030-31 day  | 180                | 656.25  | 118125             |
| <b>4th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                                |              |                    |         | <b>236909.8344</b> |
| <b>5th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                                |              |                    |         |                    |
| <b>4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                               |                                                                                |              |                    |         |                    |
| 50                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                                 | %Nos         | 2                  | 1687.48 | 33.7496            |
| 51                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                                    | % Nos        | 2                  | 964.51  | 19.2902            |
| 52                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                                            | % Nos        | 2                  | 771.73  | 15.4346            |
| 53                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading                             | Trip         | 1                  | 500     | 500                |
| 54                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                              | Rmt          | 16                 | 5.71    | 91.36              |
| <b>4th year Total</b>                                                                                                                                                                                                                                                                                                                          |                                                                                |              |                    |         | <b>659.8344</b>    |
| <b>5th year total</b>                                                                                                                                                                                                                                                                                                                          |                                                                                |              |                    |         | <b>659.8344</b>    |
| 55                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoing & Watering work for six month April to September                |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                | 2030-32 Days | 180                | 687.25  | 123705             |
| 56                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                                    |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                | 2031-32 Day  | 180                | 687.25  | 123705             |
| <b>5th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                                |              |                    |         | <b>248729.6688</b> |
| <b>ABSTRACT OF PLAN</b>                                                                                                                                                                                                                                                                                                                        |                                                                                |              |                    |         |                    |
| <b>1st Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              | <b>344406.0958</b> |         |                    |
| <b>2nd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              | <b>233374.7104</b> |         |                    |
| <b>3rd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              | <b>225853.906</b>  |         |                    |
| <b>4th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              | <b>236909.8344</b> |         |                    |
| <b>5th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                                |              | <b>248729.6688</b> |         |                    |
| <b>Total Expenditure</b>                                                                                                                                                                                                                                                                                                                       |                                                                                |              | <b>1289274.215</b> |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                |              | 0                  |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                                |              | 0                  |         |                    |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                             |                                                                                |              | <b>1289274.215</b> |         |                    |
| <b>6. JUSTIFICATION</b>                                                                                                                                                                                                                                                                                                                        |                                                                                |              |                    |         |                    |
| The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions. |                                                                                |              |                    |         |                    |
| <b>7. CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                          |                                                                                |              |                    |         |                    |
| Certified that:                                                                                                                                                                                                                                                                                                                                |                                                                                |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The estimate has been prepared as per latest approved SOR.                     |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | Quantities are based on site inspection and actual measurements.               |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The proposed treatment is technically feasible and necessary.                  |              |                    |         |                    |

Chamla Hydro Ventures  
 Authorised Signatory

Deputy Conservator of Forests  
 Chamla Forest Division  
 Chamla (S-47)

**DETAILED ESTIMATE****Site No -4****For Reclamation & Rehabilitation of Dumping (Muck) Site**

|                           |                             |
|---------------------------|-----------------------------|
| User Agency:              | Chamab Hydro Ventures       |
| Project Name:             | Ghator Top (4.98MW)         |
| Location:                 | Ghator DPF                  |
| Name of the Duping Site : | Dumping Site-IV             |
| Area Involved:            | 0.0894 Hectares/ 894 SqMtrs |
| Range / Beat:             | Swai/Ghator                 |
| Maintenance Period:       | 1 to 5 Years                |
| Financial Year:           | 2026-27                     |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                            |
|------------------------|----------------------------|
| • Total Dump Area:     | 0.0894 Hectares/894 Sqmtrs |
| • Slope Category:      | Gentle Slope               |
| • Approx. Dump Height: | 2.40 Mtrs.                 |
| • Soil Type:           | Mixed Pick Jumper          |
| • Accessibility:       | Approachable               |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhhal      | Lamu Nry       | Dumping sites consist of loose and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stabilizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration, improves soil quality, and enhances the overall environmental condition of the area. Being a cost effective and sustainable method, bio-engineering plantation is essential for long-term stabilization and protection of dumping sites |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## 4. DETAILED COST ESTIMATE (BOQ)

(Rates as per latest approved HP Forest SOR 2012-13 onward)

**1st YEAR PLAN****A. EARTH WORK & SITE SHAPING**

| Sr. No.                | Item Description             | Unit | Qty. | Rate(₹) | Amount (₹)     |
|------------------------|------------------------------|------|------|---------|----------------|
| 1                      | Dressing and grading of muck | Cum  | 22   | 81.19   | 1786.18        |
| 2                      | Spreading & leveling of muck | Cum  | 12   | 120     | 1440           |
| 3                      | Bench formation/terracing    | Cum  | 8    | 250     | 2000           |
| 4                      | Manual compaction of muck    | Cum  | 15   | 60      | 900            |
| <b>Sub Total (A)=₹</b> |                              |      |      |         | <b>6126.18</b> |

**B. RETAINING & DRAINAGE STRUCTURES**

| Sr. No.                | Item Description           | Unit | Qty. | Rate(₹) | Amount (₹)    |
|------------------------|----------------------------|------|------|---------|---------------|
| 5                      | Dry Stone masonry toe wall | Cum  | 6.5  | 2100    | 13650         |
| 6                      | Gabion wall/crate wire     | Cum  | 44.5 | 3500    | 155750        |
| <b>Sub Total (B)=₹</b> |                            |      |      |         | <b>169400</b> |

**C. SOIL IMPROVEMENT & BIO ENGINEERING**

| Sr. No.                | Item Description              | Unit | Qty. | Rate(₹) | Amount (₹)   |
|------------------------|-------------------------------|------|------|---------|--------------|
| 7                      | Application of FYM            | Qtl  | 0.45 | 1000    | 450          |
| 8                      | Mulching through chil needles | Sqm  | 182  | 35      | 6370         |
| 9                      | Grass Turfing                 | Sqm  | 190  | 20      | 3800         |
| <b>Sub Total (C)=₹</b> |                               |      |      |         | <b>10620</b> |

**D. PLANTATION WORK**

| Sr. No.                | Item Description                                                | Unit | Qty. | Rate(₹) | Amount (₹)        |
|------------------------|-----------------------------------------------------------------|------|------|---------|-------------------|
| 10                     | Digging of Pits 45x45x45cm                                      | %No. | 122  | 3375    | 4117.5            |
| 11                     | Filling of Pits 45x45x45cm                                      | No.  | 122  | 964.51  | 1176.7022         |
| 12                     | Carriage of Plants from Nry.with loading and unloading by trp . | Trip | 1    | 900     | 900               |
| 13                     | Planting of P/Bag Plants                                        | %No. | 122  | 771.73  | 941.5106          |
| 14                     | Planting of Bio-Engg. Plants                                    | %No. | 427  | 494.9   | 2113.223          |
| 15                     | Preparation of Path                                             | Rmt. | 10   | 38      | 380               |
| 16                     | Carriage of RCC Fence Post to work site                         | Trip | 1    | 800     | 800               |
| <b>Sub Total (D)=₹</b> |                                                                 |      |      |         | <b>10428.9358</b> |

**E. PROTECTION Work**

| Sr. No.                | Item Description                           | Unit  | Qty. | Rate(₹) | Amount (₹)      |
|------------------------|--------------------------------------------|-------|------|---------|-----------------|
| 17                     | Preparation /digging of holes 20-30cm deep | %Nos  | 60   | 3206    | 1923.6          |
| 18                     | Cost of RCC Fence Post                     | No.   | 60   | 500     | 300             |
| 19                     | Fixing of RCC Fence Post                   | %Nos. | 60   | 2461    | 1476.6          |
| 20                     | Cost of Barbed Wire                        | Qtl.  | 0.6  | 9000    | 5400            |
| 21                     | Stretching & fixing of b/wire              | Rmt.  | 375  | 16.75   | 6281.25         |
| 22                     | cost of board for plantation               | No.   | 1    | 2000    | 2000            |
| <b>Sub Total (E)=₹</b> |                                            |       |      |         | <b>17381.45</b> |

**G. LABOUR COST**

| Sr. No. | Item Description                                                                        | Unit | Qty. | Rate(₹) | Amount (₹)         |
|---------|-----------------------------------------------------------------------------------------|------|------|---------|--------------------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September         |      |      |         |                    |
|         | 2027-28                                                                                 | Days |      | 180     | 562.5              |
|         |                                                                                         |      |      |         | <b>101250</b>      |
| 24      | Watch & ward for six months                                                             |      |      |         |                    |
|         | 2027-28                                                                                 | Day  |      | 180     | 562.5              |
|         |                                                                                         |      |      |         | 101250             |
| 25      | Cost of cement and sand in cement masonry for retaining wall 3.00m(L)x 2.45m(H) 5no str |      |      |         |                    |
|         | Cement                                                                                  | Bag  | 11   | 550     | 6050               |
|         | Sand                                                                                    | Cum  | 2.3  | 2500    | 5750               |
|         | Stone                                                                                   | Cum  | 10   | 2000    | 20000              |
|         | Earth work                                                                              | Cum  | 2.5  | 350     | 875                |
|         |                                                                                         |      |      |         | <b>32675</b>       |
|         | <b>First Year Plan Total</b>                                                            |      |      |         | <b>449131.5658</b> |

**2nd YEAR PLAN**

**F. MAINTENANCE**

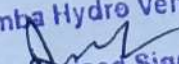
| Sr. No.                                                   | Particulars of works                                             | Unit  | Qty. | Rate(₹) | Amount (₹)         |
|-----------------------------------------------------------|------------------------------------------------------------------|-------|------|---------|--------------------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                  |       |      |         |                    |
| 26                                                        | Re-digging of pits 45x45x45 cm                                   | %Nos  | 37   | 1687.48 | 624.3676           |
| 27                                                        | Filling of Pits 45x45x45 cm                                      | % Nos | 37   | 964.51  | 356.8687           |
| 28                                                        | Planting of plants raised in P/bags                              | % Nos | 37   | 771.73  | 285.5401           |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1    | 800     | 800                |
| 30                                                        | Repair of Fencing                                                | Rmt   | 375  | 5.71    | 2141.25            |
|                                                           | <b>1<sup>st</sup> year Total</b>                                 |       |      |         | <b>4208.0264</b>   |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants       | Each. | 1    | 5000    | 5000               |
| 32                                                        | Cost of Pipe                                                     | Meter | 35   | 120     | 4200               |
| 33                                                        | Preparation of Hut with benches                                  | No.   | 1    | 5000    | 5000               |
| 34                                                        | Weeding ,Hoeing & Watering work for six month April to September |       |      |         |                    |
|                                                           | 2028-29                                                          | days  |      | 180     | 593.75             |
|                                                           |                                                                  |       |      |         | 106875             |
| 35                                                        | Watch & ward for six months                                      |       |      |         |                    |
|                                                           | 2028-29                                                          | day   |      | 180     | 593.75             |
|                                                           |                                                                  |       |      |         | 106875             |
|                                                           | <b>2nd Year Plan Expenditure</b>                                 |       |      |         | <b>232158.0264</b> |

**3rd year plan**

**2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :**

|    |                                                                  |       |    |         |                  |
|----|------------------------------------------------------------------|-------|----|---------|------------------|
| 36 | Re-digging of pits 45x45x45 cm                                   | %Nos  | 25 | 1687.48 | 421.87           |
| 37 | Filling of Pits 45x45x45 cm                                      | % Nos | 25 | 964.51  | 241.1275         |
| 38 | Planting of plants raised in P/bags                              | % Nos | 25 | 771.73  | 192.9325         |
| 39 | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1  | 800     | 800              |
| 40 | Repair of Fencing                                                | Rmt   | 35 | 5.71    | 199.85           |
|    | <b>2<sup>nd</sup> year Total</b>                                 |       |    |         | <b>1855.78</b>   |
| 41 | Weeding ,Hoeing & Watering work for six month April to September |       |    |         |                  |
|    | 2029-30                                                          | Days  |    | 180     | 625              |
|    |                                                                  |       |    |         | 112500           |
| 42 | Watch & ward for six months                                      |       |    |         |                  |
|    | 2029-30                                                          | Day   |    | 180     | 625              |
|    |                                                                  |       |    |         | 112500           |
|    | <b>3rd Year Plan expenditure</b>                                 |       |    |         | <b>226855.78</b> |

| <b>4th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------|--------------------|---------|--------------------|
| <b>3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                                      |                                                                  |              |                    |         |                    |
| 43                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 12                 | 1687.48 | 202.4976           |
| 44                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 12                 | 964.51  | 115.7412           |
| 45                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 12                 | 771.73  | 92.6076            |
| 46                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 500     | 500                |
| 47                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 18                 | 5.71    | 102.78             |
| <b>3<sup>rd</sup> year Total</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         | <b>1013.6264</b>   |
| 48                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125             |
| 49                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125             |
| <b>4th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>237263.6264</b> |
| <b>5th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                    |
| <b>4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         |                    |
| 50                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 12                 | 1687.48 | 202.4976           |
| 51                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 12                 | 964.51  | 115.7412           |
| 52                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 12                 | 771.73  | 92.6076            |
| 53                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 800     | 800                |
| 54                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 18                 | 5.71    | 102.78             |
| <b>4th year Total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1313.6264</b>   |
| <b>5th year total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1313.6264</b>   |
| 55                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Days | 180                | 687.25  | 123705             |
| 56                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Day  | 180                | 687.25  | 123705             |
| <b>5th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>250037.2528</b> |
| <b>ABSTRACT OF PLAN</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                    |
| <b>1st Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>449131.5658</b> |         |                    |
| <b>2nd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>232158.0264</b> |         |                    |
| <b>3rd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>226855.78</b>   |         |                    |
| <b>4th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>237263.6264</b> |         |                    |
| <b>5th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>250037.2528</b> |         |                    |
| <b>Total Expenditure</b>                                                                                                                                                                                                                                                                                                                       |                                                                  |              | <b>1395446.251</b> |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                    |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                             |                                                                  |              | <b>1395446.251</b> |         |                    |
| <b>6. JUSTIFICATION</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                    |
| The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions. |                                                                  |              |                    |         |                    |
| <b>7. CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         |                    |
| Certified that:                                                                                                                                                                                                                                                                                                                                |                                                                  |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The estimate has been prepared as per latest approved SOR.       |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | Quantities are based on site inspection and actual measurements. |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The proposed treatment is technically feasible and necessary.    |              |                    |         |                    |

Chamba Hydro Ventures  
  
 Authorised Signatory

  
 Deputy Conservator of Forests  
 Bharmour Forest Division  
 Bharmour Chamba (H.P.)

