

**CATCHMENT AREA TREATMENT PLAN FOR THANE PLAUN HYDRO
ELECTRIC PROJECT ON RIVER BEAS AND RANA KHAD IN JOGINDER
NAGAR AND MANDI DIVISION**



by
Naik Environment Research Institute



NAIK ENVIRONMENT RESEARCH INSTITUTE LTD
7/2, Ankit Sadan, Mehli Junga Road (Chaili), Mehli, Shimla – 171009 (HP)

Head Office
41, Dipak, Ex-servicemen colony, Paud Road,
Pune – 411038, Maharashtra; Tel. : 020-65239021

Foreword

The Catchment Area Treatment Plan for Thana Plaun HEP is an opportunity to do constructive planning and work for the betterment of ecology, the people of this Region and to minimise the erosion of surface soil. This part of the catchment of Beas River is remarkably well stocked. As such there is much less scope for new plantations than in other catchments. The other striking feature of this part of Beas Catchment is that the population here is generally poor. This stretch also does not fall on the tourism circuit except for the Rewalsar Beat in Mandi Range. There is no scope for income for the local population from tourism in most of this catchment. In much the same manner this Region does not have orchards. On the other hand there are 569 revenue villages of 110 Panchayats having 52022 households in this area. The total population of villages in the catchment is 231293 including 113940 males and 117353 females. Their livelihood is dependent mostly on seasonal rain fed crops and their need for fuel and fodder exerts undue pressure on the surrounding forests.

This CAT Plan, therefore, has focussed on better soil holding through new plantation to the extent possible, enrichment wherever required and a large amount of energy plantations coupled with pasture development. This has the twin objective of reducing the human pressure on forests while providing an ability to support livestock as the main stay of livelihood for the locals. This focus has resulted in a very large concentration of afforestation measures to the tune of Rs. 1451.66 lacs. The Soil & Moisture Conservation measures including drainage line treatment is planned at Rs. 1300.08 lacs. Most of this is devoted to gabion checkdams and for construction gabion retaining walls besides gabion spurs, trenching and bio-engineering works. The SMC measures also provide for water harvesting structures which is necessary for both wild life and the human population.

NERIL team made a checklist and had a detailed discussion with every concerned functionary of the Forest Department from Beat Guards, Block Officers, and Range Officers to the D.F.Os. The intention was to ensure that the Forest Department infrastructure is enforced to undertake such a large job of plantations and structures. It is noteworthy that the new plantations are planned for 333 ha, enrichment in 426 ha; natural regeneration is planned in 578 ha., NTFP in 114 ha., energy plantation in 347 ha. and pasture development in 375 ha. It is often said that Himachal is fighting a losing battle against the spread of noxious weeds such as Lantana and Eupatorium. We have, therefore, planned to eradicate these species from a total of 1649 ha. Needless to say that it will improve the fodder availability for wild life as well as domestic animals. Propagation of better grasses and fodder species will also result in better soil holding. Thus, meeting the over-all objective of the CAT Plan together with better food chain management. The total outlay for strengthening the forest department infrastructure is planned at Rs. 928.60 lacs; which is 15% of the over-all outlay. In addition to the physical infrastructure like Guard-huts, B.O. Quarters, Fire Watch Towers, Boundry Pillars; we have provided for soft

infrastructure in the form of Lap Tops at Range level, Data Entry Operators to maintain proper records and mobility support to the field staff.

There are other provisions made as per the HPFD guidelines for Research, Training and Capacity Building, Payment for Environment Services (PES), Monitoring and Evaluation, Improvement of Wild life Habitat, and Contingencies. Remarkable benefit for the forests and wild life is planned in the form of Research Station for Gene pool conservation of both flora and fauna at Rewalsar. We are certain that this plan will not only benefit by reducing the silt load coming to the Thana Plaun HEP but also by enhancing the habitat, improving the ground cover and the quality of life for the people in the catchment.

Rekha Somayaji
Director- NERIL
NERIL

Cdr. (Retd.) Dipak Naik,
President & Chief Executive Officer-

ACKNOWLEDGEMENT

We in NERIL are thankful to the H.P. Forest Department Officials for their guidance and cooperation. Our interaction with, Conservator of Forests Mandi, Divisional Forest Officer Jogindernagar, Division Forest Officer-Mandi, all the 17 Range Forest Officers of Ranges falling in the Project area and the Beat Guards in these Ranges, was of immense help. We are also thankful to the technical inputs given by HPPCL Officers including Sh. D.K. Chaudhary- Superintending Engineer, Thane Plaun HEP, Mr. Narinder Pal Jagota, Executive Engineer, Thane Plaun, Sh. Rahul Sharma- Assistant Engineer- Thane Plaun Project.

Understanding the Project from Senior Manager Thana Plaun



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CHAPTER 1. INTRODUCTION, OBJECTIVE & SCOPE

1.1. Rivers possess a delicate ecology that depends on a regular cycle of disturbance within certain tolerances. The plant and animal communities that inhabit the river and river margins have evolved to adapt to their rivers own peculiar pattern of flood and drought, slow and fast current. Dams disrupt this ecology. The first effect of a dam is to alter the pattern of disturbances on which the plants and animals of a river depend. Many aquatic animals coordinate their reproductive cycles with annual flood seasons. Every flood is valuable in that it takes nutrients from the land and deposits them in the river, providing food for the stream's residents. Floods also provide shallow backwater areas on vegetated and shaded riversides; the young of many animals depend on these backwaters to protect them from predators too large to swim in these shallow waters.

1.2. Himachal Pradesh Forest Department has embarked upon major initiatives to improve the catchment areas of all the major rivers in the state. The approach of HPFD is well expressed in a document published by the department in 2012. It is pertinent to quote this approach and objectives in the current context.

1.3. The government of Himachal Pradesh aims to become a leading power generating state by utilization of its hydrological potential. Himachal Pradesh has an achievable potential of producing more than 27,000 MW of power. The Government of Himachal Pradesh has awarded the work of development of the Thane Plaun Hydropower (191 MW) scheme for power generation using water from Beas River and Rana Khad in Joginder Nagar Mandi District to Himachal Pradesh Power Corporation Limited (HPPCL).

1.4. CATCHMENT AREA

This project is located at Kotli, downstream of the confluence of Beas River and Rana Khad. Beas is the only tributary of the Indus system confined to India. The total catchment area of Beas. River is 29500 Km², which spreads in two Indian states, Himachal Pradesh (H.P.) and Punjab. Out of 29500 Km² catchment area, 12130 km² is spread within Himachal Pradesh (H. P) and remaining 17370 Km² in Punjab. The catchment area of Beas River at Thana Plaun dam site is 7378 Km². Average Annual Catchment Yield of water is 5416 million meter³. The life of a dam is directly affected by the rate of siltation which is a major threat to utility of dam. The siltation is primarily dependent on the physical and biological conditions of the catchment area of the project. The more productive the Catchment area, the lesser will be the quantity of the silt flowing to the dam site.



Figure 1 : Catchment Area of the Project Area

INTRODUCTION TO THANA PLAUN HYDROELECTRIC PROJECT

Pre-Feasibility Study Report as well as draft Detailed Project Report of Thana Hydroelectric Project were prepared M/s Himachal Pradesh Power Corporation Limited after carrying out detailed investigation at site. The catchment area is adopted from the project (Source: DPR). Various other information, drawings and schematic diagrams are also taken from the project DPR wherever it was required. The layout plan of Thana Plaun refer appendix no. VII.

Figure 2. Digital Terrain Model of Thana Plaun HEP (191 MW)

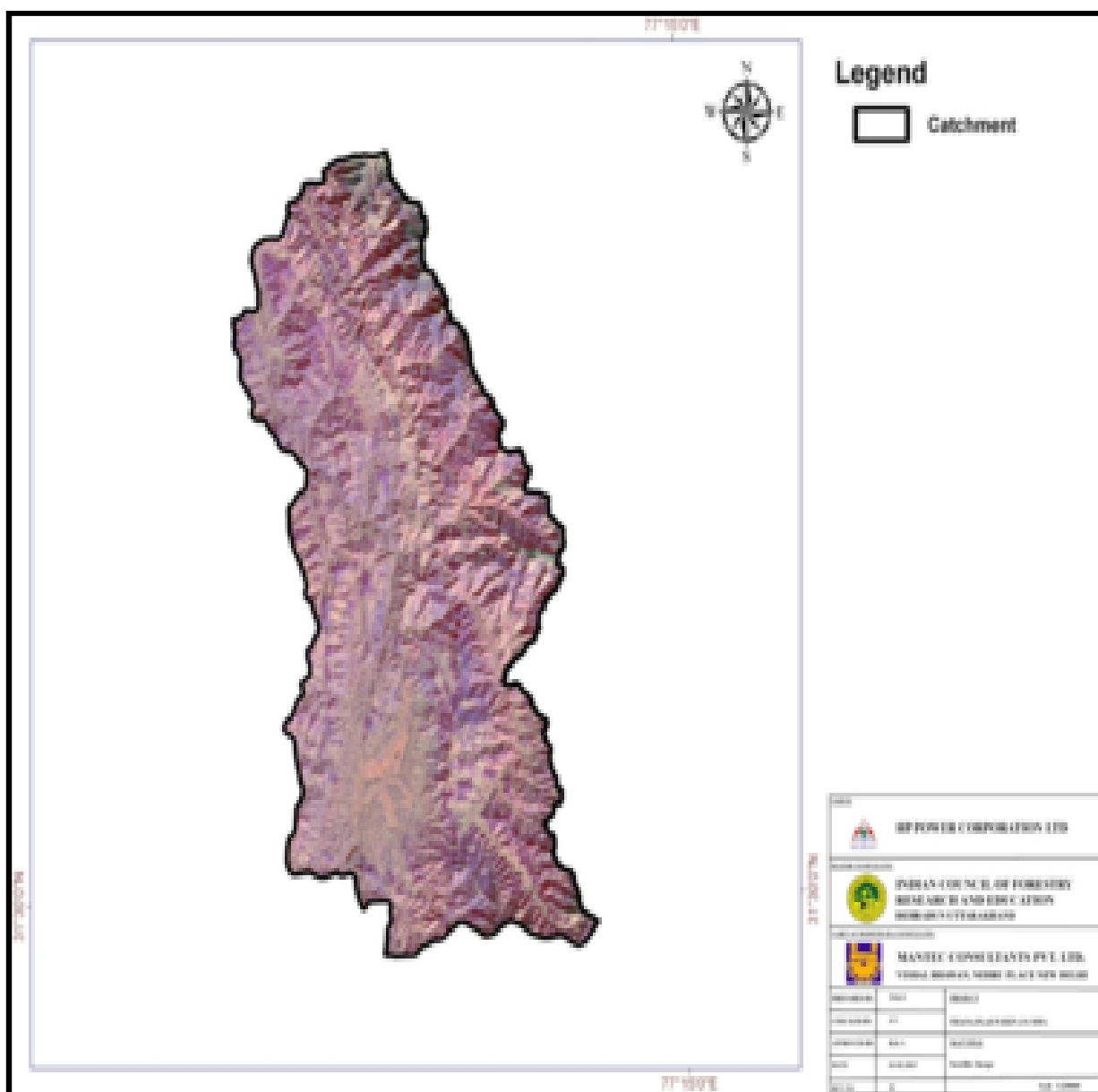
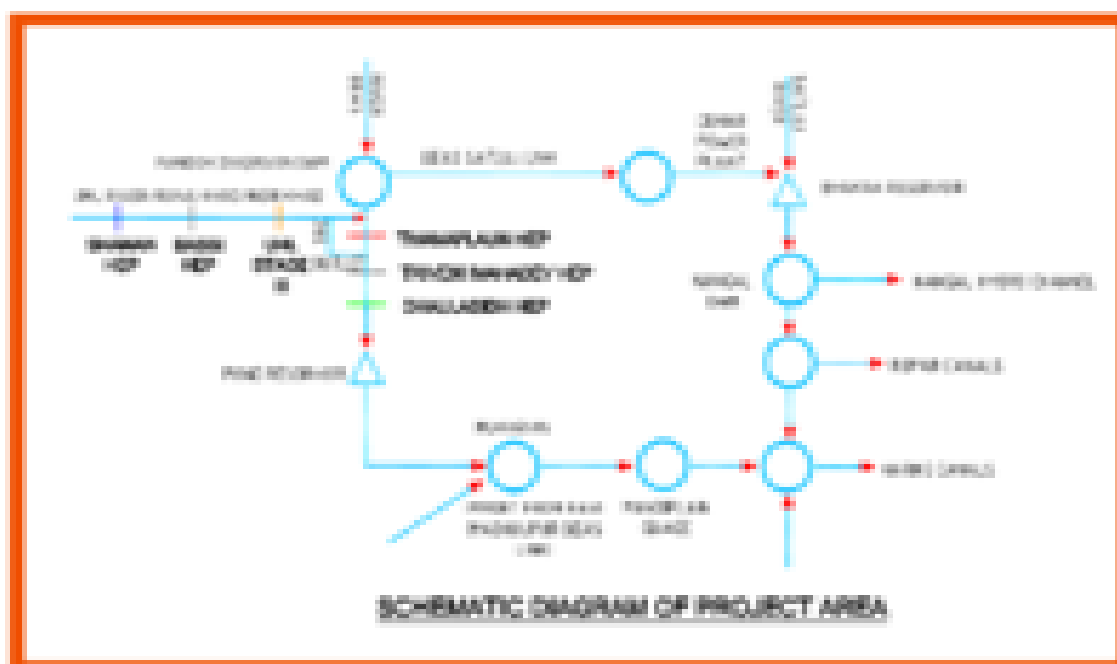


Figure 3 Schematic Diagram of location of other Projects (Source: DPR)

The total catchment area of the river Beas upto the proposed dam site of Thana Plaun HEP is 7378 KM². There are sixteen HEPs upstream of the proposed Thana Plaun HEP which shall have its own CAT plan formulated for its effective catchment area.

The immediate upstream project Pandoh is an existing project on Beas River located approx. 43 km upstream of Thana Plaun HEP. The downstream project is Triveni Mahadev HEP whose FRL 592 m is sufficiently below the TWL of Thana Plaun HEP (El. 634 m). Therefore, the downstream development does not affect proposed Thana Plaun HEP in any way. The effect of the upstream diversion at Pandoh dam and the diversion of Uhl river has been considered in the assessment of the hydrology studies for Thana Plaun HEP.

Total ten watersheds are marked in the proposed project. The direct draining catchment area of Thana Plaun HEP is mainly drained by nine perennial streams / khad viz., the Beas (upper), Hurla, Malana, Parbati, Sai Nai, Tirthan, Uhl, Suketi and Bakhli (Table 1). These watersheds are further divided into sub-watershed based on the drainage pattern of these watersheds.

1.5. EFFECTIVE DRAINING CATCHMENT

The total catchment area of the river Beas upto the proposed dam site of Thana Plaun HEP is 7378 KM². The catchment area of Beas River upstream of Pandoh Dam is approximately 5278 sq. kms. The intermediate draining catchment area of the Thana Plaun HEP comes out to be 2100 sq-KM. A major tributary Uhl river joins downstream of Pandoh dam. There are three

Hydro-Electric projects existing /proposed on this river by intercepting its flows (370 Km²) together with the flows of Rana Khad (CA- 98.9 Km²) and Neri Khad (CA-16 Km²). Hence, the effective catchment area contributing flows to Thana Plaun HEP is estimated 1615 Sq-KM. Catchment area of River upto Thana PLaun HEP Dam Site: 7378 km², Catchment area of River upstream of Pandoh Dam Site: 5278 km², Intermediate Catchment Area between Thana Plaun & Pandoh Dam: 2100 km², Catchment Area contributing flows to Uhl Stage-III: 370+98.9+16 = 484.9 km² Effective catchment area: 1615.1 km²

The effective draining catchment area is shown in **Figure 4** and the drainage pattern of the same is given in **Figure 5**. The sub watershed falls under the effective catchment area are shown in the **Figure 6**.

Figure 4. Effective Draining Catchment Area

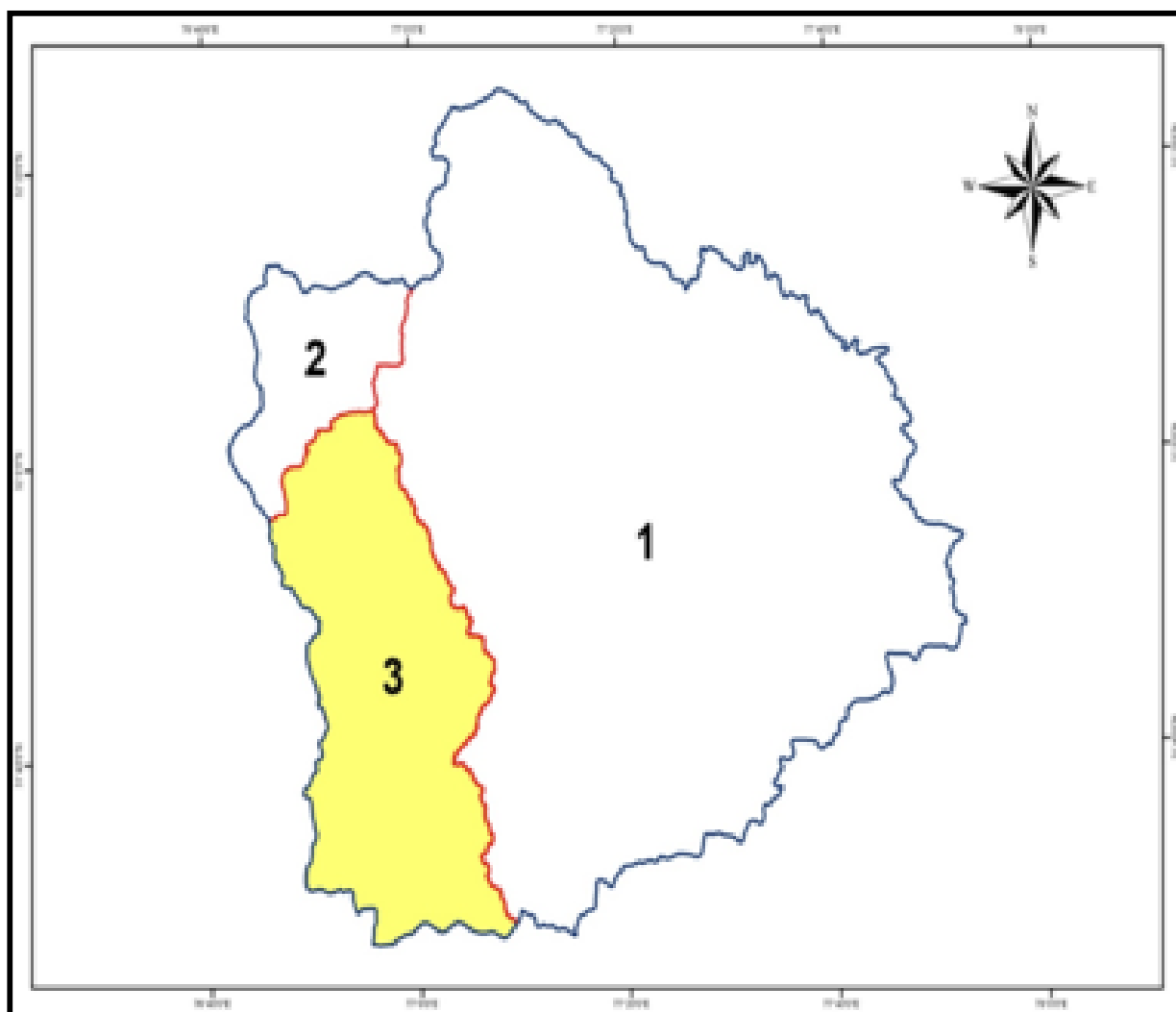
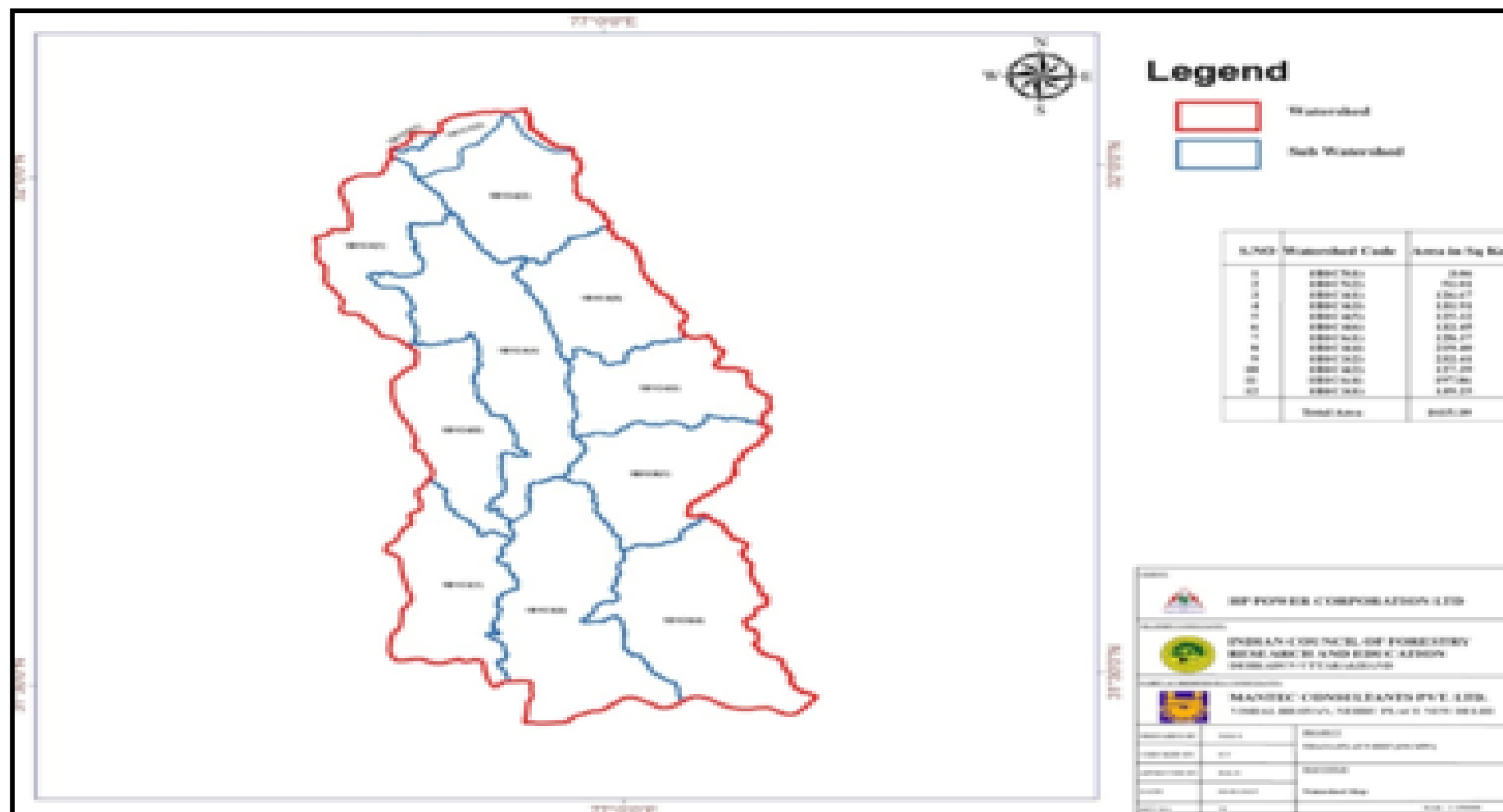


Fig 5: Effective draining catchment area of Thana Plaun HEP



Fig 6: Sub watersheds of the effective draining catchment.



1.6. DIRECT DRAINING CATCHMENT AREA

The total catchment area of the river Beas upto the proposed dam site of Thana Plaun HEP is 7378 KM²(**Fig.1**). There are sixteen HEPs upstream of the proposed Thana Plaun HEP which shall have its own CAT plan formulated for its effective catchment area. **Figure4** and **Figure5** can be referred in this reference. The immediate upstream project Pandoh is an existing project on Beas River located approx. 43 km upstream of Thana Plaun HEP. The downstream project is Triveni Mahadev HEP whose FRL 592 m is sufficiently below the TWL of Thana Plaun HEP (El. 634 m). Therefore, the downstream development does not in any way affect proposed Thana Plaun HEP. The effect of the upstream diversion at Pandoh dam and the diversion of Uhl river has been considered in the assessment of the hydrology studies for Thana Plaun HEP (Source: DPR). A detailed list of various HEPs upstream and downstream of the proposed project is annexed as **Annexure-I** (Source: DPR). Total ten numbers of watersheds are marked in the proposed project. The direct draining catchment area of Thana Plaun HEP is mainly drained by nine perennial streams / khad viz., the Beas (upper), Hurla, Malana, Parbati, Sai Nai, Tirthan, Uhl, Suketi and Bakhli (**Table 1**). These watersheds are further divided into sub-watershed based on the drainage pattern of these watersheds.

1.7. Drainage Pattern

Effective draining catchment area varies from 3998 Mtrs above MSL to 576 Mtrs above MSL (**Fig.5 & Fig.6**).A Catchment Area Treatment Plan has been formulated for the draining catchment by using satellite data subset of Landsat-8 which has been presented in **Figure 7**. The catchment is rugged and covered with spurs of high ranges.