**DETAILED ESTIMATE****Site No -5****For Reclamation & Rehabilitation of Dumping (Muck) Site**

|                           |                             |
|---------------------------|-----------------------------|
| User Agency:              | Chamab Hydro Ventures       |
| Project Name:             | Ghator Top (4.98MW)         |
| Location:                 | Ghator DPF                  |
| Name of the Duping Site : | Dumping Site-V              |
| Area Involved:            | 0.1190 Hectares/1190 SqMtrs |
| Range / Beat:             | Swai/Ghator                 |
| Maintenance Period:       | 1 to 5 Years                |
| Financial Year:           | 2026-27                     |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to project activities by the user agency. The treatment includes slope stabilization, earth work, drainage management, soil improvement, plantation and protection measures to restore the site as per Forest Clearance conditions.

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                          |
|------------------------|--------------------------|
| • Total Dump Area:     | 0.1190 Hect./1190 Sqmtrs |
| • Slope Category:      | Moderate Slope           |
| • Approx. Dump Height: | 2.50 Mtrs.               |
| • Soil Type:           | Mixed Rocky Type         |
| • Accessibility:       | Manually                 |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhhal      | Lamu Nry       | Dumping sites consists of loose and and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stablizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration,improves soil quality, and enhances the overall environmental condition of the area. Being a cost effective and sustainable method, bio-engineering plantation is essential for long - term stabilization and protection of dumping sites |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 4. DETAILED COST ESTIMATE (BOQ)

(Rates as per latest approved HP Forest SOR 2012-13 onward)

**1st YEAR PLAN****A. EARTH WORK & SITE SHAPING**

| Sr. No.                      | Item Description             | Unit | Qty. | Rate(₹) | Amount (₹)      |
|------------------------------|------------------------------|------|------|---------|-----------------|
| 1                            | Dressing and grading of muck | Cum  | 42   | 81.19   | 3409.98         |
| 2                            | Spreading & leveling of muck | Cum  | 32   | 120     | 3840            |
| 3                            | Bench formation/terracing    | Cum  | 14   | 250     | 3500            |
| 4                            | Manual compaction of muck    | Cum  | 25   | 60      | 1500            |
| <b>Sub Total (A)=₹ 12250</b> |                              |      |      |         | <b>12249.98</b> |

**B. RETAINING & DRAINAGE STRUCTURES**

| Sr. No.                       | Item Description           | Unit | Qty. | Rate(₹) | Amount (₹)    |
|-------------------------------|----------------------------|------|------|---------|---------------|
| 5                             | Dry Stone masonry toe wall | Cum  | 8.5  | 2100    | 17850         |
| 6                             | Gabion wall/crate wire     | Cum  | 64.5 | 3500    | 225750        |
| <b>Sub Total (B)=₹ 243600</b> |                            |      |      |         | <b>243600</b> |

**C. SOIL IMPROVEMENT & BIO ENGINEERING**

| Sr. No.                    | Item Description              | Unit | Qty. | Rate(₹) | Amount (₹)   |
|----------------------------|-------------------------------|------|------|---------|--------------|
| 7                          | Application of FYM            | Qtl  | 0.65 | 1000    | 650          |
| 8                          | Mulching through chil needles | Sqm  | 282  | 35      | 9870         |
| 9                          | Grass Turfing                 | Sqm  | 280  | 20      | 5600         |
| <b>Sub Total C=₹ 16120</b> |                               |      |      |         | <b>16120</b> |

**D. PLANTATION WORK**

| Sr. No.                      | Item Description                                                | Unit | Qty. | Rate(₹) | Amount (₹)      |
|------------------------------|-----------------------------------------------------------------|------|------|---------|-----------------|
| 10                           | Digging of Pits 45x45x45cm                                      | %No. | 150  | 3375    | 5062.5          |
| 11                           | Filling of Pits 45x45x45cm                                      | No.  | 150  | 964.51  | 1446.765        |
| 12                           | Carriage of Plants from Nry.with loading and unloading by trp . | Trip | 1    | 900     | 900             |
| 13                           | Planting of P/Bag Plants                                        | %No. | 150  | 771.73  | 1157.595        |
| 14                           | Planting of Bio-Engg. Plants                                    | %No. | 530  | 494.9   | 2622.97         |
| 15                           | Preparation of Path                                             | Rmt. | 10   | 38      | 380             |
| 16                           | Carriage of RCC Fence Post to work site                         | Trip | 1    | 800     | 800             |
| <b>Sub Total (D)=₹ 12370</b> |                                                                 |      |      |         | <b>12369.83</b> |

**E. PROTECTION Work**

| Sr. No.                         | Item Description                           | Unit  | Qty. | Rate(₹) | Amount (₹)      |
|---------------------------------|--------------------------------------------|-------|------|---------|-----------------|
| 17                              | Preparation /digging of holes 20-30cm deep | %Nos  | 70   | 3206    | 2244.2          |
| 18                              | Cost of RCC Fence Post                     | No.   | 70   | 500     | 350             |
| 19                              | Fixing of RCC Fence Post                   | %Nos. | 70   | 2461    | 1722.7          |
| 20                              | Cost of Barbed Wire                        | Qtl.  | 0.65 | 9000    | 5850            |
| 21                              | Stretching & fixing of b/wire              | Rmt.  | 425  | 16.75   | 7118.75         |
| 22                              | cost of board for plantation               | No.   | 1    | 2000    | 2000            |
| <b>Sub Total (E)=₹ 19285.65</b> |                                            |       |      |         | <b>19285.65</b> |

**G. LABOUR COST**

| Sr. No. | Item Description                                                                        | Unit | Qty. | Rate(₹) | Amount (₹)       |
|---------|-----------------------------------------------------------------------------------------|------|------|---------|------------------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September         |      |      |         |                  |
|         | 2027-28                                                                                 | Days | 180  | 562.5   | 101250           |
| 24      | Watch & ward for six months                                                             |      |      |         |                  |
|         | 2027-28                                                                                 | Day  | 180  | 562.5   | 101250           |
| 25      | Cost of cement and sand in cement masonry for retaining wall 5.00m(L)x 2.50m(H) 5no str |      |      |         |                  |
|         | Cement                                                                                  | Bag  | 18   | 550     | 9900             |
|         | Sand                                                                                    | Cum  | 5.5  | 2500    | 13750            |
|         | Stone                                                                                   | Cum  | 22   | 2000    | 44000            |
|         | Earth work                                                                              | Cum  | 6.5  | 350     | 2275             |
|         |                                                                                         |      |      |         | <b>69925</b>     |
|         | <b>First Year Plan Total</b>                                                            |      |      |         | <b>576050.46</b> |

**2nd YEAR PLAN**

**F. MAINTENANCE**

| Sr. No.                                                   | Particulars of works                                             | Unit  | Qty. | Rate(₹) | Amount (₹)        |
|-----------------------------------------------------------|------------------------------------------------------------------|-------|------|---------|-------------------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                  |       |      |         |                   |
| 26                                                        | Re-digging of pits 45x45x45 cm                                   | %Nos  | 45   | 1687.48 | 759.366           |
| 27                                                        | Filling of Pits 45x45x45 cm                                      | % Nos | 45   | 964.51  | 434.0295          |
| 28                                                        | Planting of plants raised in P/bags                              | % Nos | 45   | 771.73  | 347.2785          |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1    | 800     | 800               |
| 30                                                        | Repair of Fencing                                                | Rmt   | 425  | 5.71    | 2426.75           |
|                                                           | <b>1<sup>st</sup> year Total</b>                                 |       |      |         | <b>4767.424</b>   |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants       | Each. | 1    | 5000    | 5000              |
| 32                                                        | Cost of Pipe                                                     | Meter | 35   | 120     | 4200              |
| 33                                                        | Preparation of Hut with benches                                  | No.   | 1    | 5000    | 5000              |
| 34                                                        | Weeding ,Hoeing & Watering work for six month April to September |       |      |         |                   |
|                                                           | 2028-29                                                          | days  | 180  | 593.75  | 106875            |
| 35                                                        | Watch & ward for six months                                      |       |      |         |                   |
|                                                           | 2028-29                                                          | day   | 180  | 593.75  | 106875            |
|                                                           | <b>2nd Year Plan Expenditure</b>                                 |       |      |         | <b>232717.424</b> |

**3rd year plan**

**2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :**

|    |                                                                  |       |     |         |                   |
|----|------------------------------------------------------------------|-------|-----|---------|-------------------|
| 36 | Re-digging of pits 45x45x45 cm                                   | %Nos  | 30  | 1687.48 | 506.244           |
| 37 | Filling of Pits 45x45x45 cm                                      | % Nos | 30  | 964.51  | 289.353           |
| 38 | Planting of plants raised in P/bags                              | % Nos | 30  | 771.73  | 231.519           |
| 39 | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1   | 800     | 800               |
| 40 | Repair of Fencing                                                | Rmt   | 85  | 5.71    | 485.35            |
|    | <b>2<sup>nd</sup> year Total</b>                                 |       |     |         | <b>2312.466</b>   |
| 41 | Weeding ,Hoeing & Watering work for six month April to September |       |     |         |                   |
|    | 2029-30                                                          | Days  | 180 | 625     | 112500            |
| 42 | Watch & ward for six months                                      |       |     |         |                   |
|    | 2029-30                                                          | Day   | 180 | 625     | 112500            |
|    | <b>3rd Year Plan expenditure</b>                                 |       |     |         | <b>227312.466</b> |

| <b>4th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------|--------------------|---------|-------------------|
| <b>3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                                      |                                                                  |              |                    |         |                   |
| 43                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 15                 | 1687.48 | 253.122           |
| 44                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 15                 | 964.51  | 144.6765          |
| 45                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 15                 | 771.73  | 115.7595          |
| 46                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 500     | 500               |
| 47                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 43                 | 5.71    | 245.53            |
| <b>3<sup>rd</sup> year Total</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         | <b>1259.088</b>   |
| 48                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125            |
| 49                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125            |
| <b>4th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>237509.088</b> |
| <b>5th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                   |
| <b>4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         |                   |
| 50                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 15                 | 1687.48 | 253.122           |
| 51                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 15                 | 964.51  | 144.6765          |
| 52                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 15                 | 771.73  | 115.7595          |
| 53                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 800     | 800               |
| 54                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 43                 | 5.71    | 245.53            |
| <b>4th year Total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1559.088</b>   |
| <b>5th year total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1559.088</b>   |
| 55                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Days | 180                | 687.25  | 123705            |
| 56                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Day  | 180                | 687.25  | 123705            |
| <b>5th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>250528.176</b> |
| <b>ABSTRACT OF PLAN</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                   |
| <b>1st Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>576050.46</b>   |         |                   |
| <b>2nd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>232717.424</b>  |         |                   |
| <b>3rd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>227312.466</b>  |         |                   |
| <b>4th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>237509.088</b>  |         |                   |
| <b>5th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>250528.176</b>  |         |                   |
| <b>Total Expenditure</b>                                                                                                                                                                                                                                                                                                                       |                                                                  |              | <b>1524117.614</b> |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                   |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                   |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                             |                                                                  |              | <b>1524117.614</b> |         |                   |
| <b>6. JUSTIFICATION</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                   |
| The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions. |                                                                  |              |                    |         |                   |
| <b>7. CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         |                   |
| Certified that:                                                                                                                                                                                                                                                                                                                                |                                                                  |              |                    |         |                   |
| •                                                                                                                                                                                                                                                                                                                                              | The estimate has been prepared as per latest approved SOR.       |              |                    |         |                   |
| •                                                                                                                                                                                                                                                                                                                                              | Quantities are based on site inspection and actual measurements. |              |                    |         |                   |
| •                                                                                                                                                                                                                                                                                                                                              | The proposed treatment is technically feasible and necessary.    |              |                    |         |                   |

Chamba Hydro Ventures  
 Authorised Signatory

Deputy Conservator of Forests  
 Bhermour Forest Division  
 Bhermour Chamba (H.P)

**DETAILED ESTIMATE****Site No -6****For Reclamation & Rehabilitation of Dumping (Muck) Site**

|                           |                             |
|---------------------------|-----------------------------|
| User Agency:              | Chamab Hydro Ventures       |
| Project Name:             | Ghator Top (4.98MW)         |
| Location:                 | Ghator DPF                  |
| Name of the Duping Site : | Dumping Site-VI             |
| Area Involved:            | 0.0894 Hectares /894 SqMtrs |
| Range / Beat:             | Swai/Ghator                 |
| Maintenance Period:       | 1 to 5 Years                |
| Financial Year:           | 2026-27                     |