Figure 7: Digital Elevation Model of effective draining catchment area Thana Plaun HEP

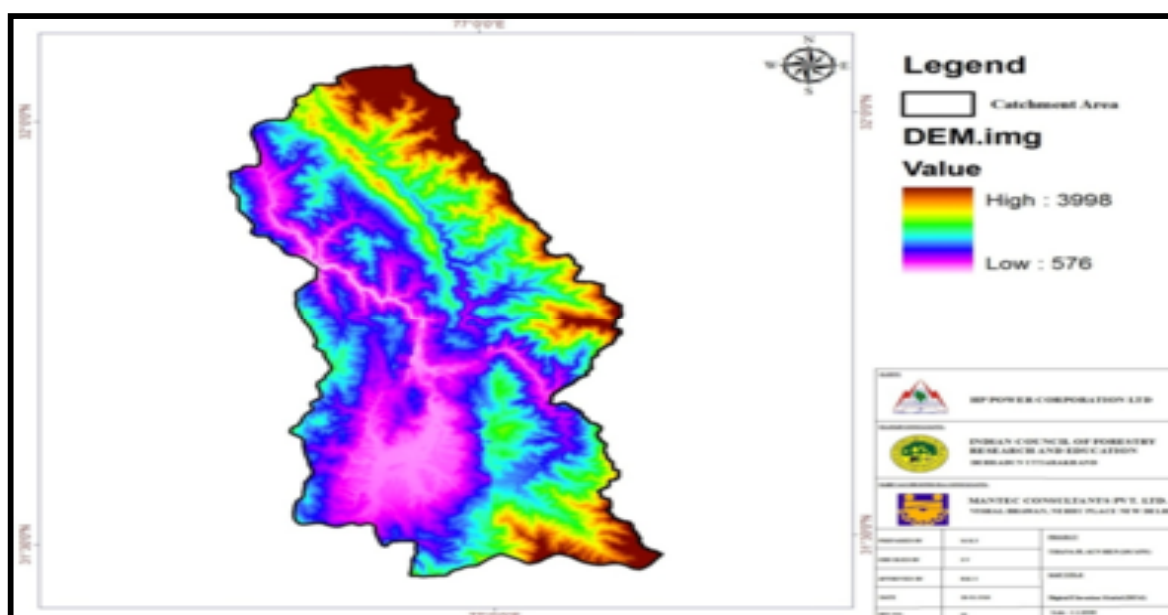
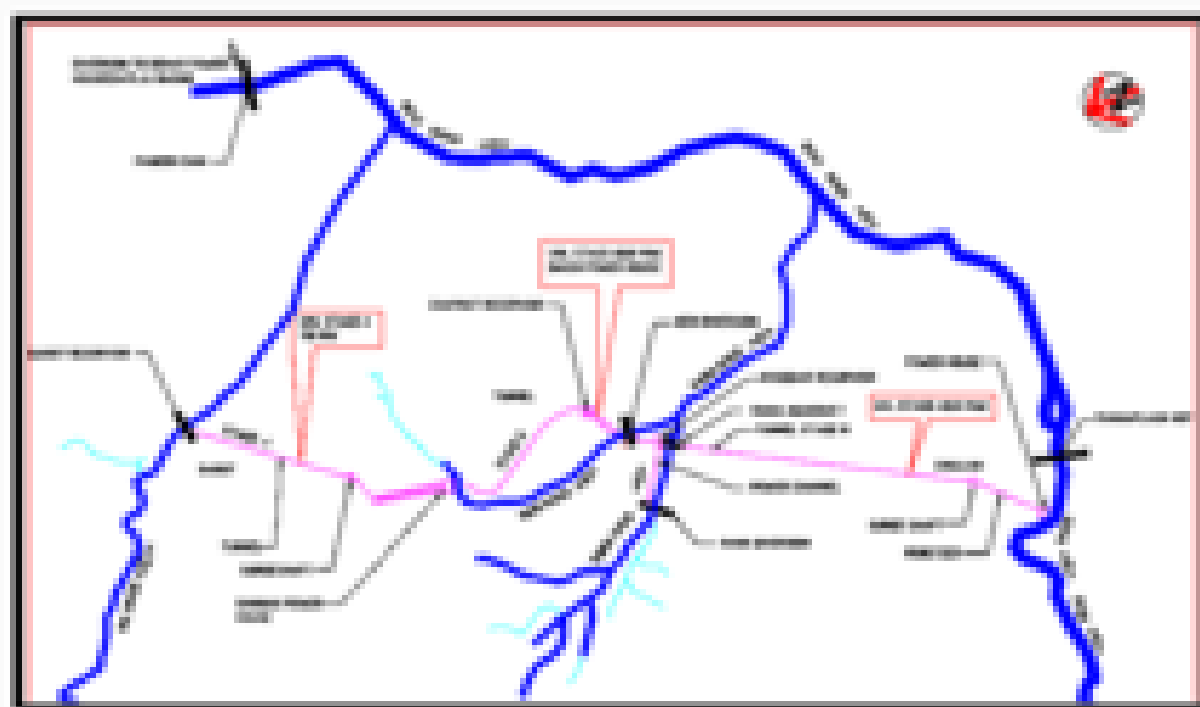


Fig 8 Schematic Diagram of location of other Projects (Source: DPR)

As per nomenclature given in the Watershed Atlas of India (1990), the draining catchment under study area lies in 1B1C3 - 1B1C6 and 1B1D1 – 1B1D6.

The code of these watersheds can be deciphered as follows: -

1B1C3: 1: Water Resources Region (WRR-1), B: Basin; 1: Catchment; .C: Sub-catchment; 3: Watershed.

Table 1 : List of Watersheds of the Total Catchment Area

Name of the Watershed	WRR	Basin, 1968	Catchment, 1968	Sub-Catchment	Watershed
1B1C3	Indus	Beas	Whole Beas (No Sub-div)	Nandaun to Pandoh dam (354)	Suketi
1B1C4	Indus	Beas	Whole Beas (No Sub-div)	Nandaun to Pandoh dam (354)	Uhl
1B1C5	Indus	Beas	Whole Beas (No Sub-div)	Nandaun to Pandoh dam (354)	Uhl
1B1C6	Indus	Beas	Whole Beas (No Sub-div)	Nandaun to Pandoh dam (354)	Bakhli
1B1D1	Indus	Beas	Whole Beas (No Sub-div)	Above Pandoh Dam (490)	Tirthan
1B1D2	Indus	Beas	Whole Beas (No Sub-div)	Above Pandoh Dam (490)	Sai Nai
1B1D3	Indus	Beas	Whole Beas (No Sub-div)	Above Pandoh Dam (490)	Hurla, Malana
1B1D4	Indus	Beas	Whole Beas (No Sub-div)	Above Pandoh Dam (490)	Parbati

Fig 9: Topographic map of total Catchment Area of Thana Plaun HEP

1.9. Objective:

The primary objective of the Catchment Area Treatment Plan is to arrest soil loss and degradation of the area. It is an effort to reduce the runoff and soil that is being eroded.

The other objectives of the CAT Plan are:

- a) To achieve sustainable development through improvement of forests and wild life habitat.
- b) Conservation of soil and reduction of the erosion of soil in the watersheds of the project and its immediate vicinity to ensure its longevity.
- c) To provide better livelihood options to the local population.
- d) To minimise the silt load and improve the quality of Beas water.
- e) To minimise the land slides, land slips and erosion of soil.
- f) To rehabilitate the degraded forest areas by using measures like afforestation, natural regeneration of plants and pasture development.
- g) To generate more employment and enhance community participation.
- h) To increase vegetative cover.

10. Scope of work

- a) Forestation of areas forests threatened with erosion with due consideration to NTFP, fodder, fuel wood and timber demand for the local people
- b) Combating erosion in the CAT Plan area.
- c) Augmentation of pastures
- d) Increasing production potential of the area and sustained use of natural resources.
- e) Strengthening extension and follow up activities of forestry and wild life development programmes.

CHAPTER 2

NERIL'S APPROACH

2.0. NERIL'S Approach:

2.1. The Agreement for preparation of CAT Plan for 191 MW Thana Plaun HEP was signed between H.P. Power Corporation Ltd. and Naik Environment Research Institute Ltd. (NERIL) on 5.09.2016. The guidelines issued by the Himachal Pradesh Government vide its Notification No. PFF-B-F(2)-72/2004-Pt. II dated 30.9.2009 state that the CAT Plan size should be based on the actual extent of work to be done in the catchment but shall not be less than 2.5% of the project cost. The estimated cost of Thana Plaun HEP works out to Rs.2223.59 Crores. **The CAT Plan cost of Thana Plaun HEP works out to Rs. 56, 00, 31,925/- or say (Rs. 56.003 crores) which is 2.52% of total project cost.**

2.2. After signing the Agreement on 5.9.2016, NERIL team headed by Cdr. D.D.Naik, President & Chief Executive Officer, NERIL held preliminary discussions with the Project Authorities at Sujampur Tihra and Kotli on 27.9.16 at Kotli to have a first hand briefing about the project and its various components. Project authorities were requested to issue a letter to all the H.P. Forest Department Officers informing about NERIL's appointment as Consultant for preparation of CAT Plan for Thana Plaun HEP. The letter was issued by the project authorities on 27.9.2017. It revealed that the Catchment of Thana Plaun project falls under Jogindernagar and Mandi Forest Divisions. The Catchment area of the project comprises of 61 Forest Beats falling in 7 Ranges of Jogindernagar and Mandi Divisions i.e. (4 Ranges of Jogindernagar Division and 3 Ranges of Mandi Division) as per details given below:

Division	Range	Total Beats in Range	Beats falling in the TP Catchment	No. of beats outside Catchment	Name of Beats
Jogindernagar	Jogindernagar	12	12	0	Drubbal Bagh, Chhaprot, Jogindernagar and Bagra., Drahli, Nainpur, Bhararu, , Ghatta, Hara Banaun, Lower Chauntra, Upper Chauntra
	Dharampur	8	8	0	Bahi, Mandap, Sidhpur, Dharampur, Baroti, Ludhiana, Mhan and Brang.
	Urla	10	7	3	Khajri, Chuku, Nagan, Urla, Gwali, Thorat, Shilla Swarh, Barot, Kahlog, Jatingri. 3 Beats namely Barot, Kahlog and Jatingri do not fall under Thana Plaun HEP Catchment.

Division	Range	Total Beats in Range	Beats falling in the TP Catchment	No. of beats outside Catchment	Name of Beats
	Ladhabadhol	9	1	8	Pandol, Golwan, Barnod, Utpur, Delehd, Panjalg, Thullh, Langna and Aahl. Only one beat namely Aahl fall under the Catchment of Thana Plaun HEP.
Mandi	Drung	9	9	0	Tandu, Silag, Kufri, Sharda, Kunnu, Paddar, Drung, Trehmli and Sraun.
	Mandi	17	17	0	Randhara, Bijni, Rehradhar, Tamlot, Talyar, Badsu, Kharnal, Rani Baain, Ratti, Majheli, Rewalsar, Tarapur, Kangni, Sakroha, Nelha, Chhabwan and Paddhar.
	Kotli	10	7	3	Nagan, Kotli, Sai gallu, Birh, Bani Kumarah, Janettri and Koon, Baglu, Sardwar and Gokhra. 3 Beats namely Baglu, Sardwar and Gokhra do not fall under the catchment of TP.
2	7	75	61	14	

2.3. Divisional Forest Officer, Jogindernagar being HPFD Nodal Officer for the CAT Plan of Thana Plaun HEP. NERIL team proceeded with holding 1st round of discussions with Conservator of Forests Mandi and both the Divisional Officers as under:

- Meeting with D.F.O. Jogindernagar and his staff: 28.9.16 at Jogindernagar.
Meeting with D.F.O. Mandi and his staff: 30.9.16 at Mandi.
Meeting with C.F. Mandi: 30.9.16 at Mandi.

2.4. After holding preliminary discussions in the above meetings, a Checklist was devised by NERIL for field survey and compiling the requirements of data under various components of the CAT Plan. Second round of field survey/ discussions at Range Level after 16th December, 2016 to identify the areas requiring treatments under various components of the CAT Plan for Thana Plaun HEP. The discussions with Range Officers and the Beat Guards and visit to their respective areas of responsibility took place from 16th December, 2016 onwards as per details given below:

1. R.O. Kotli and his staff 16.12.2016 and 4.3.17.
2. R.O. Dharampur and his staff 17.12.2016. and 4.3.17
3. R.O. Urla and his staff 19.12.2016, 3.3.17 and 15.3.17

4. R.O. Drung and his staff	10.01.2017, 2.3.17 and 14.3.17
5. R.O. Jogindernagar and his staff	11.1.2017, 3.3.17 and 15.3.17
6. R.O. Mandi and his staff.	12.1.2017, 2.3.17 and 14.3.17
7. R.O. Ladbhadhol/B.O.Langhna	13.1.2017.

In case of Ladbhadhol Range only one beat namely Aahl falls under the Catchment of Thana Plaun HEP.

2.5. Discussions as well as site visits revealed that the Catchment areas of the project by and large consist of well stocked forests i.e. Broadleaf and conifers offering lesser scope for new plantations. Still there were areas needing new plantations and enrichment plantation. Provisions for NTFP Plantations and Pasture development were also identified. Stress has been laid on upgradation of existing and setting up new Nurseries. In all there are 20 existing nurseries in the catchment area while new 15 nurseries are also proposed. Under Payment for Environment Services the general requirement of Water Ponds, Community Storage Tanks, construction of crematorium to reduce pressure on forests, distribution of Solar lights and other power saving devices, community reward schemes were underlined by the Forest Staff which have been duly included under PES. The funds under PES will be utilized as per instructions of Government from time to time. Under Infrastructure and Forest Protection, provisions have been made for repair of old infrastructure, creation of new infrastructure such as construction of new Forest Guard huts, B.O.Quarters, Conference hall at Range Level, Mobility support, contracted manpower for Watch & Ward and data updation at Range level, providing state-of-the-art equipment including fire extinguisher, construction/ repair of Bridle paths/ Forest Roads and construction and repair of Boundary Pillars etc. Eradication of invasive species like Eupatorium and lantana was the major problem noticed during the field survey. Therefore, provisions for eradication of invasive species and laying of demonstration plots for bamboos have been made under Research Training and Capacity Building. Exposure visits for the field staff have also been made under this component. Under Monitoring & Evaluation checking percentages at various levels i.e. monitoring to be done at Field level by the Forest Guards, Range Officers, A.C.Fs. and Divisional Forest Officers have been laid down. Setting up of Silt Observatory Posts for monitoring silt in the Rivers have also been made.

2.6. There are no Wildlife Sanctuaries in the Catchment area of Thana Plaun. Wildlife is found in all the areas irrespective of the fact whether areas have been specifically reserved for habitat improvement of wild life. Instances of Human wildlife conflict are noticed in the Catchment areas. Therefore, provisions have been kept for Wild Life Habitat Improvement, training of territorial staff in handling wildlife in case of emergencies, providing equipment for handling of wildlife etc.

During the course of discussions, the Beatguards underlined the need of main difficulties being faced by the villagers which included the problems of stray cattle, monkey menace and loss caused to the crops by other wild animals, shortage of irrigation facilities and shortage of fodder etc. These aspects have been covered under the Socio economic interventions under the CAT Plan for which a provision of about 0.25% of the project outlay for promoting organic farming

increase dependence on animal husbandry, provision of Natural Insemination Centres and other socio economic measures to improve the quality of life of people in the catchment. Considering that greater benefit has to reach the poor people of the Region, we have taken care to provide fuel and fodder under the afforestation plan by providing energy plantation under the afforestation plan. Similarly, separate provision for pastures is made again under the afforestation plan.

After discussions with the Range Officers, areas needing treatment under the CAT Plan were identified by associating the concerned Field Guards. The beatwise details of the activities so identified are given in the Action Plan. The

2.7. The causes of failure and injuries to forest crops were ascertained after discussions with the Forest Guards, people of the surrounding areas and the working plan. Remedial measures suggested in the CAT Plan to prevent injuries to forest crops and grass lands are identified as follows: -

- a. **Encroaching and foraging in the Forest to obtain fire wood and fodder:** - The Cat Plan provides necessary quantum of energy plantation of fuel and fodder species in areas between villages and the forests.
- b. **Denuding ground cover due to excessive grazing and damage to the top soils by hooves:** - The CAT Plan has provided for 375 ha. of Pasture development to meet the requirement of domesticating animals and to leave the soil binding grass cover undisturbed.
- c. **Debarking:** - Fodder Plantation provided as stated above.
- d. **Parasites:** -We have providing maintenance support for 5 years for silviculture. This will help to check/cure the various injuries to crops. The details are given in subsequent chapter.
- e. **Noxious weeds proliferation:** It is noticed that the noxious weeds such as Lantana Eupatorium are damaging the forest crops as well as the land available for fuel, fodder and pastures. The CAT Plan has, therefore, provided for eradication of noxious weeds to the tune of 1649 ha.

NERIL has done extensively survey and interacted with the villagers in the catchment and also noted the opinion of the beat guard in respect of benefits that can be imparted or given to the community under PES. Some photographs of the interaction are as follows:



Discussion with RFO Joginder Nagar, B.O.



Discussion with staff Kotli



CHAPTER 3

CATCHMENT AREA

3.1 Himachal Pradesh is endowed with varied natural resources in the form of perennial river systems being fed by the Himalayan glaciers. These river systems play a vital role as they provide means of irrigation, drinking water and tourism etc. Himachal, translated as the “abode of snow” is composed of mountainous terrain and begins from the Sivaliks and goes up to trans-Himalayan heights of Zaskar range with altitudes varying from 350 m to 7000 m above the mean sea level. There is a general increase in elevation from west to east and from south to north.

3.2 Overview of Catchment for Thana Plaun HEP: -

The proposed Thana Plaun Hydro-Electric Project (HEP) is located in Mandi District of Himachal Pradesh and lies between 31°45'N 76°15'E and 32°30'N 77°45'E. The entire catchment comprises of mountainous terrain with steep hill slopes and is very thinly populated. The daily observed discharge data at the Beas River downstream of Pandoh Dam are available for January 1980 to December 2011. The dam site is located at Latitude: 31°49'28.22"N Longitude: 76°50'20.53" E. The proposed layout has a dam toe type of arrangement. Therefore, the complete project including the dam site and the underground powerhouse location are presently accessible from the Jogindernagar-Neri-Dharampur highway through existing un-metalled approach roads constructed by PWD. The project site is approachable from Joginder Nagar in District Mandi, the distance of Dam site and Powerhouse site is around 33 km and 35 km respectively; and from Sujanpur- Tihra via Sujanpur- Sandhol-Dharampur Joginder Nagar road Power House is 66 km, and dam site is at 111 km via Mandi-Joginder Nagar road. 2. The Thana Plaun Hydro-electric Project is storage cum run-of-the-river scheme on the Beas River with a live storage capacity of 44.93 MCM to enhance the peaking benefits during the lean months. Land requirement for the proposed project is tabulated below: -

Type of Land	Area(in hectares)
Forest Land	269.65
Govt. Land	135.80
Private Land (kism vani)	1.34
Private Land	37.50
Total	444.29



Map: Google Image of Thana Plaun

DAH AXIS VIEW



View of intake sight at right bank of Beas River

3.3 Total length of reservoir is 16.5 kms along the River Beas, 4.5 km along Rana Khad and 1.5 kms along Arnodi khad from the dam site. The area under submergence is 341.38 hectare. There are five quarry sites having 45.94 hectares' area along with two dumping site having an area of 10.35 hectares. The project layout comprises of very short water conductor system on the right bank of River Beas leading to an underground powerhouse cavity located just downstream of the toe of the dam. The live storage capacity of 44.93 MCM will be created up by constructing a 106.70 m high (from deepest foundation level) and 221.250m long Concrete Gravity Dam near village Thana. The head works are located approximately 40 kms downstream of Pandoh Dam in Mandi district, Himachal Pradesh, about one kilometer downstream of Kunkatar bridge. The design discharge is diverted through power intakes to two headrace tunnels leading to an underground powerhouse through steel lined pressure shafts, which are bifurcated near the powerhouse. The powerhouse cavity comprises of three main units of 50.33 MW each and two environmental units of 20 MW each with a total installed capacity of 191MW. The water coming out of the turbines is discharged back into Beas River through two short tailrace tunnels. The normal tail water level at the powerhouse location is EL 634.00m with a gross head of 75.67m. The annual energy generation will be 668.07 GWh in 90% dependable year at 95% machine availability. Utilization of the water available for power generation during a 90% and 50% dependable years are divided into: a) Mandatory environmental flows to be released from the environmental units accommodated in the main powerhouse itself; and b) The balance to be utilized at the main powerhouse. The diverted flows for power generation would be the assessed from water available minus the environmental flows to be released from the environmental units. The environmental releases are proposed to be used for power generation through two environmental units located in the main underground powerhouse. 5. The opportunity offered by the state of Himachal Pradesh Power Corporation by proposing this study is of enormous value for studies of physical hydrology, or complex land-use impacts. More importantly prevention of erosion of our lands and resultant heavy silt loads, which will reduce the reservoir life cycle. It also affects the life of the turbines and can cause several shut downs in the year. The live storage capacity of 44.93 MCM will be created up by constructing a 106.70 m high (from deepest foundation level) and 221.250m long Concrete Gravity Dam near village Thana. The head works are located approximately 40 kms downstream of Pandoh Dam in Mandi district, Himachal Pradesh, about one kilometer downstream of Kunkatar bridge. The design discharge is diverted through power intakes to two headrace tunnels leading to an underground powerhouse through

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3.4 EXTRACT FROM THE WORKING PLAN

3.4.1 NAME & SITUATION:

The working plan deals with all the demarcated and un-demarcated protected forests of Mandi and Jogindernagar Forest Divisions. It covers about 35% geographical area of Mandi district. The tract lies between latitudes of 31°-34' and 31°-54' North and Longitudes of 76°-49' and 77°-13' East. It is bounded on North and East by Kangra and Kullu districts respectively, on south by Nachan Forest Division and on the South West by Palampur Forest Division. River Beas runs in East West direction through this tract and separates the tract from Nachan Forest Division in the South.

3.4.2 CONFIGURATION OF THE GROUND

The tract comprising Mandi Forest Division and Jogindernagar Forest Division is mostly mountainous with low hills in the west. River Beas flows in the East West direction and drains the major portion of the tract. The area of Mandi and Jogindernagar Forest Division is characterized by the following main ridges:

- i. Nargu-Tunga Devi Dhar
- ii. Ghoghar –Dhar
- iii. Bhabhuri-Dhar
- iv. Sikandar-Kaldu-Janitri Dhar

Most of the tract is drained by river Beas and its tributaries. River Beas enters this tract from Kullu Valley. It forms boundary of Mandi and Parbati Forest Division from Bajaura upto its confluence with Jarjee Khad just below Aut. Thereafter it runs almost in the middle of Mandi District and forms boundary between Mandi and Nachan Forest Divisions upto Badanu. It leaves the tract near Triveni. The main right bank tributaries are Bajaura, Nagwain, Chulinal, Satiur Khads and Uhl river. Left bank tributaries are Tirthan, Chohri, Bakhii, Suketi, Sun and Baker Khads. The Interstate Soil Conservation Board Punjab and Himachal Pradesh have divided the tract in the followings sub Catchments for planning soil conservation works.

Sub-Catch-ment No.	Description	Area in Sq. Kms.	Remarks.
15	Awa Khad	397.82	Only a part of this sub-catchment lies in Joginder Nagar Forest Division
16	Khader Khad	58.84	-
17	Kana Khad	22792	-
18	Luni Khad	82.88	-
19	Devi Ki Khad	62.16	-
20	Maigal Khad	28.49	-
21	Uhl River	741.46	Partly in Jogindernagar Division
22	Satalinar Khad	123.49	-
23	Takoli Shiri Khad	110.23	Catchment to the left bank of Bajaura Khad lies in Parbati Division.

3.4.3 GEOLOGY ROCK & SOIL

The tract forms a part of the lesser Himalayan region. It is bounded on North by Chhota bhagal and on East by Nargu range. River Beas is the main drainage channel and several streams joining it, exhibit dendrite and trellis type of drainage pattern. The tract lies partly on rocks belonging to the central Himalayan zone of unknown age and partly on tertiary shale and sandstones of more recent origin. The fault line separating the younger sedimentary rocks from older Himalayan series runs almost North to South along Ghogar dhar. To the East of this boundary fault, lies slates and shale which are laminated, gritty and very hard and weather slowly. Closely mixed up with shale and slates are the metamorphic rocks viz. mica, schist, horn blend, schist and quartzite. Very thin purple to maroon shales are also observed at placed. In addition, the greenish basalt forms the upper crest of Ghoghar dhar and Hathipur Mandra. Precipitous and gneiss (Coarse-grained, pale-coloured gneissose rock, containing abundant feldspar with quartz, mica, hornblende and garnet), cap all the hills of uhl catchment. Local people extract slates for the purpose of roofing their houses. Good quality slate quarries are very few and even this slate does not compare well with that extracted from Kangra, Nachan & Suket Forest Divisions. It is coarse and brittle and can only be used in the form of thick slabs. To the West of boundary fault occur conglomerates, sand stones, grits and occasional lime stone belts. These are sedimentary rocks occurred due to earth's pressure and belong to Nachan & Sabathu of Shimla group range. Shimla group comprising of silt stone and shale quartzite of various shades are found towards the North West side of the tract. The carbonaceous schist and porphyroblastic (a large mineral crystal in a metamorphic rock which has grown within the finer grained groundmass.) gneiss-chronite schist (A group of allied minerals which may be regarded as hydrated silicates of aluminium, iron and

magnesium. They crystallise in the monoclinic system and are green in colour. They occur as alteration products of such minerals as biotite and hornblende, and also in schistose rocks.); sequence of the Kullu group, is thrust over by the biotite-garnet schist quartite-carbonaceous schist of the vaikrita group in the North West. The ricks of the Vaikrita group are introduced by biotite-mascovite granodiontes ranging in age from 450- million years to 365 million years. The rocks of the vaikrita group are unconformably overlaid by conglomerates, pebbly phyllite and quartzites of the Manjir formation which in turn is overlaid by the carbonaceous shale, sands stone sequence. Mandi Forest Division is known for rock salt deposits. Other reported mineral occurrences are iron ores, Limestone, clay and slates.

ROCK SALT: Rock salt occurs in Maigal, Drang and Gumma areas of the tract and it appears to be connected with the tertiary beds. These salt mines are the only one of its type.

LIME STONES: Cement grade lime stone is reported at Harabagh, Talwara, Bandhi tiba etc.

IRON ORE: Magnetite and haematite in small amounts occurs at Koli Konar ridge, along the junction between gneiss caps and shales of Uhl valley, North of Joginder nagar, at kohar Khas, Thanag, Charyandhar, Hayandhar and Sangal wang.

SLATES: Roofing slate is quarried at Pandoh and Siba Badar.

3.5 CLAY

Gneissic rocks found to the East of the boundary fault give rise to sandy load soils; the cohesive power and the fertility of which depend on their organic matter content. Because of thick forest cover, the organic matter content is quite good. Consequently, the permeability and moisture retaining capacity of soil is good and as a result of this, the stream has perennial water supply and incidences of soil erosion are lesser. The soil of the lower hills, situated to the west of boundary fault is generally clayey loam with pockets of pure clay. This soil is poor in organic content and permeability is very poor. This soil has a very scanty vegetative growth and could be easily eroded. Rate of runoff is very high during rainy season and stream dries up during summer. From silvicultural stand point, all types of soils found in the tract, are suitable for forest growth. Even the clayey soils are well drained because of the steepness of the slope. It is, therefore, the organic matter content and the depth of the soil which exercise influences on the type of vegetation. The soil of fir forests is very rich in humus, while that of Deodar and Kail forests have adequate organic matter. Soil of chil and scrub forests is poor in organic matter content and therefore is friable and liable to be easily eroded.

3.6 CLIMATE

Because of great variation in altitudes, the climatic pattern shows great variation accordingly. It is bitterly cold in the high hills during winter whereas heat during summer is very oppressive in the lower hills. Major portion of the tract however, enjoys a temperate climate. The climate in the

lower zone can be described as sub tropical. Broadly speaking there are three types of seasons viz. winter, summer and rainy season.

3.6.1 WINTER

Winter season lasts from November to March in most parts of the tract. In the lower hills, there is heavy frost and fairly high snowfall is experienced at higher elevations. Rain and snow during winter season are caused by North-Western air currents. Snow fall starts at higher elevation towards end of November or early in December. The snow comes down to 1200 Meters elevation but it seldom stays long. Mandi town is at an altitude of 762 Meters and had snowfall during 1961, 1973 winter and recently again during winter of 1991. Total snow falls at 3000 Meters elevation averages around 3.00 meters. Bulk of the snow fall is received during January and February in normal years. Snow disappears before April from all places below 2500 Meters elevation and by the end of April, all the areas of the tract are clear of snow except some shady localities on the Northern aspect and Nallahs about 3000 Meters elevation. The broad leaved planting is mostly carried out during winter in the tract.

3.6.2 SUMMERS

Summer season lasts from the month of April to the end of June and is the driest period with maximum temperature reaching as high as 41 degrees Celsius, at places along river Beas during June. Except for some sporadic showers, the summer season is generally dry. This period is of intense phonological activity at the higher elevation. During summer season there is a great danger of fire in chir forests. Hot and desiccating winds are common in this tract. At elevations higher than about 2000 Meters, the summer season is quite pleasant.

3.6.3 RAINY SEASON

Rainy season starts with the advent of monsoons either towards the end of June or by the beginning of July and lasts up to the middle or sometimes till the end of September. The bulk of annual precipitation is received during this time. The distribution of rain fall is not regular. Sometimes it rains exceptionally heavily and the rest of the rainy season may go dry. Occasional and exceptionally heavy cloud bursts cause havoc to the tree growth and result in erosion, landslides and floods. During the rainy season in 1993-94, few cases were reported causing havoc by these cloud bursts in Swad and Sudhar villages of Chohar valley and in Gandharv forest above Mandi town respectively and will take several years for the recovery of the impact of damages. After the rainy season is over, the sky is clear and there is a very little rain falls during October and November. During this period, the diurnal variation in temperature is quite marked. The soil loses moisture very fast and becomes dry. The growth of the plants slack off and the leaves of the deciduous species get cuticularised and fall off. All the areas at about 1000 Meters elevation

experience severe frost especially in the depressions leading to creation of frost hole in many forests.

3.6.4 TEMPERATURE

The temperature in different parts of tract varies according to altitude. The temperature is lowest in the month of December and January. It begins to rise from the end of February and it goes as high as 42°C at certain places during June.

3.7 WATER SUPPLY

3.7.1 The main streams and their tributaries rising in higher hills covered by well stocked forests of silver fir, spruce, deodar, kail and oak have perennial water supply while those, having their origin in dry ridges or low lying chil areas having inadequate vegetative cover due to over grazing generally get flooded during the rains and dry up during summers. Water supply situation is satisfactory in the catchment of Uhl River and entire area of Panarsa range except for the top of the ridges in the low lying areas where hill sides are devoid of vegetative covering resulting in scarcity of water in the event of inadequate winter rainfalls. Many hill villages of the lower zone, especially those situated on ridges, suffer from serious shortage of water if it does not rain during May and June. Small ponds are dug near these villages for storing water which is used for drinking by animals and people. In case of serious drought, drinking water has to be carried from far off places. The importance of vegetative cover in ensuring regular and sustained water supply is thus justified in these areas.

3.8 DISTRIBUTION AND AREA

The total geographical area and the area under forests and cultivation are summarized below for the two Forest Divisions separately.

Forest division	Total Geo. Area (ha)	Area under DPFs.(ha)	Area under UPFs (ha)	Total area under Forest Cover	% of geographic areas
Mandi	81693	32085.81	975.98	33061.79	40.47
Jogindernagar	44371	15159.70	601.26	15760.90	35.52
Total	126064	47245.51	1517.24	48822.75	38.73

3.8.1 The above area of D.P.Fs. is divided into 497 forests in Mandi Division and 260 forests in Joginder Division for the intensive management. These forests are further divided into compartments and sub-compartments having areas between 20 and 40 hectares. Only in some

cases the area of compartment exceeds 40 ha. The following statement summarizes the distribution of forest areas in the existing ranges of the two divisions:

Division	Range	DPFs.	UPFs	Total Ft. area (ha)
Mandi Forest Division	Darang	3915.30	253.60	4168.90
	Khaliar	3945.50	140.80	4086.30
	Kataula	9195.83	137.00	9332.83
	Panarsa	10362.94	225.65	10588.59
	Sadar	4702.24	218.93	4921.17
MANDI	TOTAL	32085.81	975.98	33061.79
JOGINDERNAGAR FOREST DIVISION	J/Nagar	6864.54	135.26	6999.80
	Urla	5379.54	290.00	5669.54
	Lad Bharol	2915.62	176.00	3091.92
JOGINDERNAGAR	TOTAL	15159.70	601.26	15760.96
Area of Nargu Sanctuary				13179.22
G.TOTAL		47245.51	1577.24	62001.97

3.9 RIGHTS AND CONCESSIONS

3.9.1 Forest settlement was carried out in 1917 when the rights and concessions of the local people were admitted and recorded. The state forests are not having any private rights existing against it, but in practice the state has permitted certain kinds of usages (bartan) on waste land whether high forest, scrub or grass land, to meet the reasonable domestic and agricultural requirement of the people and such usage will be maintained in so far as it is compatible with the system of forest conservancy suited to the requirement of the state and the people. The bartans are appended to cultivated land assessed to revenue. The rights are limited to the reasonable agricultural and domestic requirements of the people and the timber applied for, in excess could be refused. The timber obtained by the bartender at privileged rates can not be sold or bartered.

3.9.2 GRAZING

The right holders are permitted to graze their cattle, buffaloes, sheep and goats for the whole year without any restriction in the forests, not closed for grazing by any specific order. Grazing fee was fixed even for local grazing of sheep, goats and buffaloes. Grazing of cows and buffaloes was allowed free for migratory graziers coming from Chamba, Kullu and the rates of grazing were higher than those for Mandi graziers.

3.9.3 GRANT OF TIMBER

The right of bartandar to obtain trees at privileged rates is recognized since the inception of forest conservancy in these areas. Even after the introduction of forest conservancy rules by Mr. Maynard, trees have been given freely. Deodar was the only conifer for which fee was charged and kail, chil, spruce and silver fir were considered to be valueless in those days and were given free. At the time of forest settlement in 1917, it was felt that all the species have become valuable and it was not correct to give trees free to the bartandar. Rates were accordingly fixed for the grant of trees of all the conifer species to the bartandar. Though no limit on number of trees to be sanctioned was fixed, it was provided in the settlement report that trees should be sanctioned only to meet the legitimate domestic and agricultural requirement. In case of buildings destroyed by fire and other natural calamities, it is discretionary with the sanctioning authority as to whether trees are to be sanctioned free.

3.9.4 LOPPING

The right of lopping broad leaved trees was allowed without limit and restrictions except in the areas worked for fuel wood and charcoal supply. Lopping of Deodar was prohibited under Mr. Maynard's forest rules. Lopping of Kail and chil was stopped under forest settlement and these species are not lopped except surreptitiously. The lopping of silver fir and spruce trees is permitted upto half the height of the trees and no tree under 3 feet girth can be lopped. Biotic pressure is increasing due to increase in human and cattle population and people are resorting to heavy lopping of trees around habitations which is result in the death of trees and recession of forest away from habitations.

3.9.5. NON TIMBER FOREST PRODUCE

Collection and sale of flowers, fruits, medicinal roots, honey and nargals is permitted. Cutting of grass is permitted even in the demarcated protected forests except where such areas are closed for regeneration. Extraction of slates from the forests is not permitted. Removal of bark from oak and other suitable broad leaved species for tanning is allowed from standing trees, provided removal of bark does not endanger the life of trees. In case of conifers, bark can be removed from the trees marked for felling. Collection of fallen needles of conifers and fallen leaves of oaks and other broad leaved species is also permissible provided no iron rake is used for their collection. Extraction of torchwood is permissible from stumps of all conifer species provided hammer marks are not disturbed during torchwood extraction. It is not permitted from dry or green fallen trees of all conifer species.

3.10 COMPOSITION AND CONDITION OF THE CROP: The vegetation met with in the tract shows great variation in accordance with the diversity of climate due to great variation in altitude which ranges from 548 meters to 4038 Meters. Almost every type of forest from high

level birch-rhododendron down to northern tropical dry mixed deciduous forest is found in the tract. The forests in this tract are classified in the following types according to Champion & Seth's classification of forest types.

- a. Northern dry mixed deciduous forests:
- b. Upper or Himalayan chir pine forests:
- c. Himalayan Sub Tropical Scrub
- d. Sub Tropical Euphorbia Scrub
- e. Oleacuspidata Scrub Forests
- f. Lower Western Himalayan Temperate Forests
- g. Lower Western Himalayan Temperate Forests- Oak Forests
- h. Moru Oak Forests
- i. Oak Scrub
- j. Moist Deodar Forest (*Cedrus Deodara*)
- k. Western Mixed Coniferous Forests (Spruce, Blue pine & Silver fir).
 - a) Spruce Deodar Forest-
 - b) Predominantly Spruce Forests
 - c) Spruce Silver Fir Forests
 - d) Pure Silver Fir
 - e) Moist Temperate Deciduous Forests
 - f) Low Level Blue Pine Forest (*Pinus Wallichiana*)
- l. Kharsu Oak Forests
- m. West Himalayan Upper Oak/Fir Forests
- n. Montane Bamboo Brakes
- o. Himalayan Temperate Pastures
- p. Himalayan Temperate Secondary Scrub
- q. West Himalayan Sub Alpine Fir Forests
- r. West Himalayan Sub Alpine Birch/Fir Forests
- s. Birch Rhododendron Scrub Forests

3.11 INJURIES TO WHICH CROP IS LIABLE:

The forests of Mandi and Jogindernagar Forest Division are exposed to various causes of injuries as given below: Nature and isolation Shocks etc.

- i) Fire.
- ii) Man- Felling damage to forests by illicit felling.
- iii) Lopping- Near the habitations, lopping of Ban oak and other low level broad leaved species such as Biul, Kachnar, Chimmu, Jhingan, Siris, Khirak, Semal, Ficus etc. is very common.
- iv) Grass Cutting
- v) Debarking
- vi) Animal Grazing

- vii) Wild Animals
- viii) Plants
 - a) Climbers
 - b) Weeds
 - c) Parasites
- ix) Insects
- x) Fungi-
 - a) *Trametes Pini*
 - b) *Fomes Annosus*
 - c) *Peridermium Campanulatum & Peridermium Brevis*
 - d) *Peridermium Cedrii*
 - e) *Peridermium Picea*
 - f) *Fusarium Spp*
- xi) Nature
 - a) Snow
 - b) Hail & storms
 - c) Lightening
 - d) Drought
- xii) Isolation shocks

3.12 Floristic composition:

A. The Flora and Fauna

List of important trees, shrubs, herbs & Climbers and grasses commonly found in Dharampur - Range/ Jogindar Nagar division: -

i. List of trees

S.No.	Botanical Name	Family	Local Name
1.	<i>Abies pindrow</i>	Coniferae	Tosh
2.	<i>Acacia nilotica</i>	Leguminosa	Kikar
3.	<i>Acacia catechu</i>	Leguminosa	Khair
4.	<i>Acer caesium</i>	Sapindaceae	Mandru, Mandar
5.	<i>Acer oblongum</i>	Sapindaceae	Perange
6.	<i>Acacia sterculiaceum</i>	Sapindaceae	Chirandru
7.	<i>Adina cordifolia</i>	Rubiaceae	Haldu
8.	<i>Aegle marmelos</i>	Rutaceae	Bel, Beelgiri
9.	<i>Aesculus indica</i>	Sapindaceae	Khanor
10.	<i>Ailanthus altissima</i>	Sapindaceae	Alianthus
11.	<i>Albizia procera</i>	Leguminosa	Siris (white)
12.	<i>Albizia odoratissima</i>	Leguminosa	Siris
13.	<i>Albizia chinensis</i>	Leguminosa	Ohl

S.No.	Botanical Name	Family	Local Name
14.	<i>Albizia lebbeck</i>	Leguminosa	Siris (Black)
15.	<i>Albizia odoratissima</i>	Leguminosa	Siris
16.	<i>Albizia stipulate</i>	Leguminosa	Ohl (Qie)
17.	<i>Alnus Nitida</i>	Cupuliferae	Kosh, Kunish
18.	<i>Alnus nepalensis</i>	Cupuliferae	Kosh
19.	<i>Anogeissus latifolia</i>	Combretaceae	Dhou, Chhal
20.	<i>Bauhinia purpurea</i>	Leguminosa	Karala (Kachnar)
21.	<i>Aloe variegata</i>	Leguminosa	Kachnar, Karala
22.	<i>Betula alnoides</i>	Betulaceae	Bhojpatra
23.	<i>Bombox ceiba</i>	Bombacaceae	Semal
24.	<i>Buxus wallichiana</i>	Euphorbiaceae	Shamshed
25.	<i>Broussonetia papyrifera</i>	Niraceak	-
26.	<i>Careva viminsa</i>	Myrtacea	-
27.	<i>Carpinus viminea</i>	Cupuliferae	Khirk, chev
28.	<i>Cassia fistula</i>	Caesalpinniaceae	Amaltas
29.	<i>Cassia siamea</i>	Caesalpinniaceae	
30.	<i>A. frondosa</i>	Caesalpinniaceae	
31.	<i>Callistemon viminalis</i>	Myrtacea	
32.	<i>Casearia elliptica</i>	Samydaceae	Pimple, Goels
33.	<i>Cordia myxa</i>	Boraginaceae	Lasaura
34.	<i>Cordia vestita</i>	Boraginaceae	Lasaura
35.	<i>Anemone obtusiloba</i>	Ranunculacas	-
36.	<i>A. fibularis</i>	Ranunculacas	-
37.	<i>Aralia cachemirica</i>	Araliaceae	-
38.	<i>Argemone hellevorifolium</i>	Araceae	-
39.	<i>Arisaema intermedium</i>	Araceae	-
40.	<i>Arisaema propinquum</i>	Araceae	-
41.	<i>Asparagus adscendens</i>	Liliaceae	Sabsi muli
42.	<i>Asplenium polypotioides</i>	-	Linger
43.	<i>Aster molliusculus</i>	Compositae	-
44.	<i>Aster peduncularis</i>	Compositae	-
45.	<i>Astropa acuminated</i>	Solanaceae	Saenggur
46.	<i>Beenninghausenas albiflora</i>	Rutaceae	Pessumer
47.	<i>Prunella vulgaris</i>	Labiatae	Patindu
48.	<i>Bupleurum lanceolatum</i>	Umbelliferae	Banjwain
49.	<i>B. tenue</i>	Umbelliferae	Banjwain
50.	<i>Cannabis sativa</i>	Utricaceae	Bheng
51.	<i>Capsella bursa pastoris</i>	Vruciferae	-
52.	<i>Carum copticum</i>	Umbelliferae	Jawain

S.No.	Botanical Name	Family	Local Name
53.	<i>Cassia obtusifolia</i>	Leguminosae	-
54.	<i>Chaerophyllum reflexum</i>	Umbelliferae	Khelti
55.	<i>Chenopodium foliosum</i>	Chenopodiaceae	-
56.	<i>Coleus aromaticus</i>	Labiatae	Pathan beg
57.	<i>Datura stramonium</i>	Solanaceae	Datura
58.	<i>Delphinium incisum</i>	Ranunculaceae	-
59.	<i>Delphinium vestitum</i>	Ranunculaceae	-
60.	<i>Echinops niveus</i>	Compositae	-
61.	<i>Elsholtzia tachycardia</i>	Labiatae	Banjwana
62.	<i>Erythrina suberosa</i>	Fabaceae	Pariara
63.	<i>Erigeron multiradiatus</i>	Compositae	-
64.	<i>Foeniculum vulgare</i>	Umbelliferae	Saunf
65.	<i>Fragaria indica</i>	Rosaceae	Bhumla
66.	<i>Fumaria parviflora</i>	Fumariaceae	Pitpapa
67.	<i>Jacaranda ovalifolia</i>	Bignoniaceae	Wallnut/ Jacrands
68.	<i>Kydia calycina</i>	Malvaceae	Pula
69.	<i>Lagerstroemia indica</i>	Lythraceae	Har singar
70.	<i>Lannea grandis</i>	Anacardiaceae	Selambra
71.	<i>Litsea umbrosa</i>	Lauraceae	Paror
72.	<i>Litsea leauphia</i>	Leguminosae	Paror/ Laurel
73.	<i>Lyonia ovalifolia</i>	Leguminosae	Subabool
74.	<i>Machilus duthiei</i>	Lauraceae	Ehran
75.	<i>Machilus odovatissia</i>	Lauraceae	Chirindi
76.	<i>Mallotus philippinensis</i>	Euphorbiaceae	Kambal
77.	<i>Mangifera indica</i>	Anacardiaceae	Aam
78.	<i>Melia azedarach</i>	Meliaceae	Drek
79.	<i>Moringa pterygosperma</i>	Moringaceae	Saunjna
80.	<i>Morus alba</i>	Urticaceae	Chimmu
81.	<i>Morus serrata</i>	Urticaceae	Pahantut
82.	<i>Myrica esculenta</i>	Myricaceae	Kaphal
83.	<i>Myrica nagi</i>	-	-
84.	<i>Olea ferruginea</i>	Oleaceae	Kahu
85.	<i>Oroxylum indicum</i>	Bignoniaceae	Arlu
86.	<i>Desmodium obovatum</i>	Leguminosae	Sanden
87.	<i>Phoenix sylvestris</i>	Palmae	Khazur
88.	<i>Phoenix humilis</i>	Palmae	Khajri
89.	<i>Picea smithiana</i>	Coniferales	Rai
90.	<i>Pinus roxburghii</i>	Coniferales	Chil
91.	<i>Pinus wallichiana</i>	Coniferales	Kail

S.No.	Botanical Name	Family	Local Name
92.	<i>Pistacia integerrima</i>	Auacardiaceae	Kakare
93.	<i>Populus deltoides</i>	Salicaceae	Chiluna, Pahari
94.	<i>Populus nigra</i>	Salicaceae	Karanj
95.	<i>Populus ciliata</i>	Salicaceae	Poplar
96.	<i>Pongamia pinnata</i>	Papilionaceae	Silver date palm
97.	<i>Prunus armeniaca</i>	Rosaceae	Chuli
98.	<i>Prunus cerasoides</i>	Rosaceae	Paja
99.	<i>Prunus cornuta</i>	Rosaceae	Jammun
100.	<i>Punica granatum</i>	Lythraceae	Auar, Daru
101.	<i>Cedrus deodara</i>	Coniferae	Khirok
102.	<i>Citrus limetta</i>	Rutaceae	Lasura
103.	<i>Cordia dichotoma</i>	Boraginaceae	Lasura
104.	<i>Cordia vestita</i>	Boraginaceae	Kreeva
105.	<i>Cornus capitata</i>	Cornaceae	Kreeva
106.	<i>Cornus macrophylla</i>	Cornaceae	Sharol
107.	<i>Corylus jacquemontii</i>	Cupulifera	Saru
108.	<i>Cupressus sempervirens</i>	Coniferae	-
109.	<i>Dalbergia sissoo</i>	Papillonaceae	Shisham, Tali
110.	<i>Ehretia acuminata</i>	Boraginaceae	Bakli
111.	<i>Ehretia laevis</i>		Chamror
112.	<i>Emblica officinalis</i>	Euphorbiaceae	Amla
113.	<i>Engelhardia colebrookiana</i>	Juglandaceae	Samma
114.	<i>Erythrina suberosa</i>	Papilionaceae	Pariara
115.	<i>Eucalyptus camaldulensis</i>	Myrtaceae	Safada
116.	<i>Eucalyptus globulus</i>	Myrtaceae	Safada
117.	<i>Eucalyptus grandis</i>	Myrtaceae	Safada
118.	<i>Eucalyptus hybrid</i>	Myrtaceae	Safada
119.	<i>Eunurus tingens</i>	Celastraceae	Kala Chindwara
120.	<i>Euonymus aureus</i>	Celastraceae	-
121.	<i>Ficus palmata</i>	Moraceae	Fagura, Fegra
122.	<i>Ficus hispida</i>		Debre
123.	<i>Ficus Misbidas</i>	Moraceae	Dobra
124.	<i>Ficus religiosa</i>	Moraceae	Pipal
125.	<i>Ficus roxburghii</i>	Moraceae	Treimbal
126.	<i>Flacourtia remetiechi- Bixaceae</i>	Bixaceae	Kangu, Kaudel
127.	<i>Floccurtia rement chii</i>		Kagu
128.	<i>Fraxinus floribunda</i>		-
129.	<i>Ficus sundaica</i>	Moraceae	Bar
130.	<i>Grevillea robusta</i>	Proteaceae	-

S.No.	Botanical Name	Family	Local Name
131.	<i>Grewia optiva</i>	Malvaceae	Bihul
132.	<i>Grewia elastica</i>	Malvaceae	
133.	<i>Berberis lycium</i>	Berberidaceae	
134.	<i>Calotropis procera</i>	Asclepiadaceae	
135.	<i>Caragana brevispina</i>	Leguminosae	
136.	<i>Carissa opaca</i>	Apocynaceae	
137.	<i>Carrisa spinarum</i>	Apocynaceae	
138.	<i>Caryopteris wallichiana</i>	Verbenaceae	
139.	<i>Caryopteris foetida</i>	Verbenaceae	
140.	<i>Cassia occidentalis</i>	Verbenaceae	
141.	<i>Cassia obrusifona</i>	Leguminosae	
142.	<i>Cerodendrum serratum</i>	Verdenaceae	
143.	<i>Colebrookea oppositifolia</i>	Labiatae	
144.	<i>Cotonaster affinis</i>	Labiatae	
145.	<i>Cotonaster congestus</i>	Labiatae	
146.	<i>Cotoneaster congestus</i>	Leguminosae	
147.	<i>Debregeasia salicifolia</i>	Utricaceae	
148.	<i>Daphne cannabina</i>	Thymelaeaceae	
149.	<i>Dasmodium subbuense</i>	Leguminosae	
150.	<i>Desmodium elegans</i>	Saxifragaceae	
151.	<i>Deutzia compacta</i>	Saxifragaceae	
152.	<i>Dodonaea viscosa</i>	Verbenaceae	
153.	<i>Duranta repens</i>	Verbenaceae	
154.	<i>Elaeagnus parvifolia</i>	Elaeagnaceae	
155.	<i>Elsholtzia fruticosa</i>	Lamiaceae	
156.	<i>Euphorbia royleana</i>	Euphorbiaceae	
157.	<i>Euphorbia prolifera</i>	Euphorbiaceae	
158.	<i>Euonymus fimbriatus</i>	Rubiaceae	
159.	<i>Flemingia prostrata</i>	Fabaceae	
160.	<i>Hamiltonia suaveolens</i>	Rubiaceae	
161.	<i>Hypericum oblongifolium</i>	Hypericaceae	
162.	<i>Indigofera hebeptala</i>	Fabaceae	
163.	<i>Pyrus pashia</i>	Rosaceae	
164.	<i>Quercus floribunda</i>	Cupulifera	
165.	<i>Quercus glauca</i>	Cupulifera	Banni
166.	<i>Quercus incana</i>	Fagaceae	Ban
	<i>Quercus leucotrichophora</i>	Cupulifera	
167.	<i>Quercus semecarpifolia</i>	Cupulifera	
168.	<i>Rhododendron arboreum</i>	Ericaceae	Robinia