**1. INTRODUCTION**

This estimate is prepared for reclamation and ecological restoration of dumping (muck) site created due to

**2. OBJECTIVES**

- Stabilization of loose muck material
- Prevention of soil erosion & landslide risk
- Restoration of vegetative cover
- Long term ecological rehabilitation
- Compliance of Forest Clearance conditions

**3. SITE DESCRIPTION**

|                        |                          |
|------------------------|--------------------------|
| • Total Dump Area:     | 0.0894 Hect./894 Sqmtrs  |
| • Slope Category:      | Gentle to moderate Slope |
| • Approx. Dump Height: | 2.70 Mtrs.               |
| • Soil Type:           | Mixed Pick Jumper Type   |
| • Accessibility:       | Manually                 |

**Planting Bio engineering plants list**

| Plants Name    | From           | Justification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Bikhhal      | Lamu Nry       | Dumping sites consist of loose and unstable material, making them highly susceptible to soil erosion and slope failure. Plantation through Bio-engineering techniques helps in stablizing the soil by binding it with plant roots, reducing erosion and runoff. it also aids in ecological restoration,improves soil quality, and enhances the overall environmental condition of the area. Being a cost effective and sustainable method, bio-engineering plantation is essential for long -term stabilization and protection of dumping sites |
| 2 Willow       | Lamu Nry       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 3 Rambaan      | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4 Piak         | from river bed |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 5 Fescue grass | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 6 white clovar | local area     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| 4. DETAILED COST ESTIMATE (BOQ)                             |                                                                 |       |               |         |                   |
|-------------------------------------------------------------|-----------------------------------------------------------------|-------|---------------|---------|-------------------|
| (Rates as per latest approved HP Forest SOR 2012-13 onward) |                                                                 |       |               |         |                   |
| 1st YEAR PLAN                                               |                                                                 |       |               |         |                   |
| A. EARTH WORK & SITE SHAPING                                |                                                                 |       |               |         |                   |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty.          | Rate(₹) | Amount (₹)        |
| 1                                                           | Dressing and grading of muck                                    | Cum   | 22            | 81.19   | 1786.18           |
| 2                                                           | Spreading & leveling of muck                                    | Cum   | 12            | 120     | 1440              |
| 3                                                           | Bench formation/terracing                                       | Cum   | 8             | 250     | 2000              |
| 4                                                           | Manual compaction of muck                                       | Cum   | 15            | 60      | 900               |
|                                                             |                                                                 |       |               |         | <b>6126.18</b>    |
|                                                             | <b>Sub Total (A)=₹</b>                                          |       | <b>6126.2</b> |         |                   |
| B. RETAINING & DRAINAGE STRUCTURES                          |                                                                 |       |               |         |                   |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty.          | Rate(₹) | Amount (₹)        |
| 5                                                           | Dry Stone masonry toe wall                                      | Cum   | 6.5           | 2100    | 13650             |
| 6                                                           | Gabion wall/crate wire                                          | Cum   | 44.5          | 3500    | 155750            |
|                                                             |                                                                 |       |               |         | <b>169400</b>     |
|                                                             | <b>Sub Total (B)=₹</b>                                          |       | <b>169400</b> |         |                   |
| C. SOIL IMPROVEMENT & BIO ENGINEERING                       |                                                                 |       |               |         |                   |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty.          | Rate(₹) | Amount (₹)        |
| 7                                                           | Application of FYM                                              | Qtl   | 0.45          | 1000    | 450               |
| 8                                                           | Mulching through chil needles                                   | Sqm   | 182           | 35      | 6370              |
| 9                                                           | Grass Turfing                                                   | Sqm   | 190           | 20      | 3800              |
|                                                             |                                                                 |       |               |         | <b>10620</b>      |
|                                                             | <b>Sub Total (C)=₹</b>                                          |       | <b>10620</b>  |         |                   |
| D. PLANTATION WORK                                          |                                                                 |       |               |         |                   |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty.          | Rate(₹) | Amount (₹)        |
| 10                                                          | Digging of Pits 45x45x45cm                                      | %No.  | 122           | 3375    | 4117.5            |
| 11                                                          | Filling of Pits 45x45x45cm                                      | No.   | 122           | 964.51  | 1176.7022         |
| 12                                                          | Carriage of Plants from Nry.with loading and unloading by trp . | Trip  | 1             | 900     | 900               |
| 13                                                          | Planting of P/Bag Plants                                        | %No.  | 122           | 771.73  | 941.5106          |
| 14                                                          | Planting of Bio-Engg. Plants                                    | %No.  | 427           | 494.9   | 2113.223          |
| 15                                                          | Preparation of Path                                             | Rmt.  | 10            | 38      | 380               |
| 16                                                          | Carriage of RCC Fence Post to work site                         | Trip  | 1             | 800     | 800               |
|                                                             |                                                                 |       |               |         | <b>10428.9358</b> |
|                                                             | <b>Sub Total (D)=₹</b>                                          |       | <b>10429</b>  |         |                   |
| E. PROTECTION Work                                          |                                                                 |       |               |         |                   |
| Sr. No.                                                     | Item Description                                                | Unit  | Qty.          | Rate(₹) | Amount (₹)        |
| 17                                                          | Preparation /digging of holes 20-30cm deep                      | %Nos  | 60            | 3206    | 1923.6            |
| 18                                                          | Cost of RCC Fence Post                                          | No.   | 60            | 500     | 300               |
| 19                                                          | Fixing of RCC Fence Post                                        | %Nos. | 60            | 2461    | 1476.6            |
| 20                                                          | Cost of Barbed Wire                                             | Qtl.  | 0.6           | 9000    | 5400              |
| 21                                                          | Stretching & fixing of b/wire                                   | Rmt.  | 375           | 16.75   | 6281.25           |
| 22                                                          | cost of board for plantation                                    | No.   | 1             | 2000    | 2000              |
|                                                             |                                                                 |       |               |         | <b>17381.45</b>   |

**G. LABOUR COST**

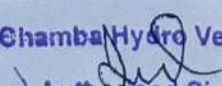
| Sr. No. | Item Description                                                                         | Unit | Qty. | Rate(₹) | Amount (₹)         |
|---------|------------------------------------------------------------------------------------------|------|------|---------|--------------------|
| 23      | Weeding ,Hoeing , Watering , Watch & Ward work for six month April to September          |      |      |         |                    |
|         | 2027-28                                                                                  | Days | 180  | 562.5   | <b>101250</b>      |
| 24      | Watch & ward for six months                                                              |      |      |         |                    |
|         | 2027-28                                                                                  | Day  | 180  | 562.5   | 101250             |
| 25      | Cost of cement and sand in cement masonry for retaining wall 10.00m(L)x 2.70m(H) 5no str |      |      |         |                    |
|         | Cement                                                                                   | Bag  | 24   | 550     | 13200              |
|         | Sand                                                                                     | Cum  | 4.8  | 2500    | 12000              |
|         | Stone                                                                                    | Cum  | 25   | 2000    | 50000              |
|         | Earth work                                                                               | Cum  | 6.5  | 350     | 2275               |
|         |                                                                                          |      |      |         | <b>77475</b>       |
|         | <b>First Year Plan Total</b>                                                             |      |      |         | <b>493931.5658</b> |

**2nd YEAR PLAN**

**F. MAINTENANCE**

| Sr. No.                                                   | Particulars of works                                             | Unit  | Qty. | Rate(₹) | Amount (₹)         |
|-----------------------------------------------------------|------------------------------------------------------------------|-------|------|---------|--------------------|
| <b>1<sup>st</sup> YEAR MAINTENANCE (30% BEATING UP) :</b> |                                                                  |       |      |         |                    |
| 26                                                        | Re-digging of pits 45x45x45 cm                                   | %Nos  | 37   | 1687.48 | 624.3676           |
| 27                                                        | Filling of Pits 45x45x45 cm                                      | % Nos | 37   | 964.51  | 356.8687           |
| 28                                                        | Planting of plants raised in P/bags                              | % Nos | 37   | 771.73  | 285.5401           |
| 29                                                        | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1    | 800     | 800                |
| 30                                                        | Repair of Fencing                                                | Rmt   | 375  | 5.71    | 2141.25            |
|                                                           | <b>1<sup>st</sup> year Total</b>                                 |       |      |         | <b>4208.0264</b>   |
| 31                                                        | Purchasing of Sintex Tank 1000 ltr. for watering in plants       | Each. | 1    | 5000    | 5000               |
| 32                                                        | Cost of Pipe                                                     | Meter | 35   | 120     | 4200               |
| 33                                                        | Preparation of Hut with benches                                  | No.   | 1    | 5000    | 5000               |
| 34                                                        | Weeding ,Hoeing & Watering work for six month April to September |       |      |         |                    |
|                                                           | 2028-29                                                          | days  | 180  | 593.75  | 106875             |
| 35                                                        | Watch & ward for six months                                      |       |      |         |                    |
|                                                           | 2028-29                                                          | day   | 180  | 593.75  | 106875             |
|                                                           | <b>2nd Year Plan Expenditure</b>                                 |       |      |         | <b>232158.0264</b> |
| <b>3rd year plan</b>                                      |                                                                  |       |      |         |                    |
| <b>2<sup>nd</sup> YEAR MAINTENANCE (20% BEATING UP) :</b> |                                                                  |       |      |         |                    |
| 36                                                        | Re-digging of pits 45x45x45 cm                                   | %Nos  | 25   | 1687.48 | 421.87             |
| 37                                                        | Filling of Pits 45x45x45 cm                                      | % Nos | 25   | 964.51  | 241.1275           |
| 38                                                        | Planting of plants raised in P/bags                              | % Nos | 25   | 771.73  | 192.9325           |
| 39                                                        | Carriage of P/bag Plants i/c loading and unloading               | Trip  | 1    | 800     | 800                |
| 40                                                        | Repair of Fencing                                                | Rmt   | 35   | 5.71    | 199.85             |
|                                                           | <b>2<sup>nd</sup> year Total</b>                                 |       |      |         | <b>1855.78</b>     |
| 41                                                        | Weeding ,Hoeing & Watering work for six month April to September |       |      |         |                    |
|                                                           | 2029-30                                                          | Days  | 180  | 625     | 112500             |
| 42                                                        | Watch & ward for six months                                      |       |      |         |                    |
|                                                           | 2029-30                                                          | Day   | 180  | 625     | 112500             |
|                                                           | <b>3rd Year Plan expenditure</b>                                 |       |      |         | <b>226855.78</b>   |

| <b>4th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------|--------------------|---------|--------------------|
| <b>3<sup>rd</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                                      |                                                                  |              |                    |         |                    |
| 43                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 12                 | 1687.48 | 202.4976           |
| 44                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 12                 | 964.51  | 115.7412           |
| 45                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 12                 | 771.73  | 92.6076            |
| 46                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 500     | 500                |
| 47                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 18                 | 5.71    | 102.78             |
| <b>3<sup>rd</sup> year Total</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         | <b>1013.6264</b>   |
| 48                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125             |
| 49                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2030-31 day  | 180                | 656.25  | 118125             |
| <b>4th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>237263.6264</b> |
| <b>5th Year Plan</b>                                                                                                                                                                                                                                                                                                                           |                                                                  |              |                    |         |                    |
| <b>4th to 5<sup>th</sup> YEAR MAINTENANCE (10% BEATING UP) :</b>                                                                                                                                                                                                                                                                               |                                                                  |              |                    |         |                    |
| 50                                                                                                                                                                                                                                                                                                                                             | Re-digging of pits 45x45x45 cm                                   | %Nos         | 12                 | 1687.48 | 202.4976           |
| 51                                                                                                                                                                                                                                                                                                                                             | Filling of Pits 45x45x45 cm                                      | % Nos        | 12                 | 964.51  | 115.7412           |
| 52                                                                                                                                                                                                                                                                                                                                             | Planting of plants raised in P/bags                              | % Nos        | 12                 | 771.73  | 92.6076            |
| 53                                                                                                                                                                                                                                                                                                                                             | Carriage of P/bag Plants i/c loading and unloading               | Trip         | 1                  | 800     | 800                |
| 54                                                                                                                                                                                                                                                                                                                                             | Repair of Fencing                                                | Rmt          | 18                 | 5.71    | 102.78             |
| <b>4th year Total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1313.6264</b>   |
| <b>5th year total</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         | <b>1313.6264</b>   |
| 55                                                                                                                                                                                                                                                                                                                                             | Weeding ,Hoeing & Watering work for six month April to September |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Days | 180                | 687.25  | 123705             |
| 56                                                                                                                                                                                                                                                                                                                                             | Watch & ward for six months                                      |              |                    |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  | 2031-32 Day  | 180                | 687.25  | 123705             |
| <b>5th Year Total Expenditure</b>                                                                                                                                                                                                                                                                                                              |                                                                  |              |                    |         | <b>250037.2528</b> |
| <b>ABSTRACT OF PLAN</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                    |
| <b>1st Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>493931.5658</b> |         |                    |
| <b>2nd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>232158.0264</b> |         |                    |
| <b>3rd Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>226855.78</b>   |         |                    |
| <b>4th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>237263.6264</b> |         |                    |
| <b>5th Year Plan Expenditure</b>                                                                                                                                                                                                                                                                                                               |                                                                  |              | <b>250037.2528</b> |         |                    |
| <b>Total Expenditure</b>                                                                                                                                                                                                                                                                                                                       |                                                                  |              | <b>1440246.251</b> |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                    |
|                                                                                                                                                                                                                                                                                                                                                |                                                                  |              | 0                  |         |                    |
| <b>Grand Total</b>                                                                                                                                                                                                                                                                                                                             |                                                                  |              | <b>1440246.251</b> |         |                    |
| <b>6. JUSTIFICATION</b>                                                                                                                                                                                                                                                                                                                        |                                                                  |              |                    |         |                    |
| The dumping site consists of loose unconsolidated muck material which poses risk of erosion and environmental degradation. The proposed engineering and biological measures are essential for stabilization and ecological restoration. The estimate is prepared strictly as per prevailing Schedule of Rates and Forest Clearance conditions. |                                                                  |              |                    |         |                    |
| <b>7. CERTIFICATE</b>                                                                                                                                                                                                                                                                                                                          |                                                                  |              |                    |         |                    |
| Certified that:                                                                                                                                                                                                                                                                                                                                |                                                                  |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The estimate has been prepared as per latest approved SOR.       |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | Quantities are based on site inspection and actual measurements. |              |                    |         |                    |
| •                                                                                                                                                                                                                                                                                                                                              | The proposed treatment is technically feasible and necessary.    |              |                    |         |                    |

Chamba Hydro Ventures  
  
 Authorised Signatory

Deputy Conservator of Forests  
 Bharmour Forest Division  
 Bharmour, Chamba (H.P.)