S.No.	Botanical Name	Family	Local Name
169.	<i>Rhus punjabensis</i>	Ericaceae	
170.	<i>Robinia pseudo accacia</i>	Leguminaceae	
171.	<i>Salix babylonice</i>	Saliaceae	
172.	<i>Salix elegans</i>	Salicaceae	Beuns
173.	<i>Salix denticulata</i>	Saliaceae	
174.	<i>Salix tetra speruna</i>	Saliaceae	
175.	<i>Dapinfud mukeresal</i>	Sapindaceae	
176.	<i>Sapium sebiferum</i>	Euphariceae	
177.	<i>Symplaces cretsoyoides</i>	Styraceae	
178.	<i>Taxus baccata</i>	Combretaceae	
179.	<i>Terminalia belerica</i>	Combretaceae	Behera
180.	<i>Terminalia tomentosa</i>	Combretaceae	Alsan
181.	<i>Terminalia chebula</i>	Combretaceae	Barar
182.	<i>Ulmus wallichiana</i>	Utricaceae	Marinu
183.	<i>Wrightia tinctoria</i>	Apacynaceae	SSumma
184.	<i>Wrightia arborea</i>	Apacynaceae	Summa
185.	<i>Xylosma longifolium</i>	Bixaceae	Draindu
186.	<i>Ziziphus jujuba</i>	Rhamnaceae	Beri

ii. Trees and Bamboos: -

S.No.	Botanical Name	Family	Local Name
1.	<i>Andropogon halepensis</i>	Gramineae	
2.	<i>Aristida depressa</i>	Gramineae	Phulna
3.	<i>Arundinaria falcata</i>	Gramineae	Lambaru
4.	<i>Aarundinaria spathiflorus</i>	Gramineae	Nirgai
5.	<i>Arundinella brasiliensis</i>	Gramineae	Ringal
6.	<i>Avena aspera</i>	Gramineae	-
7.	<i>Bambusa arundinacea</i>	Gramineae	-
8.	<i>Bambusa nutans</i>	Gramineae	Maggar
9.	<i>Bothrochola intermedia</i>	Gramineae	Daraog
10.	<i>Chrysopogan martinii</i>	Gramineae	Palwan
11.	<i>Cyperus niveus</i>	Gramineae	Dhawi
12.	<i>Dendrocalamus strictus</i>	Gramineae	Dub
13.	<i>Dendrocalamus hamiltonii</i>	Gramineae	-
14.	<i>Eriphorum comosum</i>	Gramineae	Bans
15.	<i>Hetropogon monranus</i>	Gramineae	Mohr Bans
16.	<i>Ischaemum angustifolium</i>	Gramineae	Kohl
17.	<i>Panicum plateatum</i>	Gramineae	Sariala syu Tanli
18.	<i>Phicum asperum</i>	Gramineae	Baggar

S.No.	Botanical Name	Family	Local Name
19.	<i>Panicum floccudum</i>	Gramineae	-
20.	<i>Setaria glauca</i>	Poaceae	Siun
21.	<i>Setaria viridis</i>	Poaceae	-

iii. List of Medicinal Plants/herbs found growing in Mandi and Joginder nagar division: -

S.No.	Botanical Name	Family	Local Name
1.	<i>Valeriana wallichii</i>	Valerianaceae	Musakbala
2.	<i>Saussurea lappa</i>	Asteraceae	Kuth
3.	<i>Picrorhiza kurroa</i>	Plantaginaceae	Karoo
4.	<i>Cinamonium tamala</i>	Lauraceae	Taj pattar
5.	<i>Taxus baccata</i>	Taxaceae	Rakhal
6.	<i>Dioscorea deltoidea</i>	Dioscoreales	Shingali- Minglu
7.	<i>Pistacia integerrima</i>	Anacardiaceae	Kakar shingli
8.	<i>Angelica glauca</i>	Apiaceae	Chiora
9.	<i>Berberis</i> sp	Berberidaceae	Rasaunt
10.	<i>Podophyllum emodii</i>	Berberidaceae	Bankliau
11.	<i>Aconitum hetrophyllum</i>	Ranunculaceae	Patish (Mithi)
12.	<i>Tino speera cordifolia</i>		Galoo
13.	<i>Valeriana hardwickii</i>	Caprifoliaceae	Nakh Nihani
14.	<i>Marigold grass</i>	-	Merrigold
15.	<i>Viola odorata</i>	Violaceae	Banaspa
16.	<i>Artemisia brovifolia</i>	Asteraceae	Saski
17.	<i>Thumus surphyllum</i>	Asteraceae	Banjawan
18.	<i>Morchella esculenta</i>	Morchellaceae	Guchhies
19.	<i>Polygonatum verticillatum</i>	Asparagaceae	Salam Mishari
20.	<i>Orchis latifolia</i>	Asparagaceae	Salam Panja
21.	<i>Swertia chirata</i>	Gentianaceae	Chiryta
22.	<i>Gerardiana hyterophylla</i>	Urticaceae	Bichho buti
23.	<i>Viscum album</i>	Santalaceae	Safed Dudhia
24.	<i>Saxifraga ligulata</i>	Saxifragaceae	Patharto

iv. Shrubs/Herbs/Climbers/Grasses

Shrubs		
Botanical name	Family	Local name
<i>Justicia Adhatoda</i>	Acanthaceae	Basuti
<i>Agava cmtula</i>		Ramban
<i>Andrachna Cordifalis</i>	Euphorbiaceae	Durlu
<i>Artemisia Indica</i>	Composital	Drubaha
<i>Artemisia vulgaris</i>	Composital	Drubaha

<i>Artemisia vestita</i>	Composital	Drubaha
<i>Baliospermum monatanum</i>	Euphorbiaceae	
<i>Viola serpens</i>	Violaceae	Banatsha
<i>Adhotoda-vasica</i>	Acanthaceae	Basuti
<i>Agave Americana</i>	Asparagaceae	Ramban
<i>Berberis-aristata</i>	Berberidaceae	Kashmal
<i>Berberis-chitria</i>	Berberidaceae	-do-
<i>Berbasis-lycium</i>	Berbasis-lycium	-do-
<i>Calotropis-procera</i>	Asclepiadoideae	Akh
<i>Carrissa opaca</i>	Apocynaceae	Garna
<i>Cleroden-dron-scratum</i>	Lamiaceae	
<i>Desmodeum-Sambuense</i>	Fabaceae	Safed kathi
<i>Indegofera-gerardiana</i>	Fabaceae	Kathi
<i>Dentzia-viscosa</i>	Fabaceae	Mehandoo
<i>Indegofera-gerardiana</i>	Fabaceae	Kathi
<i>Impomaea-Utelis</i>	Fabaceae	Bekhal
<i>Ricinus-Communis</i>	Euphorbiaceae	Arand
<i>Rubus-ellipticus</i>	Rosaceae	Akha
<i>Vitex-negundo</i>	Lamiaceae	Banha
<i>Zenthoxylum-alatum</i>	Rutaceae	Tirmir
Herbs		
Botanical name	Family	Local name
<i>Achillea millofolium</i>	Composotes	Fye
<i>Achyranthes bidentate</i>	Amarantaceae	Putkanda
<i>Achyranthes porlhysistachya</i>	Amarantaceae	Putkanda
<i>Aconitum heterophyllum</i>	Renunculaceae	Padish, Mohra
<i>Acorus calamus</i>	Avaceae	Barin
<i>Adiantum capillus</i>	Avaceae	Barin
<i>Agrimonia Pilosa</i>	Rosacese	Kanaula
<i>Ainsliance Apter</i>	Composital	Durwa
<i>Ajuga parviflora</i>	Lababatae	Darpatre
<i>Alium loratum</i>	Liliaceae	-
<i>Anaphalis margaritacea</i>	Compositae	-
<i>Anaphalis Conrotra</i>	Compositae	-
<i>Anaphalis triplinervis</i>	Compositae	-
<i>Cannabis sativa</i>	Cannabaceae	Bhang
<i>Carum copticum</i>	Apiaceae	Ajwain
<i>Datura stramenium</i>	Solanales	Datura
<i>Fumaria-parviflora</i>	Papaveraceae	Pitpapra
<i>Gentiana kurroo</i>	Gentianaceae	Karu
<i>Girardiana heterophylla</i>	Urticaceae	Badhubuti
<i>Hydrocotyle aristica</i>	Apiaceae	Brahmi
<i>Mentha sylvestris</i>	Lamiaceae	Pudina
<i>Podophyllum hexawdrum</i>	Berberidaceae	Bankakri
<i>Rumex hastatus</i>	Polygonaceae	Malori

<i>Salvia glutinosa</i>	Lamiaceae	Gwadraq
<i>Urtica dioica</i>	Urticaceae	Kugas
<i>Valeriana parviflora</i>	Caprifoliaceae	Kugas
<i>Valeriana hardiwichii</i>	Caprifoliaceae	Nihani
<i>Verbascum Thapsus</i>	Lamiales	Tamakhu
Climbers		
<i>Bauhinia vahlii</i>	Caesalpiniaceae	Taur
<i>Clematis gouriana</i>	Ranunculaceae	Belkango
<i>Cuscuta reflexa</i>	Convolvulaceae	Akashbel
<i>Dioscorea pentaphylla</i>	Dioscoreales	Tarei
<i>Jasminum officinal</i>	Oleaceae	Banmaiti
Grasses		
<i>Andropogon halpensis</i>	Poaceae	Phulin
<i>Arstida aspressa</i>	Poaceae	Lambaru
<i>Arundinarie falicata</i>	Poaceae	Nilgal
<i>Bambusa arundinaceae</i>	Poaceae	Magar
<i>Bambusa nutans</i>	Poaceae	Daraog
<i>Echium angustifolium</i>	Boraginaceae	Baggar

B. Fauna:- The Mandi district is the home for five out of seven rare or endangered pheasants of Himachal. Similarly, maintaining optimum population of ungulates is critical for maintaining the habitat of all carnivores. These two aspects are, therefore, included under Habitat Improvement in the CAT Plan. Captive breeding is the process of breeding animals in human controlled environments with restricted settings, the process is construed to include release of individual organisms to the wild, when there is sufficient natural habitat to support new individuals or when the threat to the species in the wild is lessened. Captive breeding programs facilitate biodiversity and may save species from extinction.

a. **Animals:-**



The wild animals and birds capable of thriving under different climatic conditions, is ranging from sub tropical to arctic and from densely wooded area to sparse tree growth are found in this area. The important animals found in this area are White-crested Kaleej, sheep, House shrew (*Suncus murinus*), Nepalese Whiskered Bat (*Myotis muricola*), Rhesus Monkey (*Macaca mulatta*), Hanuman Langur (*Semnopithecus ajax*), Himalayan fox (*Vulpes vulpes*), Yellow throated Marten (*Martes flavigula*), Himalayan Weasel (*Mustela sibirica*), Black bear (*Ursus thiubetanus*), Leopard (*Panthera pardus*), Barking deer (*Muntiacus muntjak*), Himalayan Goral (*Naemorhedus goral*), Flying squirrel (*Petaurista petaurista*), House mouse (*Mus musculus*) etc.

b. Birds/Avifauna:- During site visit birds like white capped redstart (*Chaimarrornis Leucocephalus*), little cormorants (*Phalacrocorax carbo*, *Phalacrocorax fuscicollis*) Black winged Kite, Red wattled lapwing etc. were encountered.

White capped redstart



Red- wattled lapwing



Little cormorant



Black winged kite (Onsite photo)

3.13 Physical features: -

a. Landforms: -Landforms are the geographical features of earth that manipulate and control the ecosystem, climate, weather and also affect the life on the earth.

Forces of nature like wind, water, ice and the movement of the tectonic plates of the earth, have all contributed in the formation of these landforms. Some of these landforms are created within few hours while others have taken years to form and appear. It is essential for these landforms to move and grow in a systematic order under full control and supervision of the natural forces. Any deviation in the normal movement or existence of these landforms causes immense destruction to life and property. In other words, according to earth sciences and geology sub-fields, a landform or a physical feature comprises of a geomorphologic unit, and is largely defined by its surface form and location in the landscape, as part of the terrain, and as such, is typically an element of topography. Landforms are categorized by characteristic physical attributes such as elevation, slope, orientation, stratification, rock exposure, and soil type. Himachal Pradesh has 7 different types of landforms; out of these, the catchment area of Beas basin comprises of 5 landform types.¹

- i. **Steep to very steep high hills of Lesser Himalayas:** The Lesser (Lower) Himalayan Range lies to the north of the Sub-Himalayan or Shivalik Range and to the south of the Greater Himalayas. The height of these mountains varies from 1800 to 4600 meters. Millions of years of folding, faulting and over thrusting have resulted into the formation of these mountains.
- ii. **Steep to very steep high hills of Greater Himalayas:** The Greater Himalayas are the only areas in the world other than the Polar Regions to be covered with glaciers and permafrost. The Beas basin comprises of the high hills of the Greater Himalayas as well as the Lesser Himalayas that have intense slope.
- iii. **Glaciers:** Glacier is a large persistent body of ice that originates on land and slowly flows due to the stresses induced by their weight. Glaciers form where the accumulation of snow and ice exceeds ablation (removal of material from the surface of an object by vaporization, chipping, or other erosive processes). There is a debate on whether glaciers are more erosive than streams, where some workers like Clague, 1986; Braun, 1989; claim that glaciers are more erosive than streams while some workers like Sugden, 1976, 1978; Lindstrom, 1988; have found evidences that there is a nil or little difference in their erosive powers.²

¹National Bureau of Soil Survey and Land Use Planning (NBSS&LUP).

² David R Montgomery, Valley formation by Fluvial and glacial erosion, Department of Earth and Space sciences, University of Washington, Seattle, Washington-98195, USA

- iv. **Glacio-fluvial valley:** Glacial valleys tend to have a peculiar U-shape that contrasts with the V-shape created by stream erosion.³ The glacial valleys were formed several thousand years ago (mostly during the last Ice Age) because of the erosive power of glaciers. As a result of the melting ice, Glacio-fluvial valleys are formed. The material moved by glaciers gets sorted and redeposited by flowing streams and rivers formed.
- v. **Fluvial valley:** Fluvial process comprises of the motion of sediment and erosion/ deposition on the river bed. Fluvial valleys are V shaped valleys, created as a result of stream erosion. Physically based models have proposed that the development of U-shaped glacial valleys takes place from initially V-shaped fluvial valleys (Harbor et al., 1988; Hirano and Aniya, 1988; Harbor, 1992).

Map 5: The distribution of these landforms in the project area is indicated below:

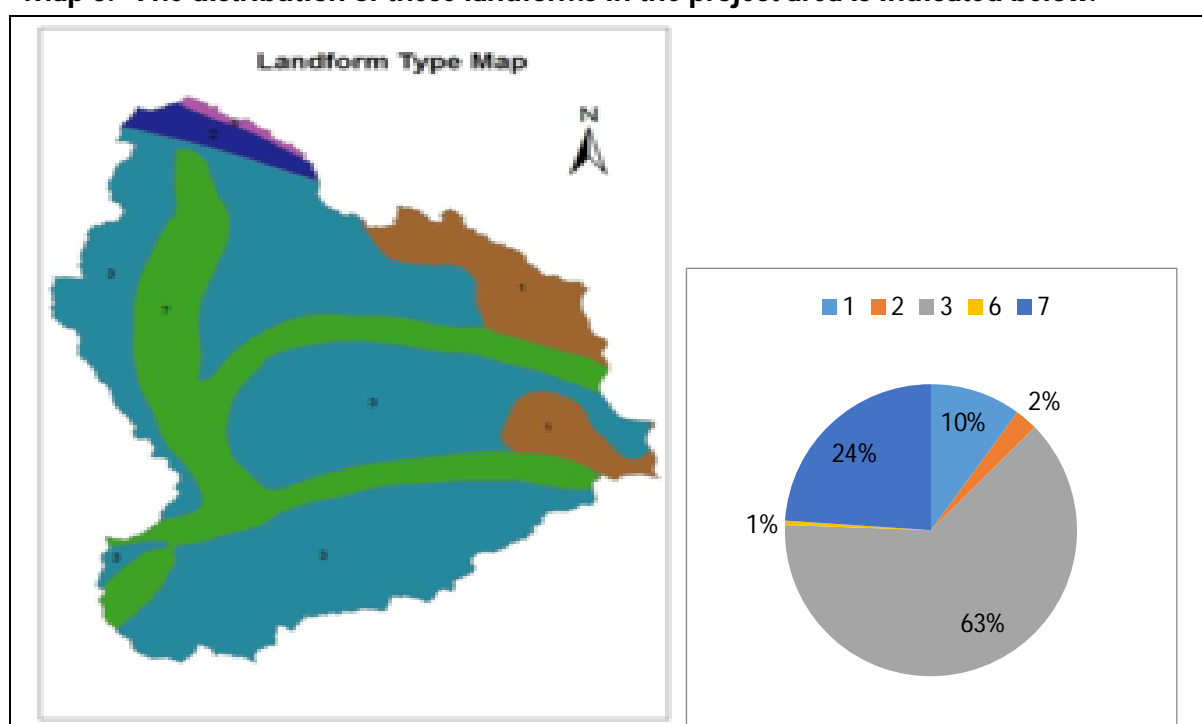


Table 9 : Landform Types and Area

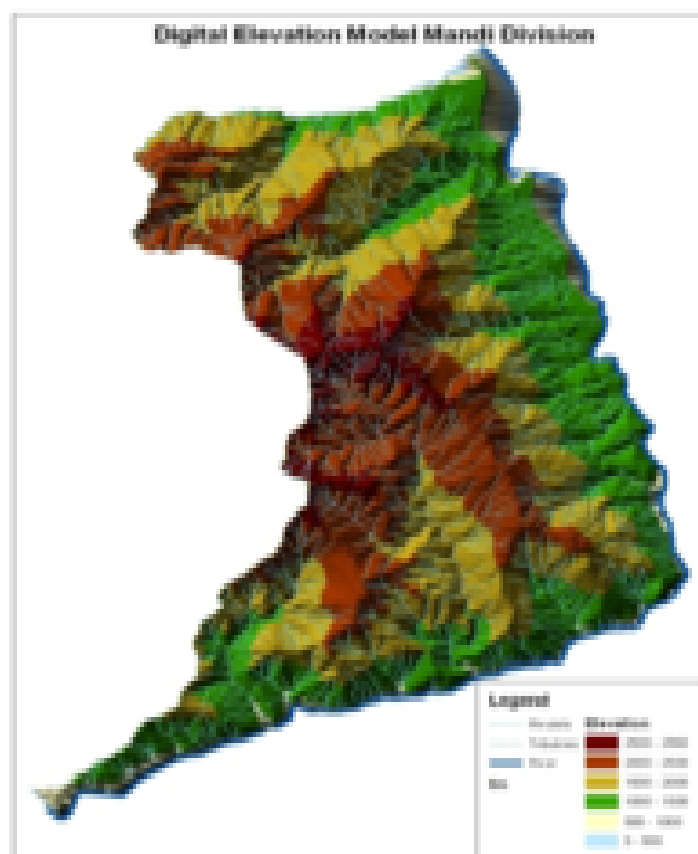
Legends

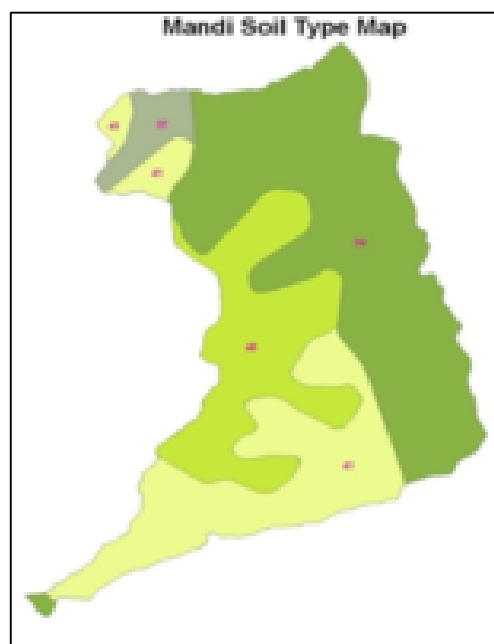
No	Unit No	Landform Types	Area (Sq Km)
1	1	Glaciers	559.66
2	2	Steep to very steep high hills of greater Himalayas	132.98
3	3	Steep to very steep high hills of Lesser Himalayas	3481.75
4	6	Glacio-fluvial valley	29.13

³ Fundamental e-book-Landforms of glaciations- Physicalgeography.net

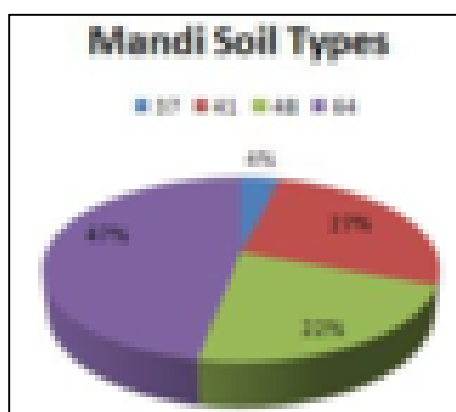
5	7	Fluvial valley	1322.02
Note: Units are assigned to facilitate short and simple representation of the landform titles which are descriptive in nature. These units will be used as names of the landforms. (Source of Map: National Bureau of Soil Survey and Land Use Planning (NBSS&LUP))			

3.14 Digital Elevation Model: -Digital Elevation Model is defined as three dimensional model of earth's surface, provided in digital form. This gives a quantitative model of landform. Often the terms of DEM/DTM are used for model for containing discrete data on elevation. It is a computer simulation model to show relief based on a three dimensional data. DTM is generated through digitization of contours and spot heights from the geo-referenced topographical maps within the project area. The next step is attaching attributes to these features with their correct elevation values. The captured vector data is carefully edge-matched across map sheet boundaries. The result is a completely seamless DTM product. The vector data (contours spot heights, hydrology and break lines) are then input into gridding software which interpolates a continuous DTM surface based on the input data. The DTM is generated from these contours and spot heights using TRI interpolation of Arc GIS 3D Analyst and Spatial Analyst software. The source data for preparation of DEM has been through standard triangulation techniques (TIN) using digitized contours at 40 m interval derived from Survey of India (SOI) 1:50,000 topographical sheets for the entire catchment.



A. Soil:-

The soil types present in the catchment are quite varied. The pie diagram shows the distribution of soil types in the Catchment. (Source: Soil & land Use Survey of India)

**B. Agro Ecological zones: -**

The variety of climatic conditions and varying environmental situations in the country has resulted in a greater variety of soils. Therefore, the systematic appraisal of agro-ecological regions has tremendous scope in grouping relatively homogenous regions; in terms of soil, climate, physiography and conducive moisture availability periods (length of growing season).⁴

The nomenclature used in describing AEZ may be denoted as C Bc P LGP

⁴ K.S Gajbhiye and C.Mandal, Agro-Ecological Zones, their Soil Resource and Cropping Systems ,National Bureau of Soil Survey and Land Use Planning, Nagpur

Where:

C = Climate

BC = Bioclimate

P = Physiography

LGP = Length of growing period (days)

The project area has a variety of bioclimatic conditions that range from Arid, Semi-arid, Semi-dry, Dry, Sub-Humid, Per humid to Moist. The physiography or location of the project area is the lesser and Greater Himalayas. The length of growing period refers to the time taken in days by the crops grown in the particular region. Here the LGP ranges from less than 60 days to 330 days. It can be observed here that time required for the growth of crops increases, as we go from higher elevation to lower elevation.

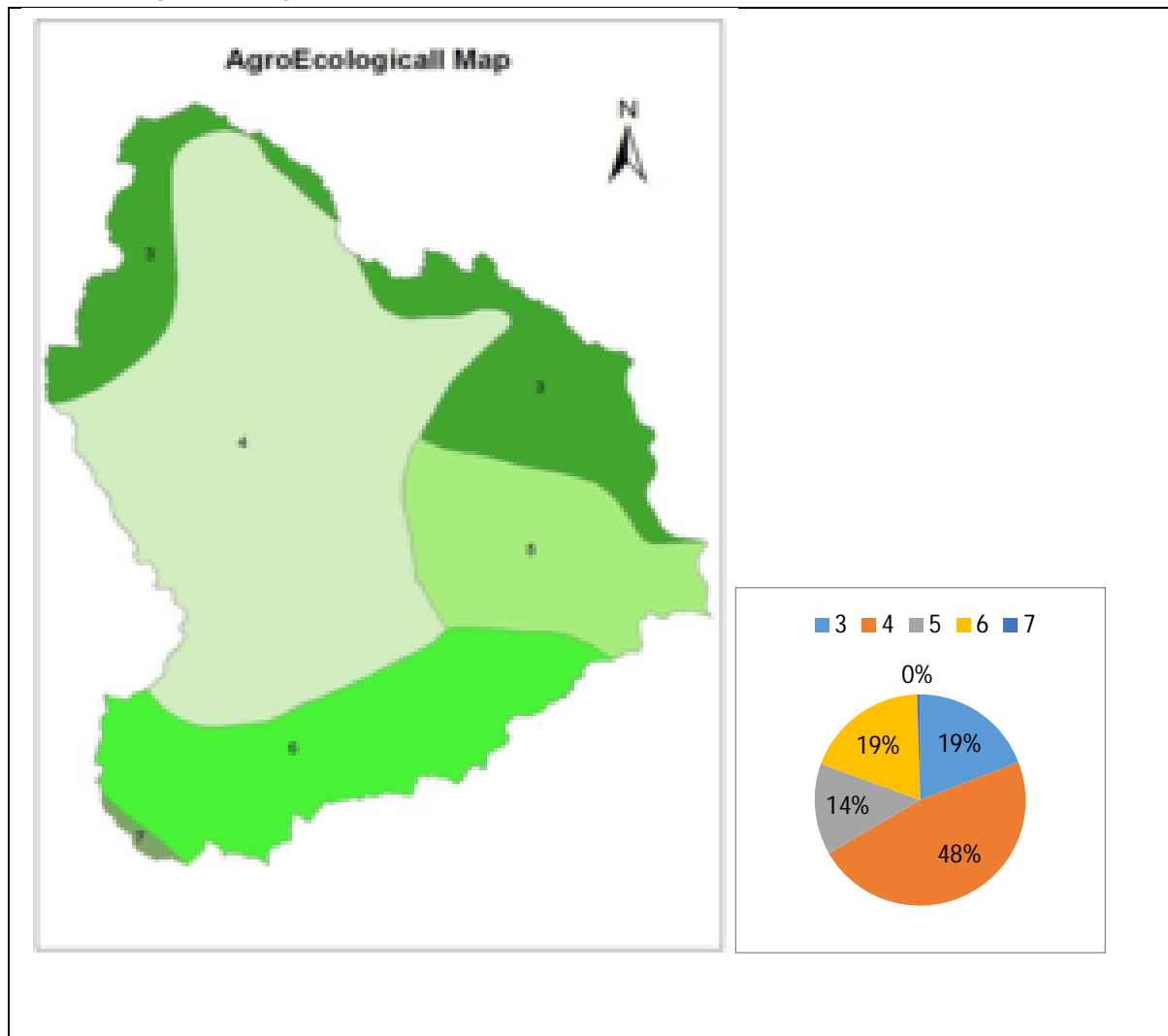
Himachal Pradesh has 10 different types of Agro-Ecological zones; out of these, the catchment area of Beas basin comprises of 5 Agro- Ecological zones. Legend:

Table 11: Agro Ecological Zone and Area

Sr. No	Unit No	Agro Ecological Zone	Area (Sq Km)
1	3	Warm, Dry, Sub-Humid, Greater Himalayas with 120-180 days LGP	1055.26
2	4	Warm, Perhumid, Lesser Himalayas with >330 days LGP	2625.83
3	5	Warm, Sub-humid, Moist, Lesser Himalayas with 180-270 days LGP	770.08
4	6	Warm, Perhumid, Lesser Himalayas with 270-300 days LGP	1050.40
5	7	Humid/Perhumid, Lesser Himalayas with 300-330 days LGP	23.99

Note: Units are assigned to facilitate short and simple representation of the agro-ecological zones titles which are descriptive in nature. These units will be used as names of the agro-ecological zones. (Source of Map: National Bureau of Soil Survey and Land Use Planning (NBSS&LUP).

Map 7: Agro Ecological Map



CHAPTER 4

CAT PLAN COMPONENTS

4. The Government of Himachal Pradesh, Forest Department has been actively engaged with arriving at the most logical allocation of funds for the different components of Catchment Area Treatment Plan. The present Notification in force is No. FEE-B-F-(2)-72/2004-Pt-II dated 30.9.2009. The Himachal Pradesh Forest Department has also proposed “Instruction for User Agencies for preparation of Catchment Area Treatment Plan” for which the Government approval is presently awaited. While making the CCP for Thana Plaun HEP, the challenge before us was whether to use the earlier notified percentages or the percentage awaiting approval of Government while ensuring that no major difficulty is experienced in adopting the new proposal when notified. Although the HPFD guidelines have suggested a generalized percentage norm to be followed the situation may vary between the variety of locations and the onsite needs. The primary objective of ensuring minimum erosion, improving the moisture regime and to minimise silt loads in the reservoirs is met through the two major components which are Afforestation and Soil and moisture conservation methods. We have adhered in this CAT Plan to an overall target of 50% of the CAT Plan amount distributed between these two components. The suggested percentage as per HPFD guidelines under each component are as follows:

S. No.	Component	Indicative Activities	% of total CAT Plan
1	Afforestation and Habitat management	Normal Afforestation Enrichment Planting Energy Plantations Treatment of InvasiveSpecies Pasture Development Nurseries NTFP plantations	25%
2	Soil & Water Conservation	Moisture retention measures Bio-engineering activities Drainage line treatment Civil structures for soil and water conservation Landslide control measures Glacier control measures stations (Including Yearly Price escalation @ 5% per year from 2 nd year for Afforestation and SMC)	25%

3	PES & Eco-tourism	All treatments on private lands Devising incentive based mechanism (IBMs) for securing watershed protection services Voluntary rotational closures of pastures	10%
4	Research, Training and Capacity Building	Participatory Action Research for adaptive management Site/issue specific research/ study/ survey Training and capacity building of staff and communities Information dissemination	5%
5	Infrastructure Built up & Forest Protection	Logistic support to forest staff Maintenance of departmental buildings, inspection paths Operational support to staff Forest fire protection Construction and repairs of Boundary pillars Promotion of non-conventional energy devices	15%
7	Wildlife Management	Support to monkey sterilization programme (at least 1% of CAT Plan cost) Human-animal conflict Habitat improvement / Water holes Bio-diversity conservation Survey and census Logistic support to staff	5%
8	M&E	Three tier monitoring and construction of Silt Observatory Posts	5%
9	Institutional and departmental charges	Establishment cost Refund of the salary of CAT plan division to Govt.	
9	Site-specific Work-plan	Micro-planning Disaster mitigation plan (To be provisioned @ of 5% of each component)	
10	Contingencies	Unforeseen expenditure	10%
11	Socio Economic	Socio economic interventions	
Total			100%

4.1. AFFORESTATION (25%):

Afforestation is the major component of the CAT Plan. During the interaction with HPFD staff as well as the Field survey, it revealed that the Forests in the Catchment are generally well stocked leaving lesser scope for the new plantations. Conifers and Broadleaved species have been

prescribed in the potential areas. Areas for Enrichment plantation, NTFP and Medicinal plantations have been identified. Provisions have also been made for Pasture development. Availability of the quality nursery plants is the first and foremost requirement for undertaking plantations in the Forests. Therefore, the CAT Plan provides for upgradation and modernization of 20 existing nurseries and setting up 15 new nurseries at a cost of Rs 19050000/-. In addition an amount of Rs. 1220000 has been provisioned for training in modern nursery.

Afforestation is further sub-classified under 8 heads, Viz. Normal Afforestation, Enrichment Planting, Gap filling, Energy Plantations, Rim Plantation, Treatment of Invasive & Alien Species prone areas, Pasture management, NTFP plantations and Nurseries. However, in case of HEP Thane Plaun, the Components considered are given below.

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Availability of the quality nursery plants is the first and foremost requirement for undertaking plantations in the Forests. Therefore, the CAT Plan provides for upgradation and modernization of 20 existing nurseries and setting up 15 new nurseries.

4.1.1. NEW Plantations: -In keeping with the current forestry practices, new plantations aim at planting of 1100 plants per Ha. Out of which at least 20% would be trees of medicinal value and 10% of wild fruits species to maintain diversity. Under this component five strand barbed wire fencing with RCC fence posts and two layers of live- hedge plants to reinforce the fencing is prescribed with

4.1.2. Enrichment: - Enrichment aims at planting 800 tall plants per notional Hactare. Under this component the area falling in degraded forest to improve the forest stocking has been provided.

4.1.3. NTFP: -Cultivation of medicinal plants is suggested under this component. | NTFP and medicinal plantations are planned in 114 ha.

4.1.4. CLOSURE: Considering that there is limited scope of plantation in catchment area, The cat plan has considered the closures for natural regenerations.

4.1.5. Pasture Developement: It is observed that due to adverse climatic and geographic conditions/ factors, there is scarcity of grass and fodder in the CAT Areas. Large herds of sheep and goat are owned by the local people. In winter these herds are taken outside the CAT area in lower parts of Himachal Pradesh to be taken back during summer. Alpine pastures within the

Catchment area and areas adjoining to it are the main grazing ground for these herds. These pastures are heavily grazed and there has been a decline in the quantity and quality of grass in these pastures. The productivity of these pastures has been decreasing gradually. For improvement of these pastures it is proposed to augment the existing grass production by way of:

- Patch sowing of palatable grass seed in 60x60x25 cm patches
- Broadcast sowing of seed after making pellets with cow dung
- Removal of obnoxious weeds and unpalatable grasses
- Application of Farm yard manure to augment fertility.
- Planting of grass tufts In 0.30x0.30 cm grid structure/trenches over ridge
- Special watch and ward staff at the rate of One person per 35 Hactares is provided in the CCAT plan for three months in a year during the period of transplantation and growth. The three-month period should start from 15th March for sub alpine pastures and from April 30th for alpine pastures.

Awareness programmes: It is well appreciated that the plantation and growth of alpine pastures can best be done with consultation and agreement between the graziers and the forest department after adequate awareness generation. Having good pastures is the need of graziers as well. The CCAT Plan, therefore, provides for a lump sum amount of Rs.8118750@ Rs. 21650/- per ha.

4.2. SOIL & MOISTURE CONSERVATION: (25%):

Soil & Moisture Conservations Measures form the second major component of the CAT Plan. Reduction of silt load in the River Waters is the major requirement for setting up of the Hydro Electric Projects and their further running. Therefore, emphasis has been laid on the construction of Gabion Checkdams, Gabion Checkwalls, Gabion Retaining/Toe Walls, Drystone Checkdams/Checkwalls, construction of spurs, Gully Plugging, Trenching, Brushwood checkdams in the Nallas and the Forest areas. All the engineering structures in the nallas and the forests have to be supported with adequate bio-engineering activities to ensure their longevity.

The soil and moisture conservation measures works are prescribed under the following categories:

- a) Moisture retentive operations: staggered contour trenching, bio-engineering species planting.
- b) Contoured live hedges where ever possible.
- c) Vegetative structures- Fascines, brush-wood checkdams, bamboo crib etc. wherever applicable.
- d) Civil structures-masonry/crate wire checkdams, masonry dams, (primarily drystone), check/protection walls.
- e) Drainage line treatment and landslide control, with site specific estimates, using interventions mentioned in a-d above.

The cost norms of soil and water conservation are prepared on the basis of prevalent schedule of work and labour rates for Mandi Circle.

Payment for Environment Services (PES) (10%):- H.P .Forest Department Guidelines for Catchment Area Treatment Plans provide 10% of the CAT Plan funds for utilisation for Payment for Environment Services. The nature of environmental services that may be provided by the people vary with the locations, living surroundings and the ecological status of each catchment area. As such it is difficult to create precise hard and fast instructions for application of these funds. However, the common consensus is always been to provide these funds to the communities and not to individuals. The Thana Plaun HEP has a provision for Rs. **50,656,033/-** under PES component to be utilized as per the Government Instructions from time to time. This amount is to be utilized towards construction of community storage tanks, village ponds, crematorium, power tillers, energy saving devises and rewards for providing help to the forest department for protection of forest from fire, anti poaching operations etc. This, on the one hand, will go in a long way in improvidig the economic conditions of the farmers and on the other hand reduce pressure on the forests.

RESEARCH, CAPACITY BUILD-UP, PUBLICITY:-

4.5. Research Training & Capacity Building (5%):- It is envisaged that this amount of Rs.**3,64,20,250/-** will be utilized for capacity building at all levels of the functionary officials at field level. So far as the training is concerned, it is necessary to impart training for both; conventional as well as new technology methods. Training for using equipment, software, photography, GIS and other related technologies through competent external agencies is also included. Exposure visits are planned for forest officers for all levels to study the best practices being followed by forest departments in the country. Some of the suggested and essential topics of Research are listed hereunder. A provision of Rs. 17,50,000 is made for training of territorial forest staff in handling of Wildlife animals. This amount is to be clubbed together and utilized for this and all other training that will be conducted from the Wildlife and Habitat Research, Training and Rescue Centre (WLRT&RC) being located at Rewalsar.

Wildlife and Habitat Research, Training and Rescue Centre (WLRT&RC) at Rewalsar:-

The HPFD already has an establishment with due approvals of the Ministry of Environment & Forests for running a zoo cum Wild Life Rescue Centre at Rewalsar. This is located over a area of only 4.5 hectares. The Rewalsar Beat is contiguous to this zoo and is spread over 39.5 hectares. It is proposed that the entire Rewalsar Beat be handed over for the expansion of Wildlife and Habitat Research, Training and Rescue Centre (WLRT&RC). This facility of HPFD is to be upgraded to meet all the requirements of research and training of low altitude flora and fauna. Considering the importance of the area as a gene pool reservoir it is ideally suited for the research and development in the field of gene pool conservation. A state of art tissue culture laboratory and an in situ conservation centre for wildlife is planned in this CAT plan. A research centre for finding out the tissue culture protocols for the rare and endangered species including medicinal plants is planned. It is strongly recommended that this research centre be run in collaboration with Academic and research institutions. The buildings for the Research Centre, Residences for its Officers and staff and a hostel for visiting Researchers is planned and a provision of Rs.15, 570,400/- is made under Forest Infrastructure. Similarly, a provision of Rs. 27841976/- is made for the staff pay, laboratory equipment and mobility support under the wild life and habitat improvement component. Once commissioned from the funds of the CAT Plan, a provision is made for staff pays allowances and consumables from 2nd to 10th year. Thereafter and even before

that for expansion, such a Research Centre can obtain grants from various State/Centre and International Funding Authorities. It should eventually become a major centre of learning and extension work resulting in better conservation and propagation of flora and fauna of lower himalyas. Some of the essential studies recommended are as follows:

- **a)Unique wildlife Habitatand gene pool conservation:-** The catchment area seems to have lot of unique wildlife habitats such as gorges and hidden valleys which are houses to many such species like amphibians, reptiles, birds, mammals etc. There is need to identify such unique habitats to protect them from activities like blasting and degradation. This is also true for the nesting site of vultures and galiform etc (cliffs and ledges). The mapping of such critical and unique area is required to be done and necessary provision for this task is kept.
- **b)Food chain study:-** The food chain study for snow leopard (*Uncia uncia*), an endangered species, has to be undertaken in wildlife conservation program similarly, the habitat conservation measures that need to be adopted for the Western Tragopan and other pheasants of Himachal need to be studied. A research on their food chain and habitat improvement is intended. It must include the identification of plant species on which these bird feeds.
- **c)Identification of Migratory Routes:-** It is necessary to carry out population estimation in Wild life area to protect Wild animals from various adversities. There is a need to identify the migratory routes of these wild animals. This would be carried out by collecting their fecal footprint. Hence Lumpsum provision is kept for this purpose.
- **d) Training:-**Develop competence based training programmes including Monkeys & Wildlife Trapping for the Forest staff and the local community, gun license holders and NGOs.

4.6. Infrastructure Development and Forest Protection (15%):-

The allocation of Rs. **92,860,202** is made for Infrastructure development and Forest Protection. NERIL has discussed and obtained the precise needs of the forest officials for strengthening of infrastructure. Considering the rugged and difficult terrain it is our considered opinion that the infrastructure facility available to the Range Staff has to be made substantially more robust than the existing available infrastructure. Our approach, therefore, has recommended appropriate infrastructure improvements. A detailed list of equipment, vehicles, offices, furniture and so on is made out and is sought to be modernised. Further, in order to achieve better survival of new plantations and NTFP Produce, the Territorial as well as WL staff has to be provided with proper mobility facilities including construction of bridal paths, jeep able roads up to Beat Guard Hut. This CAT Plan caters to providing adequate infrastructural facilities which include

construction of Forest Guard Huts, B.O. Quarters, Gang Huts, Tool Stores, Outhouses, Repairs of staff quarters, R.O. Office, R.O. Residence, repairs at Divisional Headquarter level, Conference Hall, state-of-the art firefighting equipment, Office automation equipment like Scanners, DGPS, LCD Projectors, Patrolling kits etc. In addition, the CAT Plan also provides for providing Mobility facilities like four wheeler vehicle - its replacement in the sixth year and manpower support at Range/ Divisional Level for data updation as well as watch & ward staff duty. Provisions for construction of Boundary Pillars and Demarcation of forest are also made wherever required.

4.6.1 Computation of cost of mobility:

Considering the ruggedness of the terrain, and absence of public transport to places here Forest Staff has to be present it is necessary to ensure that they are provided with efficient means of mobility. The allocation is made as follows:

Provision of 9 double cab 4X4 pick up vans (7 for Range Headquarters and their Beats and 2 for the two divisions). A lump sum provision of Rs. 18,000/- per vehicle per month is made to meet expenditure for contracted driver, fuel, oil, lubricants and routine servicing, running repair and replacement of parts and tyres. Computation of cost of mobility in case of Thana Plaun CAT Plan was worked out at the following rates to start with. Escallation at the rate of 6% per annum is accounted for in the capitation cost.

- Cost of vehicle @ Rs. 900000/- per vehicle. The vehicle to have a life span of ten years.
- Salary of the driver on contract is taken @ Rs. 12000/- per month for 10 years.
- Cost of PoLs and consumables was taken @ Rs. 6000/- per month for 10 years.

4.6.2 Forest Protection (5%): -Application of these funds is spread over the years for forest fires protection, construction and repair of boundary pillars and for promotion of non-conventional energy devices for which a total of 5% is earmarked.

Protection from forest fire: -For the forest fire protection, following provisions are recommended.

- Forest Watch Towers;
- Creation and maintenance of forest fire lines;
- Awareness generation, incentives and rewards.
- Provision of funds for site specific work plans.

4.7. WILDLIFE MANAGEMENT (5%)

No wildlife sanctuaries fall in the project catchment. However, wildlife exists in the territorial areas of the catchment. It was suggested that following provisions should be made under this component.

- The staffs's pay and routine consuables for the Wildlife and Habitat Research, Training and Rescue Centre (WLRT&RC)`
- Training of territorial staff in handling wildlife in emergency circumstances.
- Providing of tranquilizer guns and other equipment.
- Provision of payment of compensation in case of Man- animal conflict and the first aid kit. Creation of the water holes is separately provided for under SMC measures. .

A provision of 5% is made under this heading which includes at least 1% to be set aside for support to Monkey Sterlization programme. The balance of fund can be utilized for human animal conflict and habitat improvement besides bio-diversity conservation and survey and wildlife estimation.

4.7.1. HABITAT MANAGEMENT AND WILDLIFE CONSERVATION

Wildlife conservation is an activity in which people make conscious efforts to protect earth's biological diversity. Wildlife conservation activities relate to the protection of plants and animal species, and their habitats. Conservation efforts are made with a goal to preserve the nature, and the endangered species for future generations. Wildlife conservation is very important because wildlife and wilderness play an important role in maintaining the ecological balance.

Wildlife Conservation Activities:-To maintain and protect the natural vegetation communities, populations of large ungulates (with emphasis on Himalayan species), carnivores and pheasants; Protection of unique WL habitats such as gorges, burrowing sites of WL. To maintain and protect natural vegetation **new Plantation** are suggested. Considering various ground realities such as soil type, slope etc. Herbs and Shrubs plantation is prescribed under this component.

To Conserve and protect wildlife

- Implementation of developmental or income generation programmes so that they are well suited to address the livelihood priorities of local people and facilitate conservation of the CAT Plan area biodiversity.
- Income generation activities based on micro-planning
- Street Theatre for WL awareness
- Anti poaching activities
- Breeding in captivity

4.9. MONITORING AND EVALUATION (5%)

Provisions of 5% CAT Plan funds are made for Monitoring and Evaluation. Checking by the Forest Guards, B.Os. Range Forest Officers and Divisional Forest Officers are prescribed. Constitution of Divisional CAT Plan Committee at Divisional Level and range Level is recommended for this purpose there is a need to ensure effective supervision and guidance in the implementation of CAT Plan works. There is a two tier system proposed. The first tier of monitoring will be monitored by the concerned D.F.O. and C.F. However, the second tier of monitoring envisages monitoring and reporting by third party Consultants. This monitoring has to be exhaustive and to be done after field inspection of completed works versus its comparison with planned works. It is envisaged that such monitoring exercise must be done in every alternate year to ensure appropriate quality of work besides ensuring achievement of physical and financial targets.

4.10. CONTINGENCIES (10%):

A provision of 10% of the Projections under CAT Plan Cost in respect of all the components is made in the CAT Plan to offset the unforeseen expenditure on account of cost escalation and increase in the labour rates from time to time.

This is left at the discretion of Forest Department and may support unforeseen expenditures as well as unplanned activities which may arise from time to come. If maintained at the level of 10% the Contingencies, fund may also be effective in setting off cost escalation in times to come.

Conclusion:

It can be said that Neril's approach to CAT plan is in conformity with the HPFD guidelines for allocation of funds and its utility.

CHAPTER 5

GUIDE LINES FOR FORESTRY

5.1. Forestry: -

Introduction Forests play an important role in the economy of the State. They meet our requirement of timber, fuel wood, fodder, paper pulp, sports goods, match wood, plywood, resin, packing cases, and agricultural implements, other minor forest produce and medicinal plants. Forests are a major natural system to complete the water cycle. Owing to increasing pressure on forests due to enhanced grazing and other human interference, the natural regeneration on which we had depended a few decades ago is now very scarce. It has therefore, become necessary to restock the forests by planting suitable tree, shrub and grass species.

5.2. Afforestation measures: -

The most important component of management of catchment areas is Forestry. Forests have to be protected if they are well stocked, new plantations are to be made, if culturable areas exist, gaps may have to be filled in new plantations where the survival has been poor in plantations which have finished with their maintenance period or enrichment plantation has to be carried out to ensure that old forests where the stock has depleted is enriched again. Grasslands and Pastures play a key role in the continuity of food chain. They are as important for the migrant shepherds as for the ungulates. The afforestation measures under CAT Plan address each of these key areas in a systematic manner and in accordance with the established forestry practices and guidelines of the Department of Forests and CAMPA. The afforestation measures will include raising of multi-tier mixed vegetation of suitable local/native species in the steep and sensitive catchment areas of rivers and streams with the objective of keeping such areas under permanent vegetative cover. Afforestation measures when implemented will hold soil and reduce siltation. The actual plantation pattern in the catchment and treatment area and the choice of species will depend upon the altitude, the aspect, the prevalent phyto-sociology and availability of nursery stock. Consequently, the decision for the exact species mix to be planted must necessarily be left to the Officers at Division level based on the actual field conditions. However, it is specified hereunder as to what plants, shrubs, herbs and grasses are suitable at different elevations. It is highly recommended that the main species population should generally not exceed 50% of the total plantation density. The origin of any plantation starts with the nursery and hence under '*Afforestation Measures*' a special emphasis is laid on establishment of modern nurseries together with a few gypsy nurseries.

The Afforestation measures are categorized under these 7 sub-components:

- i. Establishment of Modern Nursery
- ii. New Plantations:
 - Broad leaved plantations
 - Conifer/Oak two stage plantations

- iii. NTFP Plantations
- iv. Gap Filling
- v. Enrichment planting:
- vi. Pasture Development:

5.3. Establishment of Modern Nursery (Refer Appendix I)

Survival of the fittest is the underlying principle in the process of evolution, renowned naturalist and father of the theory of evolution, “Charles Darwin”. The progeny of the fittest can therefore be assumed as genetically superior individual with in species. The maintenance/ ecological security of these superior individuals of the species therefore requires interventions like selection of Candidate plus trees, collection of seed, enhancing viability of seeds and finally creation of quality planting stock for plantation in field. Over the years these superior trees have either seized to be seed bearers due to over maturity or have been removed. The situation therefore warrants the establishment of model nursery with facilities of seed storage, germination, establishment of seedlings and planting in the field.

- i. It is also a general carried misconception that the forestry is a layman's job and not a science and that it could be practiced by any individual without scientific background or acquired skill. In fact, forestry is a pure science and its practice requires a holistic study about tree species, their habitat, ecological and site requirements, regeneration, association, entomological and pathological interventions, tree improvement etc. Every step of seed collection, processing, storage, pre-treatment, sowing, pricking, establishment in the nursery, transportation of nursery stock, site preparation, planting, maintenance of plantations, management of forests, harvesting etc. is based on scientific principles and require professional skills.
- ii. Genetically improved seed is in short supply for quite some time particularly in the developing countries. Therefore, utmost care should be taken while collecting seeds as general collection for the production of nursery stock. They must be collected from healthy, disease free, middle aged, straight bole, deep in forest or plantations etc. Seed collection from the forest floor, isolated tree, very young or old trees, injured or disease tree etc. should be avoided. Seed processing and storage are also important aspects for maintaining regular supply of quality seeds for the production of nursery stock and for that facilities should be there in model nursery itself. When the genetically improved seeds are not available for nursery production and only good quality seeds are available, it is imperative to improve upon nursery techniques to realize the full productive potential of the saplings thus produced. The role of nursery technology will remain of prime importance irrespective of the propagation technologies employed. Therefore, establishment of ‘Model/ Modern Nursery’ and its subsequent management to continuously improve the nursery technology and to produce uniform quality planting stock would be regarded as the main activity of all the Forestry departments.

- iii. For the production of large-scale quality planting material, a basic know-how of techniques for identifying superior performers among the populations and ability of rooting the vegetative material in appropriate time using appropriate chemical treatment, and infrastructure for the establishment of Vegetative Multiplication Garden is the most essential need in model nursery. Germplasm collected from various locations can be established and maintained as hedges for mass multiplication of juvenile material.

The emphasis on plantation forestry for enhancement of forest productivity also brings a concern for production of quality planting stock from improved seed and propagation by employing modern nursery techniques. The gains of tree improvement can be fully realized by adopting suitable plant production methods. In the pre-planting activities, production of quality planting stock is the most important aspect, which has direct bearing on successful establishment of productive plantations. Therefore, establishment of Model/Modern nursery (1-2 ha.) at the range level is needed. (Please refer Appendix 1 for full details)

5.4. Transportation of Seedlings

Seedlings are very delicate and should be handled properly. The polypot seedlings should always be held by the bag and never by the plant itself. Seedlings should be watered thoroughly before carrying them to the field. Seedlings should be transported in the trays, boxes or baskets and not tied in bundles with strings or grass. In case of stumps, they should be bundled, wrapped with a wet sack and transported to the field. The plants should be kept in shade and plants not planted the same day should be sprinkled with water in the morning and evening.

While transporting bare root seedlings, the nursery beds from which the plant is taken should be irrigated so as to facilitate making of ball plants. After making ball plants, they should be graded according to their height and put in shade. In order to keep the earthen balls around the roots intact the balls should be wrapped in grass and tied by sutli.

5.5. Plantation Techniques

The Catchment area is highly mountainous with steep to moderate slopes covered largely by coniferous forests in the higher reaches and by the horticultural crops in the gently sloping lower areas. The North and North Eastern slopes, by and large, sustain excellent quality of coniferous forests except for the area surrounding the heavily populated villages and towns. The area facing the South and South Western aspects are poorly stocked and barren at places. The Forest area around thickly populated villages and towns are under severe threat of encroachments and other biotic pressures especially from tourists, tour operators, and graziers etc. It is, therefore, the need of the hour to secure the physical protection of the forests as first charge of the department, by resorting to repair and renovation of existing boundary pillars of Reserve and Demarcated Protected Forests and demarcation of the Un-Demarcated Protected Forests including the updation of the demarcation records.

5.6. The upcoming natural regeneration is required to be assisted by artificial regeneration by resorting to effective closures followed by planting in patches of well grown tall and quality seedlings of indigenous species (15cmx15cmx15cm), sowing of quality seeds in pits (45cm x 45cm x45cm) in trenches (100cm x30cm x 30cm). The rugged, denuded and difficult sites should be taken up for sowing and planting of local coniferous species like Deodar, Kail, Fir, Spruce only after the area is covered or taken over by the indigenous nursing crop species of herbs, shrubs and trees, ensuring success of the main coniferous species at their very initial stage of establishment. The patch sowing should be preferred to pit or trench planting in steeply sloping areas, causing least disturbance to the soil. Whereas the pit planting should be preferred in moderately sloping areas and the trench planting should be resorted in the flat areas having moderate slope receiving low precipitation to ensure maximum moisture conservation in situ creating conducive conditions for the early establishment and fast growth of the seedlings.