### CHECK LIST -11

#### CERTIFICATE FOR MINIMUM USE OF FOREST LAND

This is to certify that the forest area involved in the proposal is unavoidable and barest minimum forest area i.e. 3.7463 hectare is proposed for diversion for the construction of GHATOR TOP SHEP (4.98MW) at Gram panchayat Jagat in Distt. Chamba HP . Three alternatives have been considered for this project and adopted alternative I uses minimum forest land and details are as under;

#### **Various Alternatives for the project**

I) **Alternative I**

This is mainly a right bank alternative. The alternative involves construction of diversion structure at EL. 2735m on Ghator nalla. The water conductor shall consist of feeder channel 18m, 741m HRT length & 1398 m long surface Penstock pipe on the right bank of the Ghator nalla. Also the penstock alignment is on surface as there is steep slope & rocky terrain except some bends to the Penstock. The gross head available for the power generation shall be around 656.50. This alternative involves the forest land of 3.7463 hectares and 57 numbers of trees cutting . The approved estimated cost of the alternative is 4051 lacs.

II) **Alternative II**

This alternative involves construction of diversion structure on Chhurkhu nala at EL.2735m on its right bank . The water conductor system of 50 m length from weir diversion upto forebay. The Penstock leads from the forebay to the Power house through loose rock and occasional slidy portion and Also the some portion of the penstock passing through strethed area which leads to more laying length so keeping in view this there may be the loss of head which leads to the slightly less annual generation. In this Alternative 4.52 hectares of land is utilising and 65 numbers of trees coming due to which the estimated cost of the scheme goes upto near about 4125 lacs.

III) **Alternative III**

This is left bank alternative involves construction of diversion structure at EL. 2735m on the Ghator nalla . The water of Ghator nala shall diverted through a 55 m long water conductor system to the forebay. The proposed Power house

and penstock consist of loose strata which is vulnerable to landslides and most of the alignment of the components are coming in cultivated land and habitant area inspite of that forest land is more than earlier mentioned alternatives because of length of the transmission line and road increasing . In this alternative near about 4.10 hectares of land is coming and 70 numbers of trees involving. The estimated cost of this alternate stands about 4210 Lacs.

In view of the advantages offered by the Alternative I, It has been taken up for preparing Detailed Project Report

**A summarised view presented in table below:-**

| Sr. No. | Description                                     | Alt-I  | Alt -II | Alt-III |
|---------|-------------------------------------------------|--------|---------|---------|
| 1       | Forest land involved in Project components      | 3.7463 | 4.5200  | 4.1000  |
| 2       | Road                                            | 1.279  | 2.4     | 4.6     |
| 3       | Trees Coming in alignment of Project components | 57     | 65      | 70      |
| 4       | Estimated cost (in Lacs)                        | 4051   | 4125    | 4210    |

This shows that alternative I shall be use minimum forest cover, less cutting of trees and economically viability


All alternatives are shown in drawing and enclosed

Place----Bharmour

Date--

For Chamba Hydro Ventures  
Chamba Hydro Ventures  
Authorised Signatory  
Authorised by

Countersigned by :

  
Divisional Forest Officer  
Bharmour Forest Division  
Bharmour (H.P.)

### CONVERSION TABLE FOR CONVERTING LOCAL MEASURES INTO HECTARES

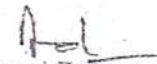
#### PART - B

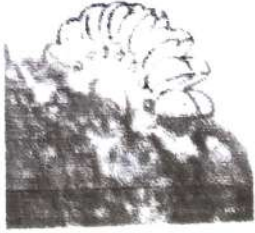
(Applicable to the areas where the length of Karam is 56" and Bigha is equivalent to 968 Sq. Yards.)

(Applicable in Districts Mandi, Kulu, Chamba and Lahaul & Spiti)

|                        |   |            |           |
|------------------------|---|------------|-----------|
| 1 inch                 | = | 0.0254     | Metre     |
| 1 Karam (56 inchs)     | = | 1.4224     | Metre     |
| 1 Sq. Karam (Biswansi) | = | 2.02322176 | Sq. metre |
| 1 Biswa                | = | 40.4644352 | Sq. metre |
| 1 Bigha (968 Sq. yard) | = | 99.288704  | Sq. metre |
| <b>Abbreviations</b>   |   |            |           |
| 1 Sq. metre            | = | 1 Centare  | (Cent)    |
| 100 Sq. metres         | = | 1 Are      | (Are)     |
| 10,000 Sq. metres      | = | 1 Hectare  | (ha.)     |

Chamba Hydro Power  
Authorized Signatory

  
Divisional Forest Officer  
Chamba Forest Division  
CHAMBA-176370



M.: 98145-23801, 97794-51344  
L.L. No. 01874-220801  
E-mail : karwalbakshi65@gmail.com

# Friends HIM Energies

Head Office C/o Happy Sen. Sec. School, Jail Road, Gurdaspur

Ref. No. PHE/SMP/SIW-IV-0078

Dated... 22-9-21

To

The Divisional Forest Officer,  
Churah (Salooni) Distt. Chamba H.P.

Subject: - Diversion of 8.0678 ha. of forest land in favour of M/S Friends Him Energies C/o Near Happy Sr. Sec. school, Jail Road, Gurdaspur- 143521 for the construction of Siul-IV SHEP. Within the jurisdiction of Churah Forest Division, Distt. Chamba HP. (online Proposal No. FP/HP/HYD/35437/2018)

Respected Sir,

In reference of Government of India Ministry of Environment, Forest and Climate Change, Integrated Regional office, Shimla First and Second Floor, C.G.O Complex Longwood, Shimla-171001. Present Address: Integrated Regional office, 25 Subhash Road. Dehradun-248001, letter No. 8B/HP/01/147/2019/FC/101 Dated 22-06-2021 vide which they have pointed out some shortcoming in the proposal folder in respect of above cited subject. In this context we have submitting point wise reply for your kind information and farther necessary action please.

1. In this point, it has been submitted the around area for transmission line ROW and as per the revenue department measurement unit, according to Himachal Pradesh Revenue department 15meters equal to  $15/1.42 = 10.5633$  karma comes. So the total breadth is taken in 11 karmas. According to the opinion of the revenue department, one karma is equal  $=1.42$ metrs. If equal to  $11 \times 1.42 = 15.62$  meters. Similarly the width of ROW is taken 11 karama which is equal to 15.62 meters to match the requirement of forest department for the transmission line. Also the necessary correction and justification have been made by Deputy Commissioner Chamba Distt. Chamba Himachal Pradesh on justify the local measurement. The copy of measurement justification is attached herewith.
2. In this point ends of the State Government may provide its comments. For favour of further necessary action please. Kindly approve and oblige.

  
Project Manager  
M/S Friends HIM Energies

Copy to: - CC.F. Chamba Circle Chamba for necessary action.

DIVERSION OF 3.7463 HAC. OF FOREST LAND FOR CONSTRUCTION OF GHATOR TOP SMALL HYDRO PROJECT 4.98 MW IN TEHSIL BHARMOUR, DISTRICT CHAMBA (H.P.)

FILE NO

: FP/HP/HYD/156608/2022

DATE OF PROPOSAL

: 9/6/2022

CHECK LIST NO. -24

**COMPONENT WISE DETAIL OF LAND REQUIRED FOR CONSTRUCTION OF GHATOR TOP SHEP**

| Sr. No. | COMPONENTS        | LENGTH | BREADTH | Khasra Number/<br>Survey or<br>Compartment<br>Number or Km<br>Stone | Forest area<br>proposed for<br>Diversion (HA) |
|---------|-------------------|--------|---------|---------------------------------------------------------------------|-----------------------------------------------|
| 1       | WEIR SITE         | 30     | 19.83   | 1/1                                                                 | 00-05-95                                      |
| 2       | FEEDAR CHANNEL    | 18     | 2.50    | 2/4                                                                 | 00-00-45                                      |
| 3       | D-TANK            | 25     | 11.88   | 2/2                                                                 | 00-02-97                                      |
| 4       | SILT FLUSING      | 16     | 2       | 2/5                                                                 | 00-0032                                       |
| 5       | TUNNEL            | 701    | 2.645   | 2/1,11/8                                                            | 00-18-54                                      |
| 6       | SHURGE TANK       | 25     | 15.88   | 11/7                                                                | 00-03-97                                      |
| 7       | PENSTOCK          | 1398   | 2.84    | 11/5                                                                | 00-03-97                                      |
| 8       | POWER HOUSE       | 60     | 39.65   | 11/1                                                                | 00-23-79                                      |
| 9       | SWITCH YARD       | 30     | 19.85   | 11/4                                                                | 00-05-95                                      |
| 10      | ROAD              | 55.58  | 3.85    | 11/3                                                                | 00-02-14                                      |
| 11      | ROAD              | 638.70 | 3.85    | 1673/1                                                              | 00-24-59                                      |
| 12      | TRANSMISSION      | 661.52 | 11.15   | 1673/1                                                              | 00-73-76                                      |
| 13      | ROAD              | 55.51  | 3.85    | 1908/1                                                              | 00-19-27                                      |
| 14      | TRANSMISSION      | 518.65 | 11.15   | 1908/1                                                              | 00-57-83                                      |
| 15      | ROAD              | 8.57   | 3.85    | 1909/1                                                              | 00-00-33                                      |
| 16      | TRANSMISSION      | 8.57   | 11.15   | 1909/1                                                              | 00-00-99                                      |
| 17      | ROAD              | 5.97   | 3.85    | 1823/1                                                              | 00-00-68                                      |
| 18      | TRANSMISSION      | 6.09   | 11.15   | 1823/1                                                              | 00-00-68                                      |
| 19      | ROAD              | 70.12  | 3.85    | 1935/1,1854/1                                                       | 00-20-70                                      |
| 20      | TRANSMISSION      | 72.64  | 11.15   | 1935/1,1854/1                                                       | 00-08-10                                      |
| 21      | TRANSMISSION      | 205    | 1.42    | 1911/3/1                                                            | 00-02-91                                      |
| 22      | TRANSMISSION      | 172.52 | 1.42    | 1973/304/1                                                          | 00-02-45                                      |
| 23      | TRANSMISSION      | 508.4  | 1.42    | 375/1                                                               | 00-07-22                                      |
| 24      | TRANSMISSION      | 478.87 | 1.42    | 1923/551/1                                                          | 00-06-80                                      |
| 25      | TRANSMISSION      | 223.94 | 1.42    | 619/1                                                               | 00-03-18                                      |
| 26      | TRANSMISSION      | 181    | 1.42    | 638/1                                                               | 00-02-57                                      |
| 27      | TRANSMISSION      | 407.74 | 1.42    | 642/1                                                               | 00-05-79                                      |
| 28      | TRANSMISSION      | 494.36 | 1.42    | 970/1                                                               | 00-07-02                                      |
| 29      | TRANSMISSION      | 544.36 | 1.42    | 1087/1                                                              | 00-07-73                                      |
| 30      | TRANSMISSION      | 235.21 | 1.42    | 1095/1                                                              | 00-03-34                                      |
| 31      | DUMPING SITE -I   | 17     | 10      | 1673/2                                                              | 00-01-46                                      |
| 32      | DUMPING SITE -II  | 14.2   | 10      | 1673/3                                                              | 00-00-99                                      |
| 33      | DUMPING SITE -III | 19.4   | 10      | 1908/2                                                              | 00-01-13                                      |
| 34      | DUMPING SITE -IV  | 15.6   | 10      | 2/3                                                                 | 00-08-94                                      |
| 35      | DUMPING SITE -V   | 17     | 10      | 11/2                                                                | 00-11-90                                      |
| 36      | DUMPING SITE -VI  | 15.6   | 10      | 11/6                                                                | 00-08-94                                      |

TOTAL AREA

3.7463 Hact.

Place: Bharmour

Dated: 11/5/2026

Countersigned by:

Divisional Forest Officer  
Bharmour Forest Division  
Bharmour Chamba (H.P.)

For Chamba Hydro Ventures  
Chamba Hydro Ventures  
Authorised Signatory

# CHAMBA HYDRO VENTURES

HOTEL ALPS RESORTS, PO & TEHSIL DALHOUSIE, DISTT. CHAMBA HP- 176304  
Mob. No. 9418080340 Email Id—[ranjan.upmanyu@gmail.com](mailto:ranjan.upmanyu@gmail.com)

Ref.No.- CHV/FCR/211/26

Dated 17/4/26

## UNDERTAKING FOR NO TREES FEELING

I Rajeev Kumar Upmanyu authorised signatory of M/S **Chamba Hydro Ventures**, hereby undertake that the no trees will be felled in the proposed Muck Dumping sites for the construction of Ghator Top (4.98MW) SHEP in the jurisdiction of Bharmour Forest Division Distt. Chamba HP.

Date---11/5/26

Place--- Bharmour

Chamba Hydro Ventures  
For Chamba Hydro Ventures  
Authorized Signatory  
Authorized Signatory

Countersigned By:-

  
Divisional Forest Officer  
Forest Division Bharmour  
Distt. Chamba HP (H.P.)

**GEOLOGICAL REPORT**  
**FOR**  
**GHATOR TOP SMALL HYDRO ELECTRIC PROJECT (4.98 MW)**

**Location Details**

Village: Ghator  
Tehsil: Bharmour  
District: Chamba  
State: Himachal Pradesh

**Project Details**

Name of Project: Ghator Top Small Hydro Electric Project  
Installed Capacity: 4.98 MW  
Type of Scheme: Run-of-the-River  
River/Nallah: Ghator Nallah (Tributary of Chirchind Nallah, Ravi Basin)

**Prepared For**

Forest Clearance (FCA) Submission  
Under the Forest (Conservation) Act, 1980

**Submitted By**

M/s Chamba Hydro Ventures  
(Project Proponent)

**Prepared By**

Arun Dhiman  
*Geologist cum RQP*  
Reg. No.: H.P./R.Q.P/25/2/2019  
Vill. & P.O. Dhaloon (Panchpuli)  
Tehsil Nagrota Bagwan  
District Kangra  
Himachal Pradesh – 176056

**GEOLOGICAL REPORT FOR PROPOSED CONSTRUCTION  
GHATOR TOP SMALL HYDRO ELECTRIC PROJECT (4.98 MW)**

**Village: Ghator | District: Chamba (H.P.)**

**1. INTRODUCTION**

India is experiencing a steady increase in electricity demand due to economic growth and rising living standards. To meet this demand sustainably, there is a need to promote renewable energy sources, particularly hydropower, which is clean, reliable, and suitable for peak load management. In hilly states like Himachal Pradesh, small hydro projects are well-suited due to the availability of perennial streams and steep gradients.

In this context, the Ghator Top Small Hydro Electric Project (4.98 MW) has been proposed on Ghator Nallah in District Chamba. The project is a run-of-the-river scheme, utilising the natural flow and available head of the stream without large-scale storage, making it environmentally compatible and suitable for fragile Himalayan conditions.

The present geological report has been prepared to assess the geological suitability of the project area with respect to rock formations, structural features, slope stability, and foundation conditions under the Forest (Conservation) Act, 1980. The project area lies in the Lesser Himalayan region, where rocks such as phyllites and quartzites provide generally competent foundations, particularly along the right bank where major components are proposed.

The report is based on field inspection and DPR data, and aims to ensure that the project is geologically safe, feasible, and suitable for implementation with necessary engineering precautions..

**2. LOCATION AND SITE SETTING**

The proposed Ghator Top Small Hydro Electric Project (4.98 MW) is located near the village Ghator in District Chamba, Himachal Pradesh, on Ghator Nallah, a tributary of Chirchind Nallah in the Ravi Basin. The diversion weir is proposed at an elevation of about 2735 m, while the powerhouse is located on the right bank at an elevation of about 2078.50 m, utilising a significant head suitable for hydropower generation.

The geographical coordinates of the project are as follows: the diversion weir site lies at approximately Latitude 32°22'33" N and Longitude 76°23'02" E, whereas the powerhouse site is located at approximately Latitude 32°46'12.80" N and Longitude 76°15'58.02" E. The project area falls within the rugged terrain of the Lesser Himalayas.

The site is characterised by steep slopes, narrow valleys, and rocky terrain, typical of geologically young Himalayan formations. From a geological point of view, the right bank, where major project components are proposed, consists of comparatively stable and competent rock

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formations, while the left bank is relatively fragile with debris and weathered material. Accordingly, the project layout has been planned along the right bank to ensure structural stability and safe construction.

Overall, the location and geological setting of the project area are considered suitable for the development of the proposed hydroelectric project, subject to standard engineering and slope stabilization measures.

### **3. PHYSIOGRAPHY AND TOPOGRAPHY**

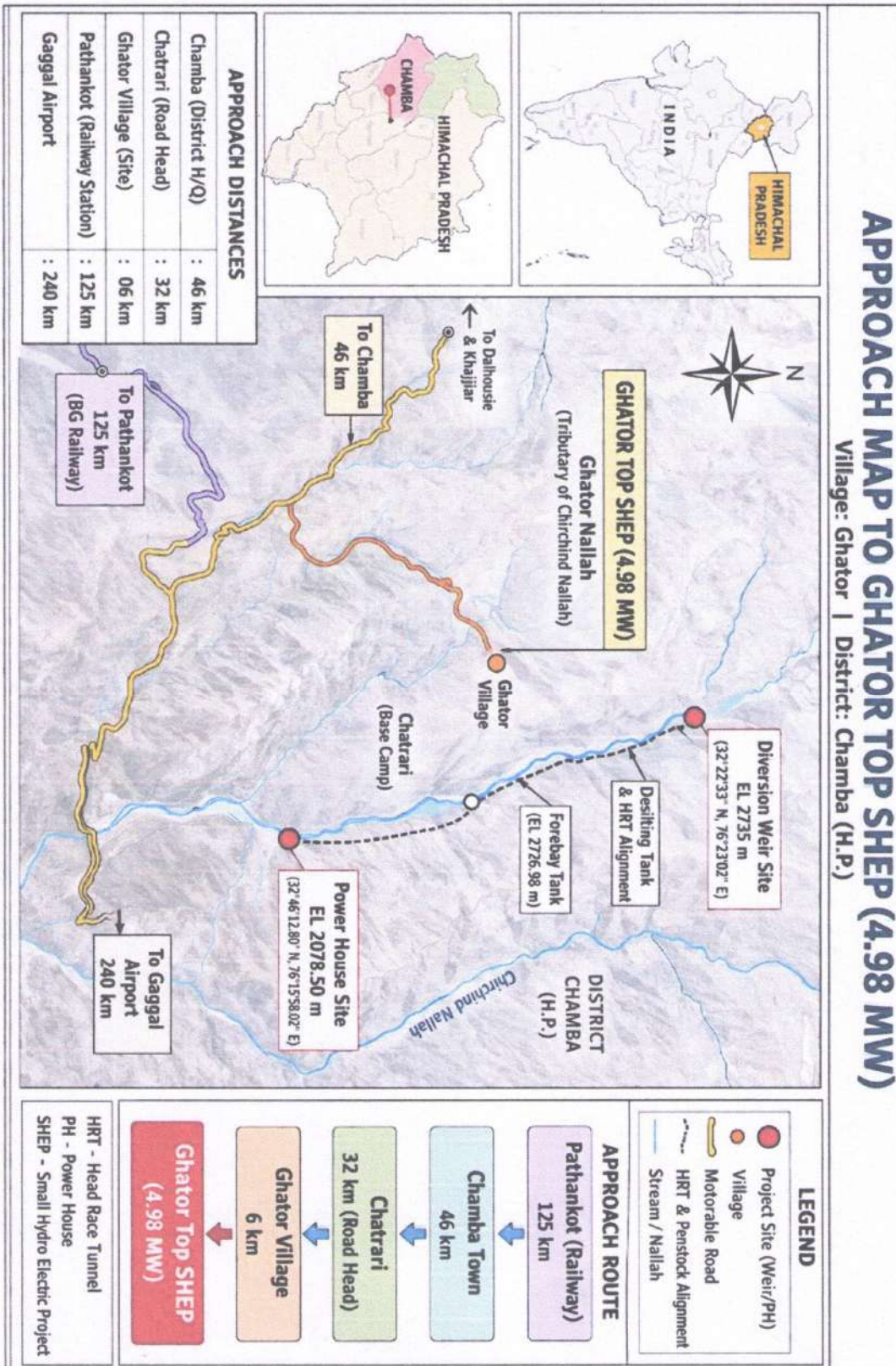
The project area of the Ghator Top Small Hydro Electric Project (4.98 MW) lies within the Lesser Himalayan region and is characterised by highly rugged and mountainous terrain. The area exhibits steep to very steep hill slopes, often exceeding 50°, with deep and narrow valleys formed due to intense fluvial activity. The Ghator Nallah flows through a confined gorge with a sharp gradient, indicating active erosion, vertical downcutting, and strong geomorphic control over the landscape.

The physiography is marked by high relief variation, rocky escarpments, and discontinuous slope profiles. The hill slopes are generally covered with a thin mantle of soil, along with exposed rock outcrops and accumulations of colluvial debris and slope wash material. These features are typical of weathered metamorphic terrains of the Himalayas and indicate continuous processes of weathering, erosion, and mass wasting. The presence of drainage channels cutting across slopes further contributes to slope instability in localized zones.

From a geological perspective, such topographic conditions require careful alignment of project components to avoid weak and unstable zones. Based on field observations and as reflected in the approach map, the project layout has been planned along the right bank, where rock exposures are more continuous and slopes are comparatively stable. The left bank, showing irregular slopes and debris accumulation, has been avoided to minimise geological risk.

Overall, the physiographic and topographic conditions of the area are suitable for development of a run-of-the-river hydroelectric project. However, due to steep slopes and active geomorphic processes, adequate slope stabilization measures, proper drainage arrangements, and controlled excavation practices are essential to ensure long-term stability and safety of the project structures.

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#### **4. REGIONAL AND LOCAL GEOLOGICAL SETTING**

Geologically, the project area of the Ghator Top Small Hydro Electric Project (4.98 MW) falls within the Himalayan tectonic belt, specifically in the Lesser Himalayan zone, which is influenced by major regional structures such as the Main Central Thrust (MCT). The region is geologically young, tectonically active, and highly deformed, characterised by intense folding, faulting, and metamorphism. These tectonic processes have significantly controlled the present geological framework, including the disposition, structure, and engineering behaviour of rock formations in the area. The regional stratigraphy comprises formations such as the Chamba Formation, Bhadra Formation, and Katargali Formation, consisting mainly of slates, phyllites, quartzites, and occasional limestone bands. These rocks have undergone varying degrees of metamorphism, resulting in well-developed foliation, schistosity, and structural discontinuities, which impart anisotropic characteristics to the rock mass and influence its strength and response to excavation.

At the project level, the local geology is predominantly represented by rocks of the Chamba Formation, including phyllites, quartzites, carbonaceous slates, and phyllitic quartzites. These rocks are generally moderately hard to hard and exhibit well-defined foliation planes trending in NW–SE to NNW–SSE direction with moderate to steep dips. The rock mass is intersected by joints, fractures, and minor discontinuities typical of metamorphic terrains, which may locally influence excavation behaviour and slope stability, especially where joint orientations are unfavourable. Weathering is moderate near the surface, with fresh and competent rock encountered at shallow depths, and the overburden cover is generally thin, consisting of slope wash material, colluvium, and river-borne deposits along the nallah. The presence of continuous rock outcrops, particularly along the right bank, indicates good rock continuity and favourable foundation conditions.

From an engineering geology perspective, the combined effect of regional tectonics and local geological conditions governs important parameters such as rock mass quality, jointing pattern, orientation of foliation planes, and seismic response. While the folded and fractured nature of rocks requires careful design and support measures, the presence of competent lithologies like quartzites and compact phyllites provides suitable conditions for foundation and underground works. Overall, despite structural complexity and seismic sensitivity, the geological setting is considered favourable for the development of the proposed hydroelectric project, subject to appropriate engineering design and treatment measures.

#### **5. GEOLOGY OF PROJECT COMPONENTS**

##### **5.1 General Geological Setting**

The geological conditions of the Ghator Top Small Hydro Electric Project (4.98 MW) and the proposed Siul Baroti-III Hydro Electric Project (5.0 MW) have been assessed through field visits (road

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assessment) and review of DPR and layout plans. The project areas fall within the Lesser Himalayan terrain, comprising phyllites, quartzites, and slates of the Chamba Formation, which are moderately hard to hard with well-developed foliation, joints, and fractures. The alignment of project components has been selected along comparatively stable stretches, mainly on the right bank, considering rock mass quality, structural features, and slope stability. Competent rock is available at shallow depths, providing generally favourable conditions, though geological discontinuities will require suitable engineering measures during execution. The assessment is based on surface observations only, without any subsurface investigation. The approach roads have also been assessed and pass through stable rocky terrain with hard and compact formations; slopes are generally stable with minor weathered patches, and only localized slope protection and drainage measures may be required for safe and sustained access..