5.7. The vegetative measures should always be given preference over the mechanical measures like lying of crates, DRSM etc. for conserving maximum soil and moisture. The totally denuded and barren area should not be straight-away taken for planting of the coniferous species. Such area need to be closed effectively and sown/ planted first with the associates of the main coniferous species intended to be planted in such area. The plantation of the major / main coniferous species should always be taken up after having given complete rest to the site for a period of at least one to two years. The soil working in general, should always be carried at least six months to one year in advance of actual planting affording sufficient time for weathering of the dug out soils and pits / trenches.

5.8. The agricultural and other categories of the lands falling outside the forest area should always be preferred for planting of the horticultural species ensuring least disturbance to the soil and maximum vegetative coverage of the soil. The local people should be educated and made aware of the benefit of the horticultural crop cultivation viz-a-viz cultivation of soil depleting crops like maize, rice, potato and wheat etc. The area surroundings heavy populations should preferably be planted with local fuel and fodder species as well as for raising MF

5.9. During the course of discussions with forest staff it is noticed that only three strand barbed wire fencing is allowed which is not most ineffective. Hence it is advised to use fencing of 4 to 5 strand barbed wire using the kind of fence posts which are most suited to the site in question. The annual maintenance of the fencing in area experiencing moderate to heavy snowfall is a necessity for the success of plantation. Similarly, the area facing heavy pressure of grazing and demand for fuel and fodder, the annual maintenance and cultural operations are necessary for the success of the plantation. It is observed that the best plantation raised using the best quality of material and methods including the fencing cannot sustain, survive, succeed unless such plantations are looked after by continuous (round the clock) watch and ward. A provision for regular watch and ward of the closure and beating up of the causalities and cultural operations is

made in the CAT Plan. On an average 35 ha of plantation should be under one person for a period of 5 years. Adequate provisions for such engagement of watch and ward staff through outsourcing is ensured. The engagement of local armed forces personnel residing close to the plantation/ closures is always beneficial.

While going through the data of last 15 years' plantations, it was revealed that survival percentage in many plantations ranges between 30 to 60%. The main reasons for failure of these plantations are said to be drought, excessive pressure of grazing, tourism, inadequate fencing and lack of watch and ward staff. There is a need for taking immediate steps to overcome these difficulties in the field. One Forest Guard is generally not able to cover the entire beat for protection of all the plantations in his beat. Presence of the Watch and Ward staff round the clock can only help to protect the plantations, restricting the smuggling of timber, extraction of medicinal herbs and eradication of cannabis and poaching of wild animals etc. For these purposes provisions of engaging the contractual staff through outsourcing to help the forest guard in maintaining strict vigil, watch and ward in the entire beat is considered. Proper infrastructure facilities such as proper Beat Office-cum-Residence in the Beat, construction of watch towers and patrolling huts fully equipped with CCTVs, Wireless systems, Mobile phones and Multiuse vehicles etc. is required to ensure for which necessary provisions in the CAT Plan should be made.

5.10. The interest of local people in protection of forests from fires and illicit felling etc. has been decreasing seemingly after withdrawal of TD and grazing rights. There is need to create awareness among the local people to create their interest in protection of forests. This aspect can be covered under payment for environment services by introducing incentive schemes to the village communities / cooperatives/ Self Help Groups / JFM's. The quantum of incentive to be given to such villager's groups should be quantified and co-related with the level of efforts made by the villages in saving the forests from fires, illicit felling of trees, poaching and reducing the silt loads in the water.

5.11. The Field Officers and lower field functionaries expressed the need for devising some means for Pastures development. This aspect needs to be looked into greater details. However, to start with, controlled grazing through Rotational Closures/ Deferred Closures and seed sowing could be some of the possible measures for Pasture development. The fodder and fuel are the bi-products of the well managed quality forests. The fodder and fuel requirements will automatically be fulfilled through the best management of forests and grazing of the pasture lands within its carrying capacity.

5.12. The Forests and Wild-life are inseparable. The wild animals, birds and other wild species of plants and animals are not only confined to the protected areas but the wild life as a whole is also found in the forests areas falling outside the protected area. Therefore, the protection of wildlife outside the protected area is as important as the protection of wildlife (flora and fauna) found inside the protected area. It is felt that appropriate and adequate training is required to be given

to the Territorial Forest Staff with regard to wild life management in the Territorial Areas. Wild life can not necessarily be confined to wildlife areas only. In case of Man animal conflict or poaching activities, one cannot wait for the wildlife wing/ staff only to come forward to handle such situations. Therefore, there is necessity for making provisions for training of both Territorial and wildlife staff to handle such eventualities in their respective areas as and when required. Provision is made for national and international level exposure / technology exchange visits and study tours of Field level staff. Training in equipment handling is also provisioned for the Field Staff. There is immense necessity of percolation of the training and exposure needs to the field staff level. It is also desirable that the protected area should not be exposed to the excessive tourist pressure until and unless requisite facilities are created preferably far away from such protected areas.

5.13. Although the cases of illegal cannabis cultivation are very rare yet this aspect needs to be examined in greater details. It is suggested that the said problem needs to be studied in depth. Manual efforts may be supplemented by the aerial spray of chemical weedicides and biological measures, if any, found suitable without any adverse effect on other vegetation, human being and animals.

5.14. It is a well known fact that there has been incidence of unregulated, uncontrolled and unscientific grazing in the forests and pasture lands beyond their carrying capacity. This is one of the most important factors responsible for the failure of natural regeneration and plantation to the large extent. Adequate provision has been made for the assessment of carrying capacity of the forests and pasture land enabling the department to regulate and control the grazing on scientific lines. The people of all walks of life should be educated through a well designed strategy about the economic, ecological, social, religious, historical and climatic importance and the impact of forest on their lives and livelihood.

5.15. Selection of Species

Tree line in the Himalayas extends up to 3500 m altitude. Climatic variations occurring due to altitudes, aspects, temperature, rain fall, soil types have resulted into a number of forest types and vegetation types that vary from place to place due to these factors. Because of this, it is not possible to recommend any particular tree species for every area. However, while selecting the species for planting in a particular area the following points should be considered:

- The soil and climate of the area is suited to the growth of particular tree species,
- The species selected for planting are in accordance with the plantation policy of the Government,
- The species selected meet the fodder, fruit and other requirements of the villagers living in the vicinity,

- The species selected suit the needs of birds and wild animals dwelling in the area. The species selected for planting should provide suitable cover and food to herbivores and carnivores
- The species should be useful for water and soil conservation such as Ban oak, and Burans etc. and

5.16. It should be borne in mind that the growth behaviour of any plant is considerably influenced by sunlight, temperature and fertility of soil. Some species have low moisture requirement, such as Khair, can be grown on South facing slopes because these slopes are comparatively drier due to their exposure to direct sun. Contrary to this, North facing slopes are much humid. Here species like Ban oak, Kafal, Burans, and Maple can be grown successfully.

400 to 1000 m	<i>Ailanthus</i> , Amrood, Amla, Bamboo, Bel, Ber, <i>Cassia</i> , <i>Eucalyptus</i> , <i>Ficus</i> , Khair, Neem, Poplar, Ritha, Safed Siris, Sal, Salix, Shisham, Silver oak, Tun
1000 to 2000m	<i>Acacia mollissima</i> , Akhrot, Amla, Angu, Ban, Burans, Chinar, Chir, Deodar, Exotic Chir, Kafal, Kail, Kala Siris, Kharik, Moru, Poplar, Ringal, Ritha, Robinia, Salix, Silver oak, Tun

Proper selection of species according to the aspects is very essential between 1000 to 2000 m. The Southern and adjoining Western and Eastern aspects are warm. Contrary to this, the Northern and adjoining North-Western and North-Eastern aspects are cool. Following species are recommended for planting in these cool aspects. The success of some species is doubtful in hot aspects like - Akhrot, Angu, Banj, Burans, Deodar, Kail, Maple, Moru, Robinia, and Ringal. Bhojpatra, Deodar, Fir, *Juniperus*, Kharsu, Moru, and Spruce are suited to zones above 2,000 m.

5.17. Classification of Species According to Their Uses

Timber: *Ailanthus*, Akhrot, Angu, Amla, Bahera, Bamboo, Chir, Deodar, *Eucalyptus*, Fir, Kafal, Khair, Maple, Neem, Poplar, Ringal, Sal, Salix, Semul, Shisham, Spruce, and Tun.

Fuel-wood: Haldu, Kharsu, Moru, and Shisham.

Fodder: Bekhal, Bans, Kharsu, Kharik, Maple, Moru, Neem, Robinia, Shahtoot, and Siris

Fruits: Akhrot, Amrood, Amla, Bahera, Ber, Harar, Kafal, Nimbu, Shahtoot .

Rejuvenation of depleting water sources: Akhrot, Banj, Deodar, Maple, Phalyat, Ringal, Siris and Utis.

5.18. Selection of Site

The selection of site and selection of species are interdependent. The selection of site is however more important as the selection of species depends upon the selection of site. The site selected

for planting should be suitable for the growth of species desired to be planted. For this purpose, the soil type, its depth, study of vegetation in the neighbourhood, local factors and other conditions should be given due consideration and advice of the local villagers should be taken.

Selection of planting site should be done by the end of September. In case of CCP the areas to be taken up for planting are listed year wise in the division plans of the respective Forest Divisions. Therefore, site selection has already been done for plantation works year wise. Plantations can be raised as a block plantation if large area is available or trees can be planted along the boundary of agriculture fields or school, offices, road sides etc.

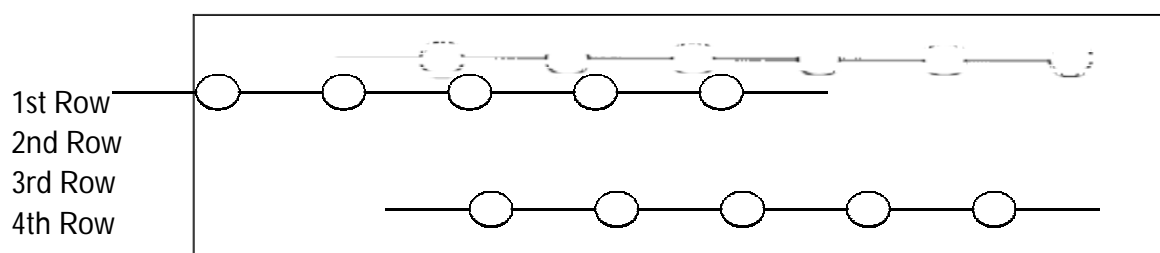
5.19. Site Development

This includes clearance of planting site, bush cutting, control burning, lopping of tree branches, checking of soil erosion, soil conservation works in 'nala', construction of vegetative or stone check dams, preparation for agave planting where necessary, marking of pits for planting of saplings and other soil works.

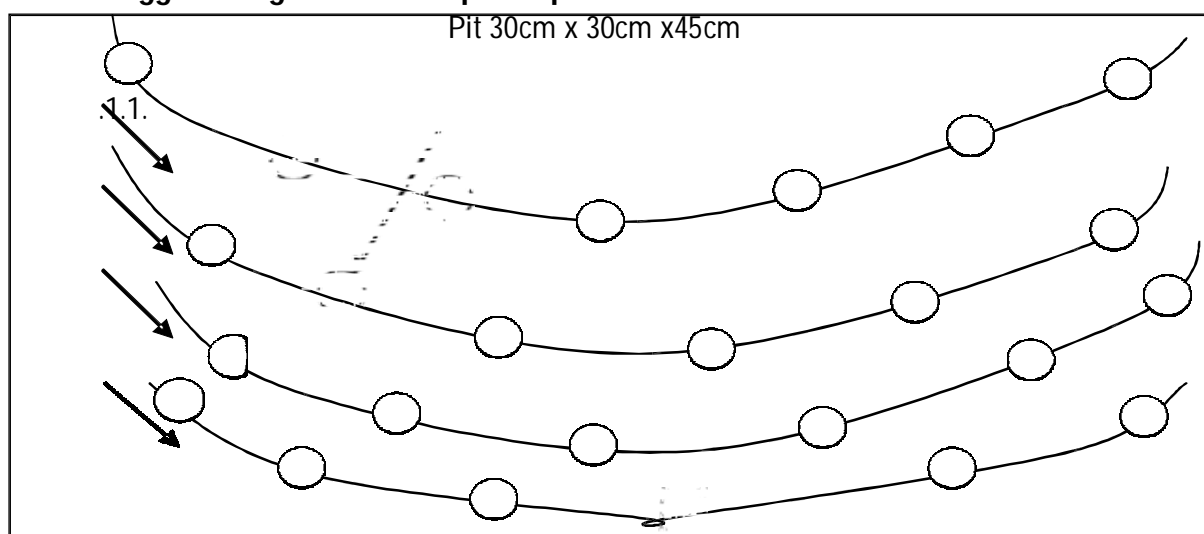
In addition, demarcation of boundary walls or fencing and inspection paths should be made to facilitate the movement of people engaged in plantation works. This work should be completed by the end of November. While developing the site for planting, care should be taken to retain all indigenous species of trees and shrubs that are naturally growing in the area. They should not be cut and burnt along with weeds and thorny species. Preferably they should be adopted in the plantation should be made around each of these plants for retention of moisture and for protection against fire and damage by grass cutters.

5.20. Digging of Pits

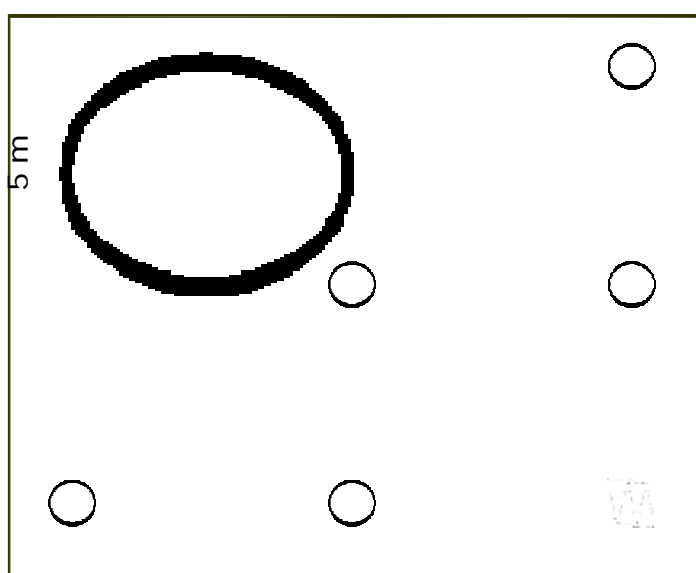
After clearing the land and before digging of pits, pit sites should be identified by using a measuring tape to ensure the desired spacing and then mark with wooden or bamboo sticks at the spot that will be the centre of the pit. Pits of the size 30 cm x 30 cm and 45 cm depth should be dug. Pits should be deep enough to ensure that the roots of the plants do not curl up once the planting material is placed in it. The soil dug from the pits should be dumped close to the pit. While digging stones, roots of trees, grass or shrubs, if any, should be separated so that while filling the dug up earth back in the pits these are not mixed with the soil. The spacing of pits varies according to the planting scheme for different areas. Generally, the spacing between pit to pit along the contour line is 2 m and the distance between lines (Contour) is 3 m. In hilly areas, it may not be possible to follow this spacing strictly due to presence of boulders or trees. No pits should be dug within the vicinity of five meters from a tree. The spacing between the pits should however, not be less than 2 x 2 m. Pits should always be dug along the contour lines. The procedure of making the contour lines has been described in Diagram 10. The pits in the second line should be dug in such a way that they fall between the pits dug in the first line as shown i.e., staggered. The triangular planting method, which is specially practiced in the hills, checks the flow of rain water and facilitates its percolation in the ground. This method should also be applied while digging contour trenches.



Staggered alignment of the pits in plain



Alignment of pits in hilly areas



Pits in row with equal square spacing

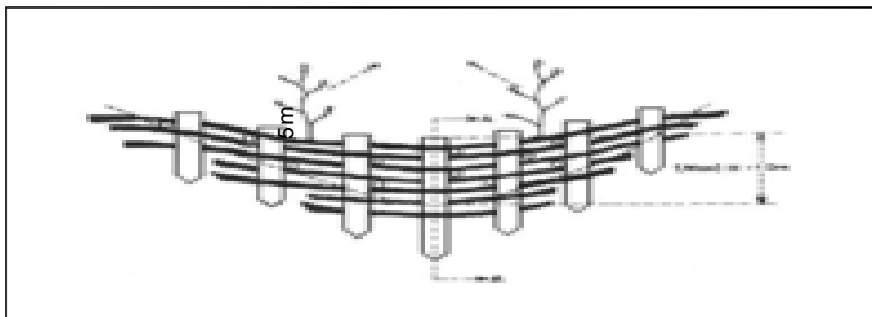


Diagram 14: Triangular spacing

5.21. Protection of Plantation Sites:

The proper fencing of plantation areas is essential to protect the seedlings from damage by the cattle and wild animals. The choice of fencing depends on the type of terrain, soil depth and the kind of soil. Since most of the afforestation programmes are employment oriented, a fence type with high labour input is preferred. Cost of fencing is another important criterion, but normally no compromise should be made on this count, because if fencing is not effective, all other measures will come to a naught.

5.22. Barbed-wire fencing with RCC Fence posts:

In areas where stones are not easily available or where cartage of stones is expensive due to long distances, the plantation area should be protected by barbed wire fencing. Wooden posts are used for this purpose with a length of 3 m and a girth of 30 cm to 45 cm. The upper ends of the posts are fashioned in conical shape to avoid rain water from rotting it. The lower end which remains in contact of the soil is painted with coal tar to avoid damage by white ants and wood decay fungi. The posts are dug 30 cm deep and placed 2.5 m to 3 m apart. Three strands of barbed wire at the height of 22, 52 and 74 cm from the ground level are stretched and fixed to these posts with the help of iron staples. To make this barbed wire fencing more effective thorny bushes are put along the fencing. For entry in the plantation area wooden ladders are provided. From the landing point of the ladder an inspection path is made inside the plantation area. Areas having nilgai menace or damage by animals like deer etc. requires at least 4 rows of barbed wire fixed at an interval of 30 cm each with two strands of barbed wire inclined at 45° to the poles to provide extra strength.

5.23. RCC Fencing:

The HPFD has promulgated use of RCC pillars instead of wooden posts for fencing. The same has been adopted in this CAT plan. The cost model for forestry components includes RCC fencing to ensure effective, uninterrupted closures. It is observed in the field that the quality of

RCC Fence posts is very poor. The RCC Post must have a minimum of two 6mm bars with interlinking rings and should be made from M15 grade of concrete.

5.24. Social fencing:

In community areas and areas close to habitations, local villagers have to be encouraged to resolve among themselves about not sending their cattle in plantation areas and protect grasses in the plantation areas to be cut after maturity by mutual agreement. Van Panchayats should be made models of such social fencing efforts. In such cases, the money earmarked for fencing must be utilized to pay the villagers who choose to stay at the plantation site and protect it from grazing. The grasses so produced can be shared by the villagers as per the mutual agreement.

5.25. Fire protection:

A 1.5 m wide strip along the outer periphery of the fencing should be cleared of grass and bushes and the strip scrapped with spade for fire protection so that any fire from outside may not enter the plantation area. A hut should be constructed inside the plantation area, preferably at the entrance point. This can be used for the stay of the people during rains and heat. After the plantation work is over the hut can be used for the stay of Chowkidar deputed to look after the plantation.

5.26. Filling of Pits:

This work should be completed in the first week of June. The dug earth dumped near the pits should be filled back after about a month or before the monsoon, so that the pit and the earth to be filled are exposed to sunlight. Insecticides may also be mixed in the soil while filling into the pit. The pit should be filled a little above the ground level so that after the earth settles the upper surface of the pit is level to the ground thus avoiding any water logging. While filling the pits, the area surrounding the pit should be scraped with spade to remove grasses or weeds. Top soil should be filled in the bottom of the pit and after this, subsoil should be filled.

5.27. Planting of Saplings:

The plantation of sapling must be done in the first week of July when monsoon rain has begun. Planting of naked root plants should be completed as early as possible so as to take full advantage of the rain. The planting work should be done either in the afternoon or during light rain or cloudy sky. The roots of the plants should be kept straight and the plant put straight in vertical position. For this a hole should be made with the help of a stick or small crow bar. The collar of the plant should be kept at the surface level of the pit. After planting the sapling, the earth around it should be firmly pressed by hands or feet and while doing so the plant should be pulled

about half inch to make sure that its roots is not bending. Species suitable for naked root planting are Akhrot, Angu, Utis, and Deodar etc.

Bagged plants should be sprayed with water before planting. The polythene should be carefully removed so that the plant is not damaged. The plant with the soil intact should then be placed in the pit in straight position, the collar of the plant being in level with the ground. The soil around the plant should then be pressed firmly by hands only. Pressing by feet is likely to disturb the soil of the plant. The planted saplings should be of suitable thickness and height. Ideal Plantable size of some species is given below in Table-4.

Table 19: Ideal Plantable size of some species

Species	Height (cm)	Age (Months)
Fir	45	40
Chir	25	9
Deodar	40	26
Khair	25	4
Neem	50	12
Shisham	45	12
Tun	25	12
<i>Acacia</i>	40	6

5.28. **Winter Planting:**-Species like Akhrot, Angu, Maple, Poplar, Salix, etc. are planted in winter months. Most of these species remain leaf less during winter. These can be planted in January or beginning of February. By March the buds sprout. If at the time of planting there is lack of moisture in the soil, it is advisable to irrigate the plants once or twice after sprouting to ensure the success of the plantation.

5.29. **Replacement of Dead Plants or Beating Up:** -Dead, dying or dry plants should be replaced within 15 days of completion of planting work.

5.30. **Soil Working and Weeding:** - After the rains are over, capillary actions begin in the pits. This causes loss of moisture due to evaporation in the hot sun. To check this, weeding should be done in and around the pits. During this operation, grasses and weeds should be removed and the earth clumps should not be broken. Second weeding should be done in September end. Third weeding should be done soon after the winter rains.

5.31. **Maintenance and After Care:** -Special Watch and Ward for Five Years are provided.

- A Chowkidar must be deputed for five years in the plantation area to look after it soon after the planting work is over. Following duties should be assigned to him:
- Periodical weeding and removal of grasses suppressing the plants,
- Maintenance and repair of inspection paths,
- Repair of boundary wall or fencing where ever necessary,

- e) To protect the plantation area from grazing and damage by wild animals and villagers cutting grass,
- f) To protect the area from fire, cleaning of dry grass and twigs, etc. from the area and cleaning of inspection paths,
- g) Cleaning of the outer periphery of the plantation area in two-meter width,
- h) Keeping regular watch over the plantation area during the fire season and
- i) Seeking help and co-operation of the neighbouring villagers in the protection of the plantation area.

5.32. Maintenance in Subsequent Years

Second year: - Beating up works should be carried out in the second year. In this operation the dead plants are replaced by planting fresh saplings immediately at the onset of monsoon rains. Under normal conditions not more than twenty per cent plants are required to be planted during the beating up operation in the second year. The reasons for mortality should be ascertained. The dead plants should be replaced by the species which are growing successfully. Atleast one weeding should be done and thanwalas be made. Protection wall or fencing should be repaired where ever necessary.

Third, Fourth and Fifth year: -Normally no beatings up operations are carried out during these years but full attention is given to protect the area from grazing and fire. However, soil working and weeding around the plants during the rainy season promotes the growth of seedlings. Therefore, provision of sufficient funds should be made for this purpose too.

5.33. Causes of Failures of Plantations: - The main causes of failure of plantation works in grazing, frost, lack of desired rainfall or excessive rain and fire. There are several other adverse factors causing failure of plantations. These are as follows:

- Wrong selection of species such as planting of deodars at low altitudes,
- Planting of weak and damaged saplings,
- Untimely planting of saplings,
- Carelessness in cartage of plants. The bagged plants need very careful handling during loading/unloading. If, cartage is done by head load they should be carried in trays or baskets to avoid damage,
- Lack of supervision at the time of growing plants in the nursery and while planting in the plantation area,
- When proper shifting, grading and root cutting of plants is not done in the nursery as prescribed, before taking plants to the planting site and
- Proper attention is not paid in planting, weeding and other works.

5.34. Planting of Grasses and Shrubs

Since vegetation of any particular area is always adapted to the local conditions of that place, therefore the varieties of grasses belonging to that place are different. According to the vegetative conditions, Himalayan forests can be divided into three categories.