### **5.2 Diversion Weir Site**

The diversion weir site is located in a narrow gorge section of Ghator Nallah, where rock exposures are available on both banks. The bed material comprises boulders and gravels overlying the bedrock of phyllite and quartzite. Geological assessment indicates that fresh and competent rock is available at a depth of about 6 to 8 metres, which is suitable for the foundation of the trench weir. The confined gorge and sound rock conditions provide favourable stability against hydraulic forces, although excavation through overburden and weathered zones will require proper treatment.

### **5.3 Desilting Tank Area**

The desilting tank area is situated on relatively stable terrain underlain by phyllites and slates. These rocks possess adequate strength and bearing capacity to support the structural loads of the desilting arrangement. However, due to the foliated and anisotropic nature of these rocks, the orientation of foliation planes plays an important role in stability. If unfavourably oriented, these planes may act as potential slip surfaces. Therefore, a detailed assessment of foliation orientation and provision of adequate drainage arrangements are essential to prevent seepage-induced weakening and to maintain long-term stability of the structure.

### **5.4 Water Conductor System (HRT)**

The water conductor system, including the Head Race Tunnel (HRT), passes through predominantly rocky terrain comprising phyllites and quartzites. The rock mass is generally of fair to good quality, but is intersected by joints, fractures, and minor shear zones typical of metamorphic formations. During tunnelling operations, localised weak zones, fractured patches, and minor seepage conditions may be encountered. These geological features may affect excavation behaviour and require systematic support. Accordingly, suitable support measures such as rock bolting, shotcreting, steel ribs (if required), and wire mesh will be adopted based on actual ground conditions encountered during

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excavation. Controlled blasting techniques and continuous geological mapping during tunnelling will be necessary to ensure the safety and stability of underground openings.

### **5.5 Forebay Area**

The forebay area is located on competent rock formations exhibiting good continuity and strength characteristics. The rock mass in this area provides adequate bearing capacity for supporting the forebay structure. Minor surface weathering may be present due to exposure to atmospheric conditions; however, this can be easily removed during foundation preparation. After removal of weathered material, the underlying fresh rock will provide a stable and reliable foundation. No major geological constraints are anticipated at this location.

### **5.6 Penstock Alignment**

The penstock alignment traverses steep and rugged rocky slopes, primarily along the right bank, where rock exposures are continuous and comparatively stable. The alignment is mostly over-exposed bedrock with only limited patches of overburden. The geological conditions are generally favourable for the installation of the penstock; however, due to steep gradients and the presence of joints and foliations, there is a possibility of local instability along slopes. Therefore, proper anchoring of the penstock, provision of saddle supports at regular intervals, and implementation of slope stabilization measures such as rock bolting, retaining structures, and drainage arrangements will be required to ensure long-term safety and operational reliability.

### **5.7 Powerhouse Site**

The powerhouse site is located on the right bank of Ghator Nallah, where geological conditions are comparatively stable and suitable for surface construction. The foundation rock mainly consists of carbonaceous phyllite interbedded with quartzite, exhibiting fair to good rock mass quality. The presence of quartzite bands enhances the strength and competency of the rock mass. The site offers adequate bearing capacity for supporting the powerhouse structure. However, localised zones of jointing, fracturing, or weathering may be encountered and will require appropriate treatment measures such as rock bolting, shotcreting, and foundation consolidation to ensure structural stability and safety.

### **5.8 Overall Assessment of the Project**

Overall, the geological conditions of all project components are favourable for the construction of the proposed hydroelectric scheme. Competent rock is available at shallow depths across the project area, particularly along the right bank, which has been preferred for alignment due to its relatively stable geological conditions. While the rock formations are suitable for foundation and excavation, the presence of foliations, joints, fractures, and moderate weathering introduces certain engineering challenges. These can be effectively managed through appropriate design, systematic excavation practices, and the adoption of suitable support and stabilization measures. Continuous geological supervision during construction is essential to monitor ground conditions and to address

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any unforeseen geological issues, thereby ensuring long-term stability, safety, and performance of the project.

## **6. OTHER OBSERVATIONS**

The slope stability conditions in the project area indicate that the right bank, where major components of the Ghator Top SHEP are proposed, is comparatively stable with firm and competent rock strata and minimal evidence of landslide activity. In contrast, the left bank is relatively fragile, characterised by debris accumulation and indications of past slope movements, and has therefore been avoided in project planning. The stability of slopes is primarily controlled by geological factors such as the orientation of foliation planes, joint patterns, and the degree of weathering, which may create potential planes of weakness in localized areas. However, no major active landslides have been observed along the project alignment. With suitable engineering measures such as retaining structures, rock bolting, slope dressing, and proper drainage arrangements, long-term stability of slopes can be ensured during and after construction.

The hydrogeological conditions of the area are governed by hard and compact rock formations with limited groundwater storage capacity. Groundwater movement is mainly confined to joints, fractures, and weathered zones, resulting in minor seepage during excavation of tunnels and foundations. No significant groundwater pressure conditions are anticipated that could adversely affect structural stability. The Ghator Nallah is a perennial stream, primarily sustained by snowmelt and rainfall, and the geological formations facilitate adequate natural drainage. Overall, the hydrogeological regime is favourable and does not pose any major constraint to the project.

The project area falls under Seismic Zone-V as per IS 1893, indicating a very high seismic risk zone typical of the Himalayan region. The area has experienced significant seismic events in the past, and the geological formations are subject to ongoing tectonic stresses. From a geological and engineering perspective, this necessitates the incorporation of earthquake-resistant design, adequate safety factors, and proper structural detailing in all project components. Despite the seismic sensitivity, the presence of competent rock formations provides a stable base for construction when appropriate design measures are adopted.

From an environmental and geological safety point of view, the project is a run-of-the-river scheme involving limited excavation and no large-scale submergence. The impact on natural landforms is minimal, and no major geological hazards have been identified in the project area. However, localized impacts related to slope cutting and muck disposal require careful management through appropriate engineering and environmental safeguards. Overall, considering the geological conditions, slope behaviour, hydrogeology, and seismicity, the project is safe and suitable for development, subject to the implementation of standard precautionary and mitigation measures.



## 7. CONCLUSION AND RECOMMENDATIONS

*Based on detailed geological analysis, it is concluded that the Ghator Top Small Hydro Electric Project (4.98 MW) area possesses generally favourable geological conditions for the construction of the proposed hydroelectric scheme. The rock formations comprising phyllites, quartzites, and slates are competent and suitable for foundation, particularly along the right bank, where major project components are planned. The slopes in this area are comparatively stable, and no major active landslides or critical geological hazards have been identified along the project alignment. The key geological factors such as lithology, structural features including joints and foliations, degree of weathering, slope conditions, and seismic considerations, have been adequately examined and taken into account during project planning. From an engineering geology point of view, the site is considered feasible and suitable for development, subject to the adoption of appropriate design and construction practices in compliance with the provisions of the Forest (Conservation) Act.*


In order to ensure safe and sustainable execution of the project, it is recommended that detailed geotechnical investigations be carried out prior to construction to confirm foundation characteristics, rock mass quality, and design parameters. Controlled and systematic blasting techniques should be adopted during excavation to minimise disturbance to the surrounding rock mass. Adequate slope stabilization measures, including retaining structures, rock bolting, shotcreting, and proper drainage arrangements, should be implemented wherever required to maintain slope stability. The muck generated during excavation should be disposed of in a scientific manner at designated and geologically stable locations, with provision of retaining walls and drainage to avoid erosion and slope failure. All project structures must be designed considering seismic forces as per the relevant IS codes, given the location of the project in Seismic Zone-V. Further, continuous geological supervision and monitoring during construction is essential to identify and address any unforeseen geological conditions, thereby ensuring long-term stability and safety of the project.

**Prepared By:**

Arun Dhiman

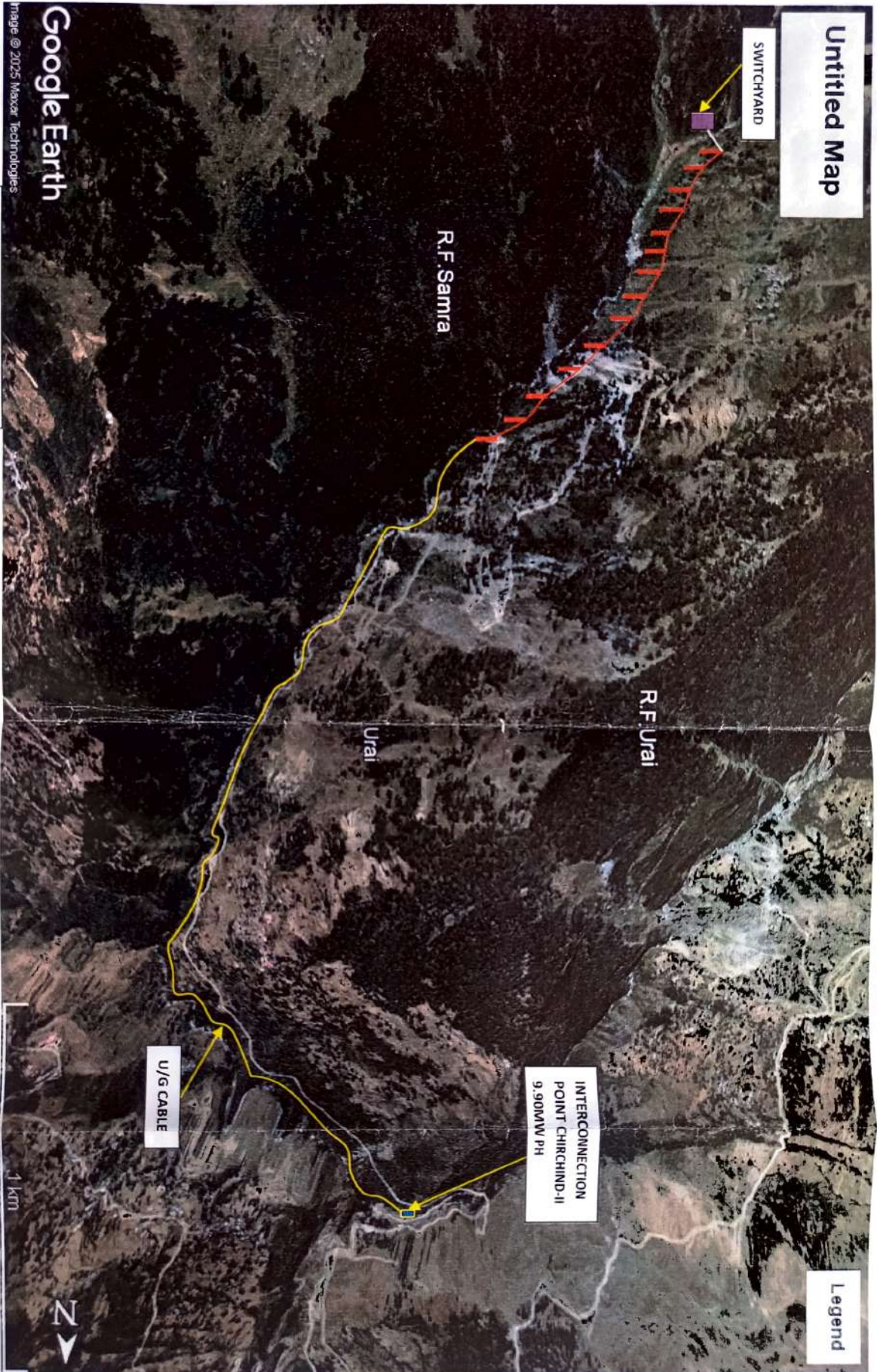
Geologist cum RQP

Reg. No.: H.P./R.Q.P/25/2/2019

  
Arun Dhiman  
RQP Registration No.  
HP/RQP/25/2/2019

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# EVACUATION PLAN OF GHATOR TOP SHEP 4.98 MW



Untitled Map

SWITCHYARD

R.F. Samra

R.F. Urai

Urai

INTERCONNECTION  
POINT CHIRCHIND-II  
9.90MW PH

U/G CABLE

1 km

Google Earth

Image © 2025 Maxar Technologies

## POLE TO POLE DISTANCE

|              |              |                  |                    |
|--------------|--------------|------------------|--------------------|
| SV TO P1 70M | P4 TO P5 92M | P8 TO P9 94M     | P12 TO P13 90M     |
| P1 TO P2 93M | P5 TO P6 92M | P9 TO P10 93M    | P13 TO P14 92M     |
| P2 TO P3 92M | P6 TO P7 85M | P10 TO P11 90M   | UG CABLE<br>3451 M |
| P3 TO P4 95M | P7 TO P8 95M | P11 TO P9 12 95M |                    |