- Humid temperate forests
- Dry temperate forests
- Alpine forests

As evident from the names of these forests that cold places having sufficient moisture are called 'Humid temperate forest', forests where the moisture is comparatively low and climate is dry and cold are called 'Dry temperate forests'. Whereas, the snow covered areas are called 'Alpine forests'. Similarly, the grasses found in these three areas are also different

5.35. Classification of grasses according to forest areas and vegetation types

Type of forest	Vegetation type	Grasses inhabited
Humid temperate forests	Chir-Ban Oak forest (1500-1700m)	Batanya, Druv, Fulni, Fulkya, Hewaiya, Jhangori, June grass, Kummer, Kush, Naktura, Motia, Seru, Van -cheena, Vanjovata
	Ban oak- Blue pine (1700-2200m)	Batanya, Broom grass Chiruva, Durva, Faagu, Fulni, Jhangori, Kummer, Laaya, Nadi grass, Naktura, Paluva, Vanjovata
	Ban oak- conifers (2000-3000m)	Babula, Batanya, Broom grass, Durva, Faagu, Falwan, Jhangori, June grass, Khor, Kummer, Kush, Laaya, Nadi grass, Mathanya, Naktura, Phulakya, Vanjovata
Dry temperate forests	Ban oak- Blue pine (1700-2200m)	Same as above
Alpine forests	Above 3000m	Bughyali grass, Babula, Chirva, Cocks foot, Fulakya, June grass, Khor, Kush, Laaya, Prarhari grass, Naktura, Nadi grass, Sathia, Vanjovata, Van kauni
Sub-tropical forest	400-1400m	Baalo Doob, Dalis, Kaans, Khas-Khas, Kush, Kunura, Kumraya, Makhmali grass, Moonj, Palms, Reshmi grass, Tachula, Vanshi grass

Zone A (upto 000 M), Tropical Zone	Zone B (1000-1500M) Sub Tropical Zone	Zone C (1500-2400M)	Zone D (>2400M)
42.FOOD AND FRUIT			
<i>Berberis asiatica</i> , <i>Murraya koenigii</i> , <i>Zizyphus spp.</i> , <i>nummularia</i> , <i>Rhus parviflora</i> , <i>Indigofera cassioides</i> ,	<i>Berberis asiatica</i> , <i>Berberis lyceum</i> , <i>Tetrastigma serrulatum</i> , <i>Ampeloissus latifolia</i> , <i>Rhus parviflora</i> , <i>Rhus cortinus</i> , <i>Indigofera cassioides</i> ,	<i>Berberis lyceum</i> , <i>Berberis chitria</i> , <i>Tetrastigma affine</i> , <i>Vitis himalayana</i> , <i>Ampeloissus latifolia</i> , <i>Rhus cortinus</i> , <i>Rubus</i>	<i>Berberis chitria</i> , <i>Vitis himalayana</i> , <i>Rubus paniculatus</i> , <i>Prinsepia utilis</i> , <i>Rosa</i>
<i>Cassia leavigata</i> , <i>Callicarpa macrophylla</i> , <i>Pyrus pashia</i> , <i>Rosa brunonii</i> , <i>Carissa opaca</i>	<i>Cajanus cajan</i> , <i>Callicarpa macrophylla</i> , <i>Rubus elliptica</i> , <i>Pyrus pashia</i> , <i>Pyracantha renulata</i> , <i>Rosa brunonii</i> , <i>Punica granatum</i> , <i>Viburnum mullaha</i> ,	<i>paniculatus</i> , <i>Rubus ellipticus</i> , <i>Prinsepia utilis</i> , <i>Pyrus pashia</i> , <i>Pyracantha renulata</i> , <i>Punica granatum</i> , <i>Viburnum cotinifolium</i> , <i>Viburnum mullaha</i>	<i>macrophylla</i> , <i>Rosa rericea</i> , <i>Viburnum cotinifolium</i>
43.FODDER			
<i>Murraya paniculata</i> , <i>Murraya koenigii</i> , <i>Rhus parviflora</i> , <i>Indigofera cassioides</i> , <i>Mucuna nigrians</i> , <i>Lespedeza stenocarpa</i> , <i>Milletia auriculata</i> , <i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Cassia leavigata</i> , <i>Bauhinia vahlii</i> , <i>Callicarpa macrophylla</i> , <i>Pyrus pasha</i> , <i>Spermadictyon suaveolens</i> , <i>Artemisia vulgaris</i> , <i>Diospyrus Montana</i> , <i>Sesbania cannabina</i> , <i>Adhatoda vasica</i> , <i>Colebrookea oppositifolia</i> , <i>Ficus palmate</i> , <i>Dendrocalamus strictus</i> , <i>Xylosma longifolia</i> , <i>Dracacna uagustifolia</i> , <i>Pistacia khinjuk</i> , <i>Randia tetraparma</i> , <i>Xeromphi spinosa</i> , <i>Rhmnus verigata</i> ,	<i>Rhus parviflora</i> , <i>Rhus cortinus</i> , <i>Indigofera cassioides</i> , <i>Indigofera heterantha</i> , <i>Mucuna nigrians</i> , <i>Lespedeza stenocarpa</i> , <i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Bauhinia vahlii</i> , <i>Callicarpa macrophylla</i> , <i>Pyrus pasha</i> , <i>Spermadictyon suaveolens</i> , <i>Artemisia vulgaris</i> , <i>Diospyrus Montana</i> , <i>Sesbania cannabina</i> , <i>Adhatoda vasica</i> , <i>Colebrookea oppositifolia</i> , <i>Ficus palmate</i> , <i>Dendrocalamus strictus</i> , <i>Xylosma longifolia</i> , <i>Dracacna uagustifolia</i> , <i>Pistacia khinjuk</i> , <i>Randia tetraparma</i> , <i>Xeromphi spinosa</i> , <i>Rhmnus verigata</i> , <i>Eurya acuminata</i>	<i>Euonymus tingens</i> , <i>Rhus cortinus</i> , <i>Desmodium tiliaefolium</i> , <i>Indigofera heterantha</i> , <i>Pyrus pasha</i> , <i>Leptodermis lanceolata</i> , <i>Artemisia vulgaris</i> , <i>Colebrookea oppositifolia</i> , <i>Ficus nerifolia</i> , <i>Ficus palmate</i> , <i>Dendrocalamus strictus</i> , <i>Cotoneaster bacillaris</i> , <i>Dracacna uagustifolia</i> , <i>Randia tetraparma</i> , <i>Salix wallichiana</i> , <i>Symplocos chinensis</i> , <i>Eurya acuminata</i>	<i>Euonymus tingens</i> , <i>Desmodium tiliaefolium</i> , <i>Leptodermis lanceolata</i> , <i>Ficus nerifolia</i> , <i>Dendrocalamus strictus</i> , <i>Cotoneaster bacillaris</i> , <i>Salix wallichiana</i> , <i>Symplocos chinensis</i>

44.FUEL			
<i>Cocculus laurifolius</i> , <i>Berberis asiatica</i> , <i>Cosearea elliptica</i> , <i>Xylosma longifolia</i> , <i>Urea lobata</i> , <i>Calastrus paniculatus</i> , <i>Rhus parviflora</i> , <i>Indigofera cassioides</i> , <i>Indigofera</i>	<i>Cocculus laurifolius</i> , <i>Mohonia borealis</i> , <i>Berberis asiatica</i> , <i>Berberis lyceum</i> , <i>Cosearea elliptica</i> , <i>Xylosma longifolia</i> , <i>Plttosporum erioarpum</i> , <i>Urea lobata</i> , <i>Calastrus paniculatus</i> , <i>Sageretia filliformis</i> , <i>Rhus parviflora</i> <i>Rhus cortinus</i> , <i>Coriaria</i>	<i>Mohonia borealis</i> , <i>Berberis lyceum</i> , <i>Berberis chitria</i> , <i>Zanthoxylum armatum</i> , <i>Buxus sempervirens</i> , <i>Picrasma guassioides</i> , <i>Euonymus tingens</i> , <i>Sageretia filliformis</i> , <i>Rhus cortinus</i> , <i>Rhus wallichii</i> , <i>Coriaria</i>	<i>Berberis chitria</i> , <i>Zanthoxylum armatum</i> , <i>Buxus sempervirens</i> , <i>Picrasma guassioides</i> , <i>Euonymus tingens</i> , <i>Rhus wallichii</i> , <i>Desmodium</i>
<i>heterantha</i> , <i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Mimosa himalayana</i> , <i>Pyrus pasha</i> , <i>Rosa brunonii</i> , <i>Woodfordia fruticosa</i> , <i>Xeromphi spinosa</i> , <i>Diospyrus motana</i> , <i>Vitex negundo</i>	<i>nepalensis</i> , <i>Indigofera cassioides</i> , <i>Indigofera heterantha</i> , <i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Mimosa himalayana</i> , <i>Pyrus pasha</i> , <i>Pyracantha renulata</i> , <i>Rosa brunonii</i> , <i>Woodfordia fruticosa</i> , <i>Viburnum cylindricum</i> , <i>Viburnum mullaha</i> , <i>Randia tetraparma</i> , <i>Xeromphi spinosa</i> , <i>Diospyrus motana</i>	<i>nepalensis</i> , <i>Desmodium tiliacifolium</i> , <i>Pyrus pasha</i> , <i>Pyracantha renulata</i> , <i>Cotoneaster bacillaris</i> , <i>Lonicrea guinguelocularis</i> , <i>Viburnum cylindricum</i> , <i>Viburnum mullaha</i> , <i>Randia tetraparma</i> , <i>Symplocos chinensis</i>	<i>tiliaefolium</i> , <i>Rosa macrophylla</i> , <i>Rosa Rericea</i> , <i>Cotoneaster bacillaris</i> , <i>Lonicrea guinguelocularis</i> , <i>Symplocos chinensis</i>
45.FIBRE			
<i>Urea lobata</i> , <i>Mucuna nigrians</i> , <i>Milletia auriculata</i> , <i>Bauhinia vahlii</i> , <i>Purgularia daemia</i> , <i>Marsdenia roylei</i> , <i>Heterostemma alatum</i> , <i>Flacourtia indica</i> , <i>Calotropis procera</i>	<i>Urea lobata</i> , <i>Mucuna nigrians</i> , <i>Bauhinia vahlii</i> , <i>Cryptolepis buchnaani</i> , <i>Marsdenia roylei</i> , <i>Heterostemma alatum</i> , <i>Flacourtia indica</i> , <i>Aechmanthera gossypina</i>	<i>Clematis buhananiana</i> , <i>Symplocos chinensis</i> , <i>Cryptolepis buchnaani</i> , <i>Marsdenia roylei</i> , <i>Aechmanthera gossypina</i>	<i>Clematis buchananiana</i> , <i>Symplocos chinensis</i>
46.TOYS AND WOODEN ARTICLES			
<i>Cosearea elliptica</i> , <i>Flacourtia indica</i> , <i>Marsdenia roylei</i> , <i>Pyrus pasha</i> , <i>Xeromphi spinosa</i> , <i>Diospyrus motana</i>	<i>Cosearea elliptica</i> , <i>Flacourtia indica</i> , <i>Marsdenia roylei</i> , <i>Coriaria nepalensis</i> , <i>Pyrus pasha</i> , <i>Pyracantha renulata</i> , <i>Viburnum mullaha</i> , <i>Randia tetraparma</i> , <i>Xeromphi spinosa</i> , <i>Diospyrus motana</i> , <i>Dendrocalamus strictus</i>	<i>Marsdenia roylei</i> , <i>Buxus sempervirens</i> , <i>Coriaria nepalensis</i> , <i>Pyrus pasha</i> , <i>Pyracantha renulata</i> , <i>Cotoneaster bacillaris</i> , <i>Leycesteria formosa</i> , <i>Viburnum mullaha</i> , <i>Randia tetraparma</i> , <i>Dendrocalamus strictus</i>	<i>Buxus sempervirens</i> , <i>Cotoneaster bacillaris</i> , <i>Leycesteria Formosa</i> , <i>Dendrocalamus strictus</i>

47.MANUERS				
<i>Flemingia blacteata</i> , <i>Indigofera cassioides</i> , <i>Mucuna nigrians</i> , <i>Lespedeza stenocarpa</i> , <i>Millettia auriculata</i> ,	<i>Flemingia blacteata</i> , <i>Indigofera cassioides</i> , <i>Indigofera heterantha</i> , <i>Mucuna nigrians</i> , <i>Lespedeza stenocarpa</i> , <i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Mimosa himalayana</i> , <i>Bauhinia</i>	<i>Desmodium tiliaefolium</i> , <i>Indigofera heterantha</i>	<i>Desmodium tiliaefolium</i>	
<i>Sesbania cannabina</i> , <i>Cajanus cajan</i> , <i>Cassia leavigata</i> , <i>Mimosa himalayana</i> , <i>Bauhinia vahlii</i> , <i>Adhatoda vasica</i>	<i>vahlii</i> , <i>Adhatoda vasica</i>			

48.MEDICINAL PLANTS				
<i>Berberis asiatica</i> , <i>Flacourtia indica</i> , <i>Urea lobata</i> , <i>Thespesia lampas</i> , <i>Murraya paniculata</i> , <i>Muraya koenigii</i> , <i>Calastrus paniculatus</i> , <i>Rhus parviflora</i> , <i>Indigofera cassioides</i> , <i>Millettia auriculata</i> , <i>Mimosa himalayana</i> , <i>Rosa brunonii</i> , <i>Viburnum mullaha</i> , <i>Vitex negundo</i> , <i>Xeromphi spinosa</i> , <i>Artemisia vulgaris</i> , <i>Diospyrus motana</i> , <i>Heterostemma alatum</i> , <i>Calotropis procera</i> , <i>Adhatoda vasica</i> , <i>Clerodendrum philippinum</i> , <i>Pogostemon benghalense</i> , <i>Hibiscus rosa-sinesis</i> , <i>Indigofera cassioides</i> , <i>Cassia leavigata</i> , <i>Bauhinia vahlii</i> , <i>Rosa brunonii</i> , <i>Jasminum multiflorum</i> , <i>Vallis solanacea</i> , <i>Ichnocarpua frutescens</i> , <i>Trachelospermum</i>	<i>Mohonia borealis</i> , <i>Berberis asiatica</i> , <i>Berberis lyceum</i> , <i>Flacourtia Indica</i> , <i>Urea lobata</i> , <i>Calastrus paniculatus</i> , <i>Rhamnus virigatus</i> , <i>Rhus parviflora</i> , <i>Rhus cortinus</i> , <i>Indigofera cassioides</i> , <i>Mimosa himalayana</i> , <i>Rosa brunonii</i> , <i>Punica grnatum</i> , <i>Viburnum mullaha</i> , <i>Randia tetraparma</i> , <i>Xeromphi spinosa</i> , <i>Artemisia vulgaris</i> , <i>Diospyrus motana</i> , <i>Cryptolepis buchnaani</i> , <i>Heterostemma alatum</i> , <i>Adhatoda vasica</i> , <i>Clerodendrum philippinum</i> , <i>Colebrookea oppositifolia</i> , <i>Pogostemon Benghalense</i> , <i>Roylea cinerea</i> , <i>Hibiscus rosa-sinesis</i> , <i>Indigofera cassioides</i> , <i>Indigofera heterantha</i> , <i>Bauhinia vahlii</i> , <i>Rosa Brunonii</i> , <i>Inula cappa</i> , <i>Jasminum multiflorum</i> , <i>Trachelospermum lucidum</i> , <i>Buddleja necmdar</i> , <i>Periplcca calophylla</i> , <i>Buddleja necmdar</i> , <i>Brugmansia suaveolens</i> , <i>Duranta repens</i> , <i>Holmskioldia sanguine</i> ,	<i>Clematis buehananiana</i> , <i>Schizandra grandiflora</i> , <i>Mohonia borealis</i> , <i>Berberis lyceum</i> , <i>Berberis chitria</i> , <i>Zanthoxylum armatum</i> , <i>Picrasma guassioides</i> , <i>Euonymus tingens</i> , <i>Rhamnus virigatus</i> , <i>Rhus cortinus</i> , <i>Desmodium tiliaefolium</i> , <i>Prinsepia utilis</i> , <i>Punica grnatum</i> , <i>Lonicrea guinguelocularis</i> , <i>Viburnum cotinifolium</i> , <i>Randia tetraparma</i> , <i>Leptodermis lanceolata</i> , <i>Artemisia vulgaris</i> , <i>Cryptolepis buchnaani</i> , <i>Colebrookea oppositifolia</i> , <i>Roylea cinerea</i> , <i>Hibiscus rosa-sinesis</i> , <i>Euonymus echiatus</i> , <i>Indigofera heterantha</i> , <i>Spiraea cantoniensis</i> , <i>Inula cappa</i> , <i>Myrsine africana</i> , <i>Buddleja necmdar</i> , <i>Periplcca calophylla</i> , <i>Buddleja necmdar</i> , <i>Caryopteris odorata</i> , <i>Litsaea</i>	<i>Clematis buehananiana</i> , <i>Schizandra grandiflora</i> , <i>Berberis chitria</i> , <i>Zanthoxylum armatum</i> , <i>Picrasma guassioides</i> , <i>Euonymus tingens</i> , <i>Desmodium tiliaefolium</i> , <i>Prinsepia utilis</i> , <i>Rosa macrophylla</i> , <i>Rosa sericea</i> , <i>Lonicrea guinguelocularis</i> , <i>Viburnum cotinifolium</i> , <i>Leptodermis lanceolata</i> , <i>Rhododendron anthopogan</i> , <i>Euonymus echiatus</i> , <i>Rosa macrophylla</i> , <i>Rosa sericea</i> , <i>Spiraea cantoniensis</i> , <i>Myrsine africana</i> , <i>Rhododendron anthopogan</i> , <i>Litsaea umbrosa</i>	

<i>lucidum,</i> <i>Telosma cordata,</i> <i>Brugmansia suaveolens,</i> <i>Tecoma stans, Vitex</i> <i>negundo, Duranta</i> <i>repens, Holmskioldia</i> <i>sanguine</i>	<i>Caryopteris odorata</i>	<i>umbrosa,</i>	
49.BIO—FENCING			
<i>Murraya koenigii, Rhus</i> <i>parviflora</i>	<i>Mohonia borealis, Sageretia</i> <i>filliformis, Rhamnus virigatus,</i> <i>Rhus parviflora,</i> <i>Rhus cortinus, Coriaria</i> <i>nepalensis</i>	<i>Mohonia borealis,</i> <i>Zanthoxylum armatum,</i> <i>Sageretia filliformis, Rhamnus</i> <i>virigatus,</i> <i>Rhus cortinus,</i> <i>Rhus wallichii, Coriaria</i> <i>nepalensis</i>	<i>Zanthoxylum</i> <i>armatum, Rhus</i> <i>wallichii,</i>

5.36. Shrubs. At present per annum demand of forest products is 3.6 lacs m³ in hills. This demand is likely to be increased in near future. This enormous demand can only be met out if efforts are made to enhance the productivity of land. Shrubs may be one of the important tools in this regard. Shrubs may be advantageous in the following respects:

- They produce a variety of fruits, medicines, minor forest products like fibre, gum, lac and also provide fodder and fuel,
- Shrubs can be well adapted to the adverse climatic conditions and a variety of soils,
- Shrubs are suitable for soil conservation as their roots penetrate the soil densely. It helps similarly as iron rods in reinforced cement concrete,
- Being small, they can be pruned and easily managed,
- Being compact in size, these are resistant to high wind velocity,
- They can even be grown in areas having poor soil and dry conditions,
- They can be used for bio- fencing and
- Some shrubs are good for nitrogen fixing thus increase soil fertility.

5.37. Maintenance of Fire Lines:- Forest fires are a common feature in Himachal Pradesh, especially in fire adapted chir-pine forests. Almost all fires are man-caused (intentional or accidental). The total damage from forest fires is very large. Small trees and regeneration are often killed; severe fire can kill the large trees as well. Protection of forests against fires is one of the important operations in forestry. Fire lines of sufficient width are cleared of vegetation and maintained all around the forests and run criss-cross inside the forest so that a compact block or area is separated from other area. The width of these fire lines depends on many factors such as, type of forests, density, terrain, wind speed in the area etc. Such fire lines are usually cleared before the start of the fire season in order to avoid the spread of fires from one area to another.

5.38. NTFP Plantations:- The factors responsible for non development of NTFP in the State are classified under two primary headings:

- a) Wild Collected NTFP.
- b) Cultivation of NTFP.

5.39. Wild Collected NTFP:- Most of the collections methods are exploitative and non sustainable in nature. They, therefore, are not remunerative to the community. On the other hand non sustainable removal also results in putting tremendous pressured on these natural resources. Some of the main reasons are:

- a) Un-organized collection: Unorganized collection due to destructive harvesting and low returns to the collectors as their ability to bargain is compromised due to advances taken from the brokers.
- b) Authenticity Issues: Inability of the collectors to precisely identify the plant/ or mixing them up with similar species thus obtaining adulterated material. The authenticity is, therefore, disturbed due to contractual labours who are required to collect large quantities without proper knowledge.
- c) Unscientific Post Harvesting Handling: Most of the collecting households do not have the facilities for cleaning, cutting and drying. Unscientific handling at this stage results in loss of aroma, loss of colour and fungal attacks resulting in low returns.
- d) Lack of Management Control: This sector of forest produce is not managed at all. Non availability of field identification guides, lack of trained staff to guide people about harvesting restrictions to protect the species are also not exhorted.

To summarise it can be said that role of NTFP in local economy and in enhancing the standards of living have not received adequate recognition. It is, therefore, this area where large improvements are possible, if an organized effort is undertaken by the Forest Department in collaboration with the local population.

5.40. Cultivation of NTFP

The study carried out by the Mid Himalayan Project has also identified that cultivation of NTFP in the state has failed due to following reasons:

- Non availability of suitable land;
- Long gestation period of the produce;
- Lack of economical viability;
- Absence of demonstration fields;
- Non availability of certified Germ Plasma;
- Prohibitive investment unaffordable to small and marginal farmers;
- Lack of appropriate marketing support and
- Non supportive legal environment.

It can be seen that the problem areas are very well identified. N.T.F.Ps. in particular herbs and shrubs, can play a vital role in soil conservation. The CAT Plan, therefore, should have inherent interest in promoting the conservation of existing NTFP in the forest area and cultivation of NTFP in the non forest areas. Considering the economic potential of this produce, it can be of immense help to enhance the livelihood of the local population. However, although this seems to be the obvious choice of people and the Forest Department, there are numerous hurdles enroute. The Mid Himalayan study has identified the causes of failure to promote NTFP as a major source of livelihood.

5.41. Strategies to promote plantations of NTFP in Thana Plaun Catchment Area

The people of Himachal Pradesh are obtaining NTFP from the forests and considering that they have admitted rights for such cultivation, they can be expected to continue to do so. The strategy for soil conservation by enhancing NTFP must be planned to enhance the benefit to the population depending up such cultivation. There is a strong case for surveying the germ plasma and have artificial propagation through Forest Department Nurseries and thereafter planting them in the specified pattern of 13200 plants per hectare through public participation. The Forest Department will have also to do extension work either by itself or through the competent consulting agencies to enable the people to follow the correct harvesting practices. The strategy to promote soil conservation through plantation of medicinal plants will have to include:

- Strengthening resource base of NTFP Planting material;
 - Handling, cleaning and processing of the harvested produce;
 - Organising herb collectors and producers;
 - Creating an organised frame work for preliminary processing and marketing of NTFP.
- a. It is recommended that a Pilot Project be undertaken to experiment the participatory plantation, harvesting and processing of medicinal herbs. After a successful role model is

established, the same may be implemented. This CAT plan has made a provision of Rs. 180.36 Lakhs for NTFP Plantation in 55 Hectares in three areas in Tosh and Tulga beats.

- b. Under the Payment for Environment Services (PES), a provision is made to invest an amount up to 2% of total PES applicable to the project for investment into creation of centralized processing, Extraction, Handling, Drying, Packing and Marketing facilities so that a NTFP Cluster approach is created at Range level.

5.42. NTFP species in CCAT Plan Area:- A list of NTFP species with altitude is provided here under. The local forest authorities may choose from this list depending on their local preference. These are as follows:

A.Mid-Hills/ Middle MotaneZone	-Mildtemperate climate with annual precipitation of about 1800mm.	A.Trees	<i>Prunus armeniaca</i> (Chulli), <i>Juglans regia</i> (Walnut), <i>Celtis australis</i> (Khirik)
(800-1600m asl, covering about 32% of the total area and about 53% of cultivated area)	-Soil sandy loam to loamy. -Northern slopes bear good forests while southern and western slopes have grasslands.	B.Shrubs C.Herbs/ Grasses	<i>Vitex negundo</i> (Bana), <i>Berberis</i> sp. (Kahsmal), <i>Carissakarandas</i> (Karaunda) <i>Swertia chiraiya</i> , <i>Lilium polyphyllum</i> , <i>Habenaria</i> sp., <i>Lolium</i> , <i>Dactylis</i> , <i>Phleum</i> , <i>Phylaris</i> .
B.High Hills/ Temperate Zone (1600-3000m asl, covering about 25% of the total area and about 11% of cultivated area)	-Moist temperate climate with annual precipitation of up to 1500mm. -Soils loamy. -Lower areas have good forests and higher reaches bear extensive alpine pastures	A.Trees B.Shrubs	<i>Aesculus indica</i> (Horse Chestnut), <i>Alnus nitida</i> (Kunsh), <i>Juglans regia</i> (Walnut), Poplar. <i>Berberis aristata</i> (Kashmal), <i>Dioscorea deltoidea</i> (Shingli Mingli). <i>Podophyllum hexandrum</i> , <i>Meconopsis aculeata</i> , <i>Aconitum</i> sp., <i>Dactylorhiza hatageria</i> , <i>Festuca</i> , <i>Dactylis</i> , <i>Bromus</i> , <i>Lucerne</i> , <i>White Clover</i> , <i>Red Clover</i>
C. Cold Dry Zone (>3000m asl covering about 8% of the total area and about 3% of cultivated area)	-Dry temperate climate with annual precipitation of up to 200mm, with heavy winter snow. -Soils dry and fragile. -Scanty natural Vegetation.	A.Trees B.Shrubs C.Herbs/ Grasses	<i>Betula utilis</i> (Bhojpatra), <i>Juniper</i> sp., <i>Willow</i> . <i>Ephedra gerardiana</i> , <i>Artemisia</i> sp., <i>Juniper</i> sp., <i>Festuca arundinacea</i> , <i>Dactylis glomerata</i> , <i>Saussurea costus</i> , <i>Hissopus officinalis</i>

Source: Himachal Pradesh Mid-Himalayan Watershed Development Project Non-Timber Forest Produce as Livelihood Option for Rural Communities of Mid Himalayas in Himachal Pradesh page no 12-13

5.43. Pasture development:-It is observed that due to adverse climatic and geographic conditions/ factors, there is scarcity of grass and fodder in the CAT Areas. Large herds of sheep and goat are owned by the local people. In winter these herds are taken outside the CAT area in lower parts of Himachal Pradesh to be taken back during summer. Alpine pastures within the Catchment area and areas adjoining to it are the main grazing ground for these herds. These pastures are heavily grazed and there has been a decline in the quantity and quality of grass in these pastures. The productivity of these pastures has been decreasing gradually. For improvement of these pastures it is proposed to augment the existing grass production by way of:

- Patch sowing of palatable grass seed in 60x60x25 cm patches
- Broadcast sowing of seed after making pellets with cow dung
- Removal of obnoxious weeds and unpalatable grasses
- Application of Farm yard manure to augment fertility.
- Planting of grass tufts In 0.30x0.30 cm grid structure/trenches over ridge
- The special watch and ward for 35 Ha. / person @ Rs. 170 / Day for three months in a year during the period of transplantation and growth i.e from 15th March to 15th April plus 60 days for sub alpine pastures and from April 30th to May 30th Plus 60 days for alpine pastures.
- Awareness programmes: It is well appreciated that the plantation and growth of alpine pastures can best be done with consultation and agreement between the graziers and the forest department after adequate awareness generation. Having good pastures is the need of graziers as well. The CCAT Plan, therefore, provides for a lump sum amount of Rs. 300/ per hectare.