SWITCHYARD

U/G CABLE

POLES

INTERCONNECTION POINT

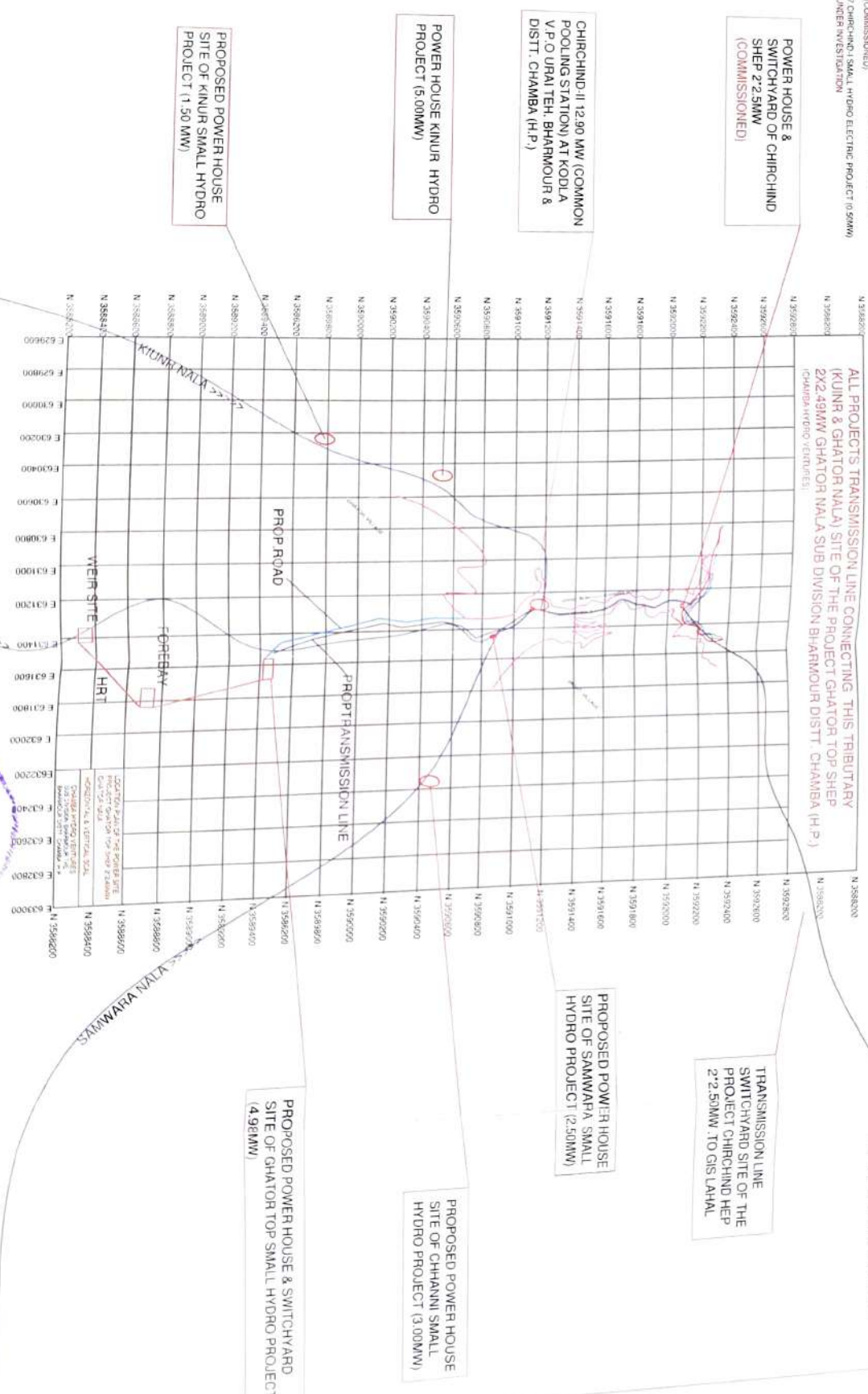
Legend

EchembaHydro Ventures  
Amenity & Regulatory

Deputy Conservator of Forests  
Ebermeur Forest Division  
Baramulla, Chendur (K.P.)

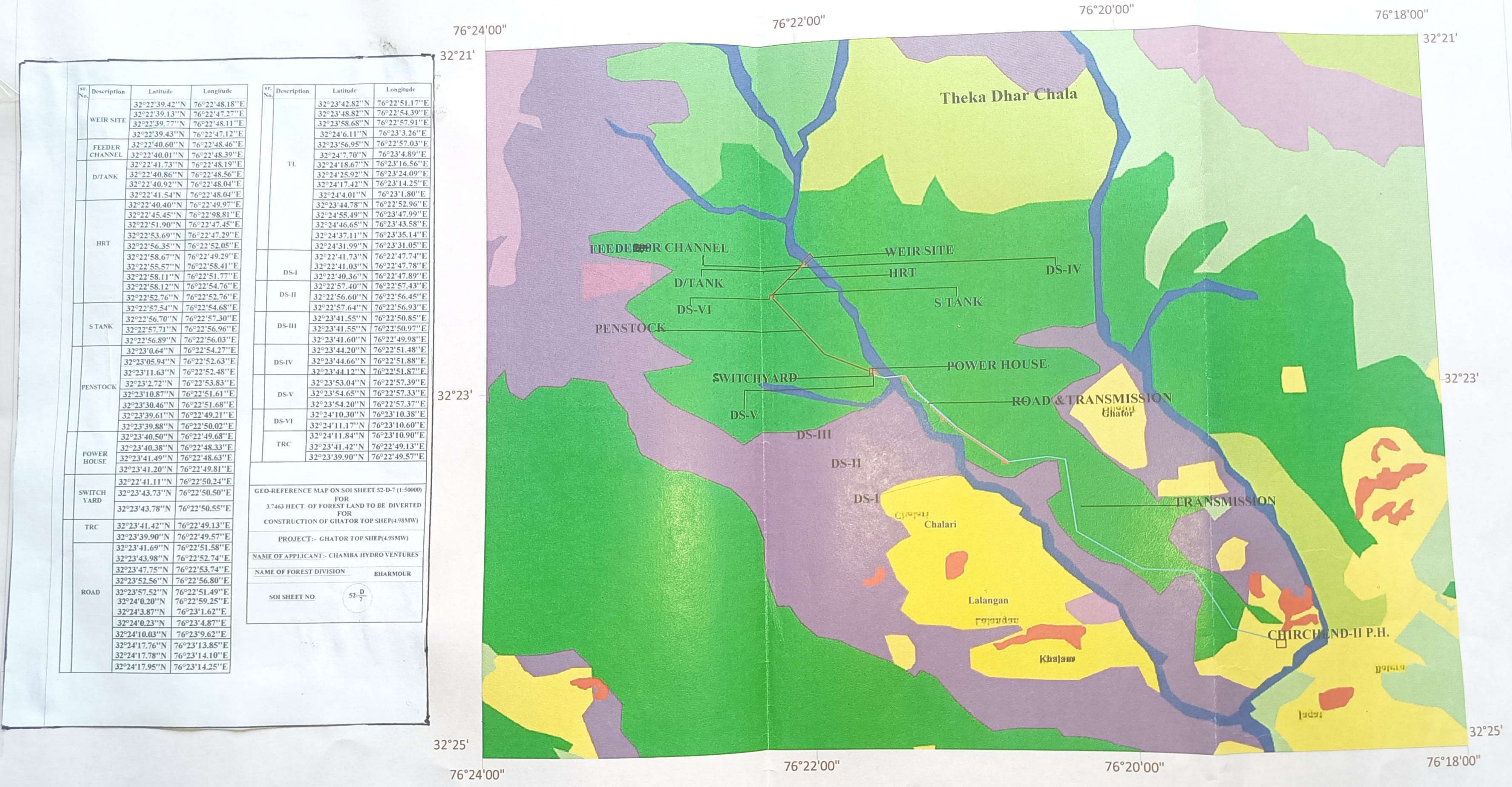
ALL PROJECTS TRANSMISSION LINE CONNECTING TO CHIRCHIND-II COMMON POOLING STATION (C.C.P.S.) AT THIS TRIBUTARY (KUNNR & GHATOR NALA) SITE OF THE PROJECT CHIRCHIND-II HEP 12.90 MW.

- DIGITIZED LOCATION MAP FOR HEP IN THE AREA LANDSCAPE OF GHATOR TOP SMALL HYDRO ELECTRIC PROJECT (4.98MW)
1. SAMAWAPA SMALL HYDROELECTRIC PROJECT (2.50MW) UNDER INVESTIGATION
  2. CHANNI SMALL HYDROELECTRIC PROJECT (3.00MW) UNDER INVESTIGATION
  3. GHATOR SMALL HYDROELECTRIC PROJECT (2.00MW) UNDER INVESTIGATION
  4. CHIRCHIND-II HEP 12.90 MW OF MS SWANUK ENERGY PVT LTD UNDER INVESTIGATION
  5. KUNNR HEP 4.98 MW OF SACHIDANAND POWER PROJECT (COMMISSIONED) KARARI WORKSHEER, SIB TEH CHAMAWALA TEH & DISTT. CHAMBA (H.P.)
  6. CHIRCHIND HEP 4.00 MW (CHIRCHIND HYDRO POWER LIMITED (COMMISSIONED))
  7. CHIRCHIND-I SMALL HYDRO ELECTRIC PROJECT (0.50MW) UNDER INVESTIGATION



Chamunda Hydro Ventures  
Authorized Signatory

# Geo-Reference Map For 3.7463 Hect. of Forest Land to be Diverted for Construction of Ghator Top SHEP(4.98MW)



| Sr. No. | Description    | Latitude      | Longitude     | Sr. No. | Description | Latitude      | Longitude     |
|---------|----------------|---------------|---------------|---------|-------------|---------------|---------------|
|         | WEIR SITE      | 32°22'39.42"N | 76°22'48.18"E |         | TL          | 32°23'42.82"N | 76°22'51.17"E |
|         |                | 32°22'39.13"N | 76°22'47.27"E |         |             | 32°23'48.82"N | 76°22'54.39"E |
|         |                | 32°22'39.77"N | 76°22'48.11"E |         |             | 32°23'58.68"N | 76°22'57.91"E |
|         |                | 32°22'39.43"N | 76°22'47.12"E |         |             | 32°24'6.11"N  | 76°23'3.26"E  |
|         | FEEDER CHANNEL | 32°22'40.60"N | 76°22'48.46"E |         |             | 32°23'56.95"N | 76°22'57.03"E |
|         |                | 32°22'40.01"N | 76°22'48.39"E |         |             | 32°24'7.70"N  | 76°23'4.89"E  |
|         | D/TANK         | 32°22'41.73"N | 76°22'48.19"E |         |             | 32°24'18.67"N | 76°23'16.56"E |
|         |                | 32°22'40.86"N | 76°22'48.56"E |         |             | 32°24'25.92"N | 76°23'24.09"E |
|         |                | 32°22'40.92"N | 76°22'48.04"E |         |             | 32°24'17.42"N | 76°23'14.25"E |
|         |                | 32°22'41.54"N | 76°22'48.04"E |         |             | 32°24'4.01"N  | 76°23'1.80"E  |
|         |                | 32°22'40.40"N | 76°22'49.97"E |         |             | 32°23'44.78"N | 76°22'52.96"E |
|         |                | 32°22'45.45"N | 76°22'48.81"E |         |             | 32°24'55.49"N | 76°23'47.99"E |
|         |                | 32°22'51.90"N | 76°22'47.45"E |         |             | 32°24'46.65"N | 76°23'43.58"E |
|         |                | 32°22'53.69"N | 76°22'47.29"E |         |             | 32°24'37.11"N | 76°23'35.14"E |
|         |                | 32°22'56.35"N | 76°22'52.05"E |         |             | 32°24'31.99"N | 76°23'31.05"E |
|         |                | 32°22'58.67"N | 76°22'49.29"E |         |             | 32°22'41.73"N | 76°22'47.74"E |
|         |                | 32°22'55.57"N | 76°22'58.41"E |         |             | 32°22'41.03"N | 76°22'47.78"E |
|         |                | 32°22'58.11"N | 76°22'51.77"E |         |             | 32°22'40.36"N | 76°22'47.89"E |
|         |                | 32°22'58.12"N | 76°22'54.76"E |         |             | 32°22'57.40"N | 76°22'57.43"E |
|         |                | 32°22'52.76"N | 76°22'52.76"E |         |             | 32°22'56.60"N | 76°22'56.45"E |
|         |                | 32°22'57.54"N | 76°22'54.68"E |         |             | 32°22'57.64"N | 76°22'56.93"E |
|         |                | 32°22'56.70"N | 76°22'57.30"E |         |             | 32°23'41.55"N | 76°22'50.85"E |
|         |                | 32°22'57.71"N | 76°22'56.96"E |         |             | 32°23'41.55"N | 76°22'50.97"E |
|         |                | 32°22'56.89"N | 76°22'56.03"E |         |             | 32°23'41.60"N | 76°22'49.98"E |
|         |                | 32°23'06.44"N | 76°22'54.27"E |         |             | 32°23'44.20"N | 76°22'51.48"E |
|         |                | 32°23'05.94"N | 76°22'52.63"E |         |             | 32°23'44.66"N | 76°22'51.88"E |
|         |                | 32°23'11.63"N | 76°22'52.48"E |         |             | 32°23'44.12"N | 76°22'51.87"E |
|         |                | 32°23'27.72"N | 76°22'53.83"E |         |             | 32°23'53.04"N | 76°22'57.39"E |
|         |                | 32°23'10.87"N | 76°22'51.61"E |         |             | 32°23'54.65"N | 76°22'57.33"E |
|         |                | 32°23'30.46"N | 76°22'51.68"E |         |             | 32°23'54.20"N | 76°22'57.37"E |
|         |                | 32°23'39.61"N | 76°22'49.21"E |         |             | 32°24'10.30"N | 76°23'10.38"E |
|         |                | 32°23'39.88"N | 76°22'50.02"E |         |             | 32°24'11.17"N | 76°23'10.60"E |
|         |                | 32°23'40.50"N | 76°22'49.68"E |         |             | 32°24'11.84"N | 76°23'10.90"E |
|         |                | 32°23'40.38"N | 76°22'48.33"E |         |             | 32°23'41.42"N | 76°22'49.13"E |
|         |                | 32°23'41.49"N | 76°22'48.63"E |         |             | 32°23'39.90"N | 76°22'49.57"E |
|         |                | 32°23'41.20"N | 76°22'49.81"E |         |             |               |               |
|         |                | 32°22'41.11"N | 76°22'50.24"E |         |             |               |               |
|         |                | 32°23'43.73"N | 76°22'50.50"E |         |             |               |               |
|         |                | 32°23'43.78"N | 76°22'50.55"E |         |             |               |               |
|         |                | 32°23'41.42"N | 76°22'49.13"E |         |             |               |               |
|         |                | 32°23'39.90"N | 76°22'49.57"E |         |             |               |               |
|         |                | 32°23'41.69"N | 76°22'51.58"E |         |             |               |               |
|         |                | 32°23'43.98"N | 76°22'52.74"E |         |             |               |               |
|         |                | 32°23'47.75"N | 76°22'53.74"E |         |             |               |               |
|         |                | 32°23'52.56"N | 76°22'56.80"E |         |             |               |               |
|         |                | 32°23'57.52"N | 76°22'51.49"E |         |             |               |               |
|         |                | 32°24'0.20"N  | 76°22'59.25"E |         |             |               |               |
|         |                | 32°24'3.87"N  | 76°23'1.62"E  |         |             |               |               |
|         |                | 32°24'0.23"N  | 76°23'4.87"E  |         |             |               |               |
|         |                | 32°24'10.03"N | 76°23'9.62"E  |         |             |               |               |
|         |                | 32°24'17.76"N | 76°23'13.85"E |         |             |               |               |
|         |                | 32°24'17.78"N | 76°23'14.10"E |         |             |               |               |
|         |                | 32°24'17.95"N | 76°23'14.25"E |         |             |               |               |

GEO-REFERENCE MAP ON SOI SHEET 52-D-7 (1:50000) FOR 3.7463 HECT. OF FOREST LAND TO BE DIVERTED FOR CONSTRUCTION OF GHATOR TOP SHEP(4.98MW)  
 PROJECT:- GHATOR TOP SHEP(4.98MW)  
 NAME OF APPLICANT:- CHAMBA HYDRO VENTURES  
 NAME OF FOREST DIVISION:- BHARMOUR  
 SOI SHEET NO. 52-D/7

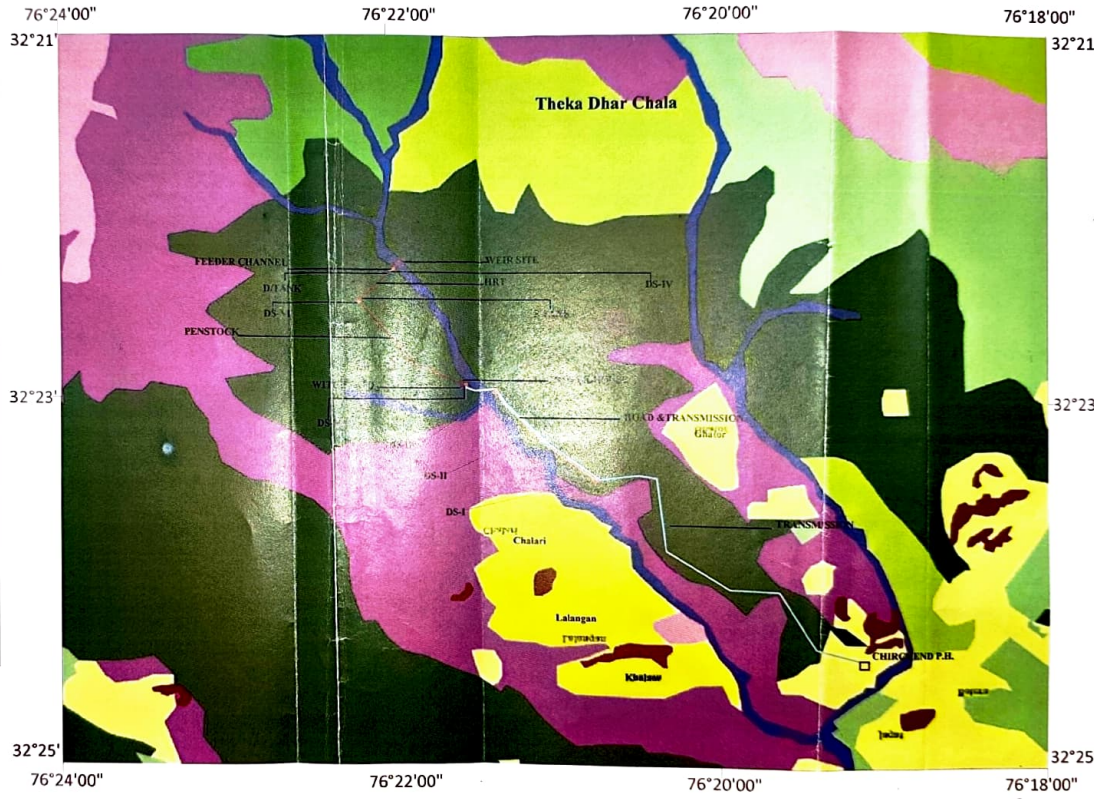
WATER BODY RESIDENTIAL AREA /CULTIVATED LAND FORESTLAND PROJECT COMPONENTS

DUMPING SITES PROP. ROAD TRANSMISSION

R.F.O Swal

Divisional Forest Officer  
 Bharmour Forest Division  
 Bharmour (H.P.)  
 Chamba Hydro Ventures  
 Authorised Signatory

# Geo-Reference Map on SOI Sheet 52-D-7 (1:5000) For 3.7463 Hect. of Forest Land to be Diverted for Construction of Ghator Top SHEP (4.98MW)



| No.             | Description     | Latitude        | Longitude |
|-----------------|-----------------|-----------------|-----------|
| WEIR SITE       | 32°22'29.42\" N | 76°22'48.18\" E |           |
| 32°22'38.13\" N | 76°22'47.52\" E |                 |           |
| 32°22'39.77\" N | 76°22'48.11\" E |                 |           |
| 32°22'39.43\" N | 76°22'47.12\" E |                 |           |
| FEEDER CHANNEL  | 32°22'40.60\" N | 76°22'48.40\" E |           |
| 32°22'40.01\" N | 76°22'48.30\" E |                 |           |
| 32°22'41.73\" N | 76°22'48.19\" E |                 |           |
| 32°22'40.86\" N | 76°22'48.56\" E |                 |           |
| 32°22'40.92\" N | 76°22'48.04\" E |                 |           |
| 32°22'41.54\" N | 76°22'48.04\" E |                 |           |
| 32°22'40.40\" N | 76°22'49.07\" E |                 |           |
| 32°22'45.45\" N | 76°22'48.81\" E |                 |           |
| 32°22'51.90\" N | 76°22'47.45\" E |                 |           |
| 32°22'53.69\" N | 76°22'47.29\" E |                 |           |
| 32°22'56.35\" N | 76°22'52.85\" E |                 |           |
| 32°22'58.67\" N | 76°22'49.29\" E |                 |           |
| 32°22'55.57\" N | 76°22'58.41\" E |                 |           |
| 32°22'58.11\" N | 76°22'51.77\" E |                 |           |
| 32°22'58.12\" N | 76°22'54.76\" E |                 |           |
| 32°22'52.76\" N | 76°22'52.76\" E |                 |           |
| 32°22'57.54\" N | 76°22'54.68\" E |                 |           |
| 32°22'56.70\" N | 76°22'57.30\" E |                 |           |
| 32°22'57.71\" N | 76°22'56.96\" E |                 |           |
| 32°22'56.89\" N | 76°22'56.03\" E |                 |           |
| 32°22'58.64\" N | 76°22'54.27\" E |                 |           |
| 32°22'05.94\" N | 76°22'52.63\" E |                 |           |
| 32°22'11.63\" N | 76°22'52.48\" E |                 |           |
| 32°22'12.72\" N | 76°22'52.83\" E |                 |           |
| 32°22'10.87\" N | 76°22'51.61\" E |                 |           |
| 32°22'30.46\" N | 76°22'51.68\" E |                 |           |
| 32°22'39.61\" N | 76°22'49.21\" E |                 |           |
| 32°22'39.88\" N | 76°22'50.02\" E |                 |           |
| 32°22'40.50\" N | 76°22'49.68\" E |                 |           |
| 32°22'40.38\" N | 76°22'48.33\" E |                 |           |
| 32°22'41.49\" N | 76°22'48.63\" E |                 |           |
| 32°22'41.20\" N | 76°22'49.81\" E |                 |           |
| 32°22'41.11\" N | 76°22'50.24\" E |                 |           |
| 32°22'43.73\" N | 76°22'50.50\" E |                 |           |
| 32°22'43.78\" N | 76°22'50.55\" E |                 |           |
| 32°22'41.42\" N | 76°22'49.13\" E |                 |           |
| 32°22'39.90\" N | 76°22'49.57\" E |                 |           |
| 32°22'41.69\" N | 76°22'51.58\" E |                 |           |
| 32°22'43.98\" N | 76°22'51.74\" E |                 |           |
| 32°22'47.25\" N | 76°22'53.74\" E |                 |           |
| 32°22'52.56\" N | 76°22'56.80\" E |                 |           |
| 32°22'57.53\" N | 76°22'51.49\" E |                 |           |
| 32°22'48.20\" N | 76°22'59.25\" E |                 |           |
| 32°22'47.87\" N | 76°22'51.62\" E |                 |           |
| 32°22'46.23\" N | 76°22'48.87\" E |                 |           |
| 32°22'10.03\" N | 76°22'59.62\" E |                 |           |
| 32°22'17.76\" N | 76°22'51.85\" E |                 |           |
| 32°22'17.28\" N | 76°22'51.10\" E |                 |           |
| 32°22'17.95\" N | 76°22'51.42\" E |                 |           |

| No.             | Description     | Latitude | Longitude |
|-----------------|-----------------|----------|-----------|
| 32°22'42.82\" N | 76°22'51.17\" E |          |           |
| 32°22'48.52\" N | 76°22'54.30\" E |          |           |
| 32°22'58.68\" N | 76°22'57.01\" E |          |           |
| 32°22'46.11\" N | 76°22'53.26\" E |          |           |
| 32°22'56.85\" N | 76°22'57.37\" E |          |           |
| 32°22'47.90\" N | 76°22'54.80\" E |          |           |
| 32°22'18.67\" N | 76°22'18.56\" E |          |           |
| 32°22'28.92\" N | 76°22'24.09\" E |          |           |
| 32°22'17.42\" N | 76°22'14.25\" E |          |           |
| 32°22'41.01\" N | 76°22'11.80\" E |          |           |
| 32°22'44.78\" N | 76°22'52.80\" E |          |           |
| 32°22'58.49\" N | 76°22'47.90\" E |          |           |
| 32°22'46.65\" N | 76°22'43.58\" E |          |           |
| 32°22'32.11\" N | 76°22'35.14\" E |          |           |
| 32°22'31.99\" N | 76°22'31.69\" E |          |           |
| 32°22'41.73\" N | 76°22'47.24\" E |          |           |
| 32°22'41.03\" N | 76°22'47.78\" E |          |           |
| 32°22'40.36\" N | 76°22'47.89\" E |          |           |
| 32°22'52.40\" N | 76°22'57.43\" E |          |           |
| 32°22'56.68\" N | 76°22'56.45\" E |          |           |
| 32°22'57.64\" N | 76°22'56.93\" E |          |           |
| 32°22'57.30\" N | 76°22'50.85\" E |          |           |
| 32°22'51.55\" N | 76°22'50.97\" E |          |           |
| 32°22'41.60\" N | 76°22'49.98\" E |          |           |
| 32°22'44.20\" N | 76°22'51.48\" E |          |           |
| 32°22'44.66\" N | 76°22'51.85\" E |          |           |
| 32°22'44.12\" N | 76°22'51.87\" E |          |           |
| 32°22'52.04\" N | 76°22'57.39\" E |          |           |
| 32°22'54.65\" N | 76°22'57.33\" E |          |           |
| 32°22'54.20\" N | 76°22'57.37\" E |          |           |
| 32°22'10.36\" N | 76°22'10.38\" E |          |           |
| 32°22'11.77\" N | 76°22'10.60\" E |          |           |
| 32°22'11.84\" N | 76°22'10.99\" E |          |           |
| 32°22'41.42\" N | 76°22'49.13\" E |          |           |
| 32°22'39.90\" N | 76°22'49.57\" E |          |           |

GEO-REFERENCE MAP OF SOI SHEET 52-D-7 (1:5000) FOR 3.7463 HECT. OF FOREST LAND TO BE DIVERTED FOR CONSTRUCTION OF GHATOR TOP SHEP (4.98MW).  
 PROJECT - GHATOR TOP SHEP (4.98MW).  
 NAME OF APPLICANT - CHAMBA HYDRO VENTURES.  
 NAME OF FOREST DIVISION - BHARMOUR.  
 SOI SHEET NO - 52-D-7.

**WATER BODY** █    
 **RESIDENTIAL AREA /CULTIVATED LAND** █    
 **FORESTLAND** █    
 **PROJECT COMPONENTS** █

**DUMPING SITES**     
**PROP. ROAD** —    
**TRANSMISSION** —

Chamba Hydro Ventures  
 Authorized Signatory

Deputy Conservator of Forests  
 Bharmour Forest Division  
 Bharmour, Chamba (H.P.)