5.45. Plantation Process:-Normally, any plantation to succeed it should be provided with protection. However, at the heights of alpine pasture it is physically difficult and economically impractical to erect RCC Poles with barbed wire fencing. The second option which may be advocated by some is to make cattle proof trenches. Considering the problem faced by these areas due to water seepage during snow melt and the erosion that will be caused by such water seepage leading to landslips will be counterproductive. The pastures will need protection during its sowing stage and for the first 45 to 60 days thereafter. It is considered prudent and cost effective to provide for watch and ward staff for 90 days between the periods mentioned above. The same person can be tasked with and trained for communicating with the migrant shepherds.

- a. The plantation is carried out either by the pit method or by the strip method. In the present case, we have considered strip method with a combination of legumes and

grasses 50% each. It is recommended that the palletized grass seed be broadcast, in addition to tufts of grass being sown along with legume seeds. The suitable species and seed rate for these altitudes of grasses and legumes as researched by the “Regional Research Centre, Indian Grassland and Fodder Research Institute, Palampur” are as follows:

- b. **Grasses:** - *Lolium perenne*, *Festuca pratense*, *F. rubra*, *Phleum pratense*. In sub alpine areas *Festuca arundinacea*, *Phalaris arundinacea* and *P. Tuberosa* are also suitable.
- c. **Legumes:** - *Trifolium repens*, *T. pratense*, for subalpine areas, *Trifolium sub Terraneum*. *Lotus corniculatus*, *Medicago sativa* and *Onobrychis viciaefolia* are also suitable. In the context of the pastures, it is very important to create mixed vegetation so that the herbage availability is assured the season round. Depending upon the availability of seeds, it is recommended that the seeds of grasses and legumes should be sown in proportions.
- d. **Seed rate:** - The optimum seed rate for sowing of grasses is 5kg/ha excepting *Festuca arundinacea*. In this case the recommended seed rate is 6 kg/ha. In case of legumes the optimum seed rate is 5 kg/ha excepting *Lotus corniculatus* and *Onobrychis* for which a seed rate of 7 and 15 kg/ha, respectively may be applied.

5.46. Transplantation:- Nurseries of grass seedlings should be raised on well drained elevated soils 45 days before the date of transplantation. Manure @ 100 kg per hectare should be added. An ideal bed size would be 4m x 2m. Seed should be evenly spread on the soil and a thin layer of soil not more than 2 cms above the seed should be spread over it. Light shower with a sprinkler should be provided after sowing. The bed should then be covered with mulch which should be removed when the seedlings reach two leaf stages and the bed then should be irrigated regularly. The seedlings are ready to be transplanted in the pits/ strips when they are 20 cms long. Two hours before the transportation of seedlings to the site the bed should be flood irrigated. Thereafter, the seedlings can be uprooted and tied in small bundles or tufts and transported. At site the strip should be made ready after moving the sward and the soil cleaned and dug upto 10 to 15 cms. At site the upper portion of the seedlings should be chopped off and length of only about 10 cms from base should be maintained for the seedling. Minimum of two seedlings should be transplanted at one spot and these spots should be 10 cms apart.

5.47. Time of sowing:- For the best survival of the seedlings of grasses and legumes, sowing should be made during March and April in sub alpine areas and during April and May in Alpine region. The survival rate will be adversely affected if the sowing time is at variance than that recommended in the spring. Exact time may have to be determined after considering the time of snow melt availability of clear pasture area and weather conditions.

5.48. Application of Fertilizers:- In case of grasses the best response and growth is found by application of 90 kgs of Urea per hectare whereas for legumes best response is found with 60 kgs of p2o5. It is recommended that 90 kg N plus 60 kg p2o5 may be applied to the resown pasture

in three instalments; first the basal application; second after the growth of seedlings to about 30 cms and third application should be made at initiation of boot stage i.e. when the developing seed head begins to push through the uppermost leaf sheet and the plant stops elongating. This is the reproductive stage and is the period when the seed head develops, pollination occurs and the new seed develops.

5.49. Post sowing activities:-The next stage of operation will be the next year and identical to the first. The interspaces of strips should be replanted in the same way as described above to ensure greater spread of the desired grasses. The newly transplanted/ resown grasses will need one year for establishment. The entire area should not be planted in one go. Half the area should be improved and protected from grazing for one year and it may be opened for grazing in the following area when the rest of the area may be resown or transplanted. In order to maximize production, regular management practices like fertigation and regulated grazing need to be followed.

5.50. Handling of Invasive Species:

During the field visits the problem of invasive species proliferation was discussed with forest officers and his staff. It was decided to make specific provision to handle invasive species. All areas of new plantations are given an additional provision for removal of invasive species such as Lantana, Eupatorium. The cost of eradication as per the present CAMPA rates is rupees 12200 Per hectares, and the cost for plantation of indigenous grass is rupees 15800 per ha. This CAT Plan provides a norm of Rs. 15050/- per ha. for handling invasive species and lantana eradication.

5.51. Silvo Pasture Development:

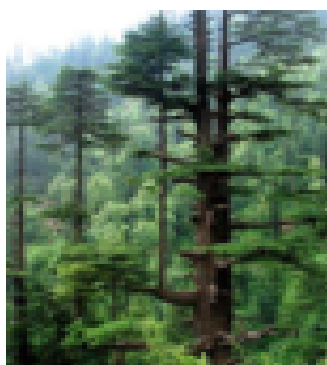
Silvo Pasture Development is described as a component of Forestry and grazing of domestic animals in a mutually beneficial way. It also enhances the soil protection by increasing long term income for people while producing trees and fodder for the grazing animals.

5.52. Measures to handle Invasive species:- Under this component, the area infested with invasive weeds like lantana is normally proposed to be undertaken. The invasive weeds are to be eradicated and planted with 800 No of plants per Ha.(i.e. 300 Nos. tall plants and 500 Nos. Herbs) including sowing of native grass seeds. Extensive use of local grass to be broadcast over the area being treated is recommended.

CHAPTER 6

GUIDELINES FOR WILD LIFE & HABITAT CONSERVATION

6.1 Wildlife Habitat Management: -



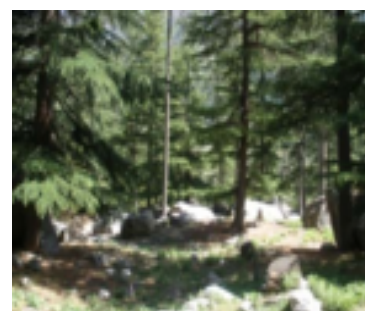
The wild life in Himachal needs special attention and efforts. It is important to maintain and protect the natural vegetation communities, populations of large ungulates (with emphasis on Himalayan species), carnivores and pheasants; Protection of unique WL habitats such as gorges, burrowing sites of Wild life. A few steps in the CAT Plan of Thana Plaun will go a long way in achieving this objective.

6.1.1 To maintain and protect natural vegetation: -

a) New Plantation:

Under this component planting of 1100 plants per Ha out of which at least 20% would be trees of medicinal value and 10% of wild fruits species to maintain diversity is suggested. Brush wood Fencing is suggested as per DFO WL Suggestion.

But in higher altitude areas considering various ground realities such as soil type, slope etc. only Conifers Plantation & deciduous Herbs and Shrubs plantation has been prescribed under this component. (Refer annexure no 11 for cost norms)



b) Enrichment planting:

Under this component the area falling under degraded forest and improvement of the forest stocking has been proposed which aims at planting 800 tall plants per notional Ha. (Refer appendix no C for cost norms)

c) Energy plantation:

Under this component plantation of trees which are harvestable in comparable shorter time and are specifically meant for fuel is recommended. Such plantation provides almost inexhaustible renewable sources of energy which are essentially local and independent of unreliable and finite sources of fuel. The main feature of this sub component is fuelwood plantations which will reduce pressure on regular forests for fuelwood requirement of local population.

d) Pastures.

It is observed that there is tremendous pressure due to overgrazing by both wildlife as well as domestic cattle in this area. The CAT plan therefore provides for developing pastures.

6.2. To Conserve and protect wildlife species the following are suggested:

6.2.1 Rewalsar Wildlife Research Training and Rescue Centre (RWRT&RC): There is a need to do in captivity breeding of endangered species such as those of the pheasants of Hmachel. Similarly there is a need to provide rescue, treatment and care for injured or orphaned native animals that are victims of vehicle collisions, dog or cat attack, trapping, shooting or electrocution. The goal is to relieve the stress of these unfortunate animals and ideally to rehabilitate them back to the wild in a fit condition to ensure their rehabilitation and release with minimum human imprint. There is a need to carry out an in-depth study in the best practices followed by wildlife rescue centres in caring for orphaned, injured and old animals of the wild. Such a Centre will necessarily need separate sections for rodents, reptiles, mammals and an aviary with adequate veterinary staff and equipment. Provisions are made for establishment of the facility for Research and Training is made under the Heading for strengthening of Forest Infrastructure. It is strongly recommended that the Rewalsar Zoo with an area of 4.5 hectares be expanded to include the adjacent DPF of 39.5 hectares, thus, providing it with an area of 44 hectares. It is seen that increasing population of Sambar is resulting in damage to trees and a larger enclosure and larger no. of trees are required for them. The CAT Plan provides for building infrastructure at a cost of Rs.15570400/- for the Research Centre Facility of 2000 sq. meters together of residential accommodation for all the officers and staff. Additionally a hostel to accommodate visiting Research Scientists/ Research Students is also provided. Standard 4 Strand Barbed Wire with RCC Fence with vegetative barriers of thorny bushes is provided for entire 40 hectares. A provision of Rs. 25 lacs is included under Infrastructure for purchase of Laboratory Equipment.. The wildlife component provides for pay of Research and Veterinary Staff of the Research Centre as well as for laboratory consumables and mobility support for 10 years at a cost of Rs.27841976/- A separate provision is made under Research Training & Capacity Building Component for training of territorial forest staff in handling of wildlife. A total amount of Rs. 6,25,000 under this heading is to be clubbed together and administered through RWRT&RC. Similarly, this Centre will also carry out training for nursery staff of the ranges under the CAT Plan and a further provision of Rs. 12,20,000 is made for 10 years for this purpose.

6.3 Protection of forest and wildlife through Publicity and awareness.

Awareness programs like Exposure Visits for Public/ Workshops/ Painting competitions in Schools etc. may be effective for protection of wildlife and forest. A Lump sum provision is made for this purpose under APO's.

b) Gene Pool Conservation and Conservation Breeding Program.

i. The genetic resources of Wildlife in the area are already identified and are also well documented. The status of these resources has also been studied through various Research Studies carried out in this area. The need for conservation of gene-pool is already well known. This CAT Plan, therefore, has made provisions for gene-pool conservation for both flora and fauna. In so far flora is concerned, a Research & Development Tissue Culture Laboratory is provisioned at the Riwalsar Wild Life Research, Training and Rescue Centre together-with a state-of-the-art nursery with poly-houses, shade-houses and so on.

iii. Captive breeding is the process of breeding animals in human controlled environments with restricted settings, such as wildlife reserves, zoos and other conservation facilities; sometimes the process is construed to include release of individual organisms to the wild, when there is sufficient natural habitat to support new individuals or when the threat to the species in the wild is lessened. Captive breeding programs facilitate biodiversity and may save species from extinction.

CHAPTER 7

GUIDELINES FOR SMC MEASURES

7.1. INTRODUCTION-

7.1.1. Check Dams: Check dams are small, sediment-storage dams built in the channels of steep gullies to stabilize the channel bed. They are commonly used in all countries to control channelized debris-flow frequency and volume. A less common use of check dams is to control raveling and shallow slides in the source area of debris slides. Channelized debris flows are associated with channel gradients over 25 degrees and obtain most of their volume by scouring the channel bed. Check dams serve three purposes when installed in the channels:

- To mitigate the incidence of failure by reducing the channel gradient in the upper channel.
- To reduce the volume of channel-stored material by preventing down Cutting of the channel with subsequent gully sidewall destabilization and by providing toe support to the gully slopes.
- To store debris-flow sediment, when installed in the lower part of the channel.

When installed on debris slides, the dams store raveled material, which eventually creates small terraces on the slide, reducing the surface slope. The spacing of dams depends on channel gradient and dam height. For example, a 2-m-(6 foot) high dam in a 20-degree channel with 10-degree sloping channel infill will be spaced every 12 m (36 feet). Lateral stream erosion and scour by spillway water are the main drawbacks.

7.2. Measures to be taken to prevent check dam failure:-During construction, the wing walls and log crib ends must be tied securely into the canyon wall and streambed to withstand backfill pressures and lateral scour. Wing walls should slope at about 70 percent and extend a minimum of 1–2 meters (3 to 6 feet) into the banks. The foundation of the dam should have a minimum width of one-third the total height of the dam and be deeper than any scour holes likely to develop. Backfilling the dam, rather than allowing it to fill naturally, reduces the dynamic loading on the structure and results in a more stable design. The slope of the backfill should be less than one-half the channel gradient. Dams that have been back-filled usually will survive a debris flow. The backfill material will not be scoured during or after a torrent.

7.3. Proper drainage management:-Inappropriate & in-adequate drainage management is very commonly observed in majority of slides investigated in MWs. Water infiltration in the overburden during heavy rains and consequent increase in pore pressure within the overburden reduces the strength of the material and causes sliding of the landmass. This can be minimized by reducing infiltration by providing adequate drainage network. In this regard, a dual-pronged strategy must be adopted such as reducing flow of water into the vulnerable slope material by constructing interceptor drain, trench drain, diverting side drains and by channelization of all drains and second, by draining out the remaining water by horizontal to sub-horizontal drainage system (using perforated pipes) including construction of collection chamber and diverting the water to existing channel and removal of any blockade to existing drainage system. Most

important, all drainage systems need regular maintenance and surveillance for detecting any change in the flow pattern or pore water pressure by installing inexpensive piezometers at selected locations.

7.4. Ditches and drains:-Surface drainage can be through either surface ditches or shallow subsurface drains. Surface drainage is especially important at the head of the slide, where a system of cutoff ditches that cross the headwall of the slide, and lateral drains to lead runoff around the edge of the slide are effective. Ditch gradient should be at least 2 percent, to ensure rapid flow away from the unstable area. The simplest type of subsurface drain is the lateral trench constructed above an unstable slope. Drainage trenches are economical only for shallow soils overlying bedrock or hard impermeable till. The trenches should be excavated to the base of the shallow soil to intercept any ground-water flow along the failure plane. They are backfilled with coarse gravel to prevent sloughing of the ditch sidewalls. An improvement is to use drainpipe and then backfill the area with coarse gravel. Engineering measures are more effective in conserving soil and water when they are supplemented by vegetative methods. But in certain situations, only engineering measures can be proposed. This section gives a brief about the various engineering measures that are suggested for soil and water conservation for the project area. These measures have been suggested after site visits carried out by the group of experts. About 8 different types of structures with varying dimensions have been suggested for the project area. These engineering structures are as follows:

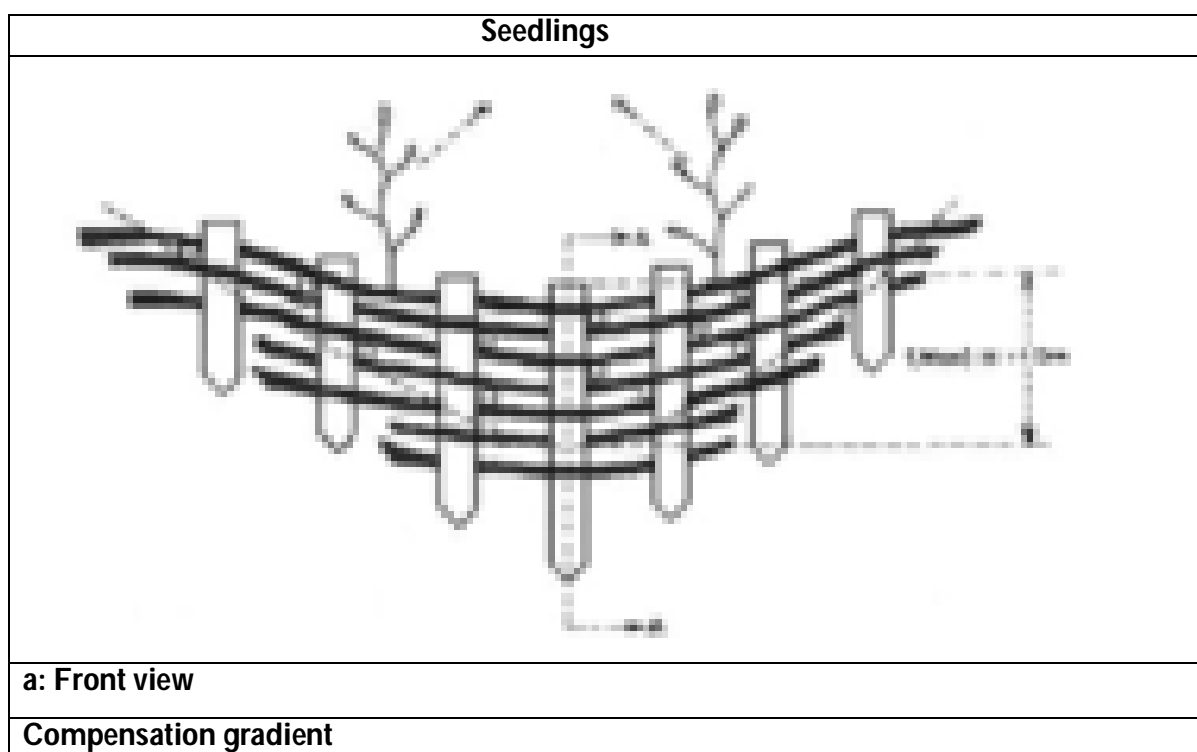
- Check dam
- Check/Retaining wall
- Deflecting spur
- Lined Gabion with Non Permissible Geomembrane
- Diversion drain
- Silt Detention dam
- Water harvesting structure
- Toe wall

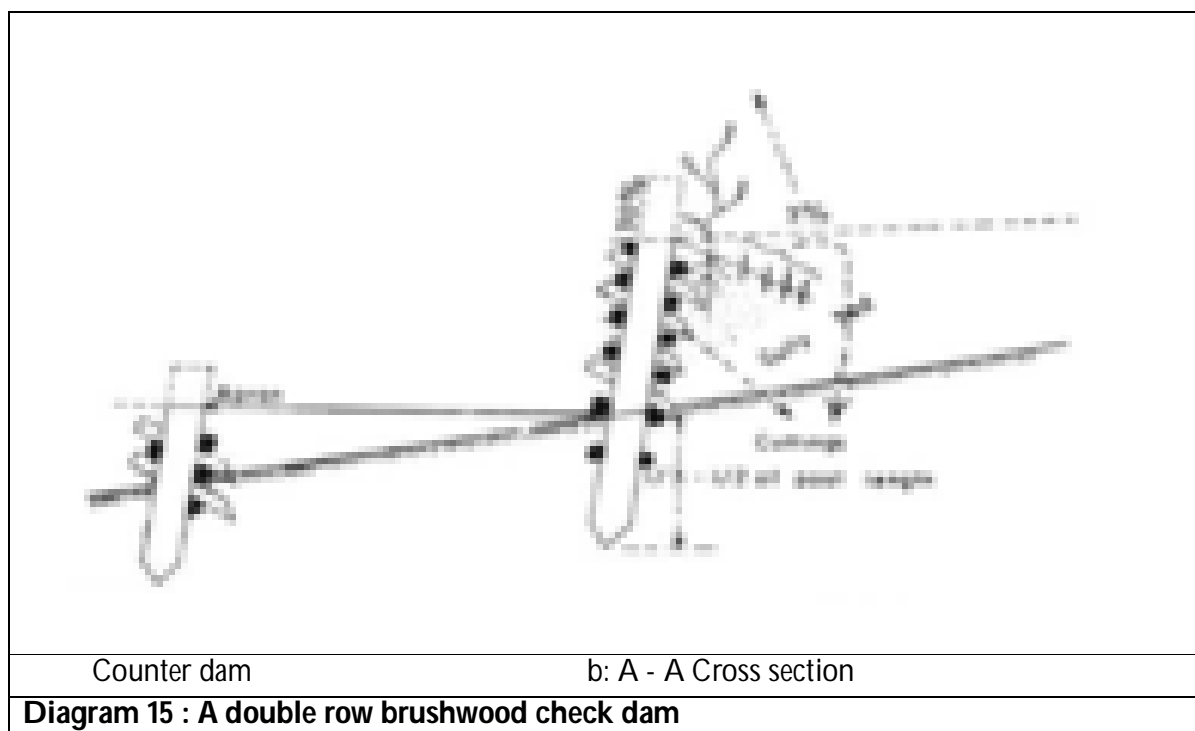
These structures have been defined with fixed width and height and the length varies as per the requirements of the treatment site. The cost of each structure varies with the length. These measures have to be selected depending upon the site's topography and weather. Conditions like torque and stress caused by wind and water also need to be considered before constructing these structures. The drawings and cost estimates for the different soil and water conservation measures are given *ibid*. Some of the most common prevalent practices which are easy to follow are given hereunder with drawings for ready reference:

7.5. Gully Plugging and Nala Control:-In control of gullies and Nallas the erosive velocities are reduced by flattening out the steep gradient of the gully by constructing a series of checks which transform the longitudinal gradient into a series of steps with low riser and long flat treads. This involves construction of check dams (vegetative, stone and crate wire or wire mesh check dams). Spur walls and retaining walls can also be constructed for bank protection to save valuable agricultural fields from being

cut up. Mechanical measures (check dams) are supplemented by planting in gullies behind check dams. All gully or nala control work should start from the top of gully/nala and this activity must cover both non-arable and arable land. The stabilization of gullies through vegetation is difficult task as gullies have to be used for conveying run off during the time vegetative measures are undertaken and these measures get damaged by runoff. Therefore, mechanical measures have to be adopted to prevent washing away of vegetative measures by large volume of runoff. Vegetation once established is able to take care of gully. Thus mechanical measures, temporary or permanent, are necessary in gully control to be supplemented by vegetative measures since mechanical measures weaken and vegetative measures get strengthen with the passage of time. Following types of check dams are being suggested under mechanical measures.

7.6. Brushwood check dams:-The main requirement of temporary control structures is that they must be quick and easy to construct and use cheap readily available materials. In brushwood check dams small branches preferably of coppice able species are fixed in two parallel rows across the gully or nala and packed with brushwood between the rows of these vertical stakes (Diagram 15) .The vertical stakes can be tied down with wires or fastened with sticks across the top. The important point in erecting brushwood check dams is to pack the brushwood as tightly as possible and to secure it firmly. Brushwood check dams are generally meant for small gullies or at the starting stretch of the gullies.





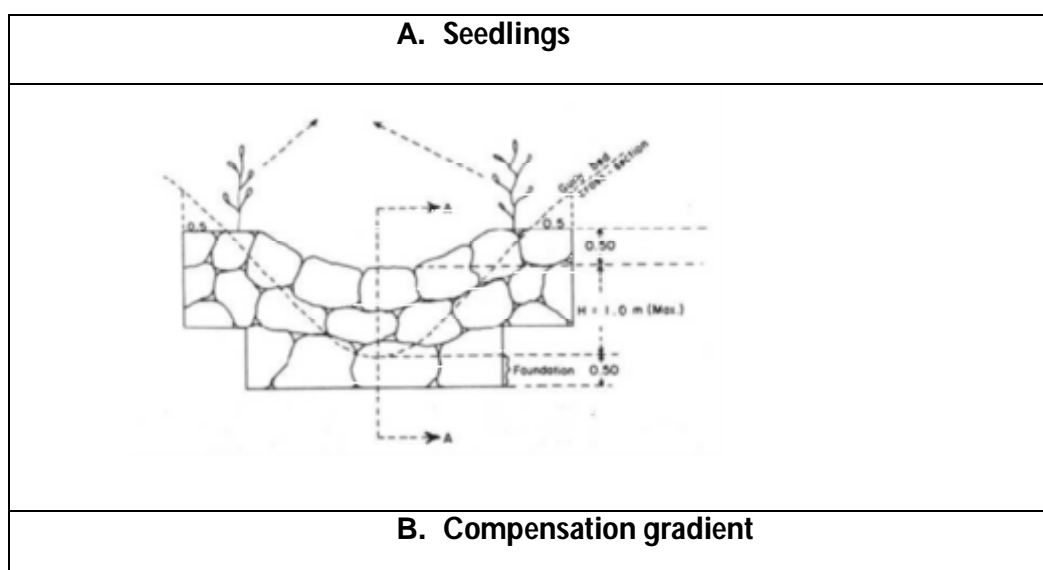
Posts are set in trenches (0.3 x 0.2 m in size) across the gully to a depth of about 1/3 to 1/2 of the post length, and about 0.3 to 0.4 m apart. The length of the posts is 1.0 to 1.5 m and their top-end diameter is 3 to 12 cm. Any tree or shrub species, such as *Alnus*, pine, bamboo, *Salix*, poplar, etc., can be used as posts. The flexible branches of trees (*Salix*, Poplar, *Gliricidia*, *Cassia*, etc.) flexible stems of shrubs (*Tamarix*, *Arundinaria*, etc.), and the strips made of bamboo stems may be used as interlink material. These materials are woven between wooden posts driven into the ground. The ends of interlink materials should enter at least 30 cm into the sides of the gully. The space behind the brushwood check dams must be filled with soil to the spillway. If sprouting species (*Salix*, Poplar, etc.) are selected as posts and interlink materials, brushwood check dams should be constructed when the soil in the gully is saturated or during the early rainy season. If non-sprouting species (pine and *Alnus* as posts, bamboo strips as interlink materials) are used, brushwood check dams can be constructed during any season.

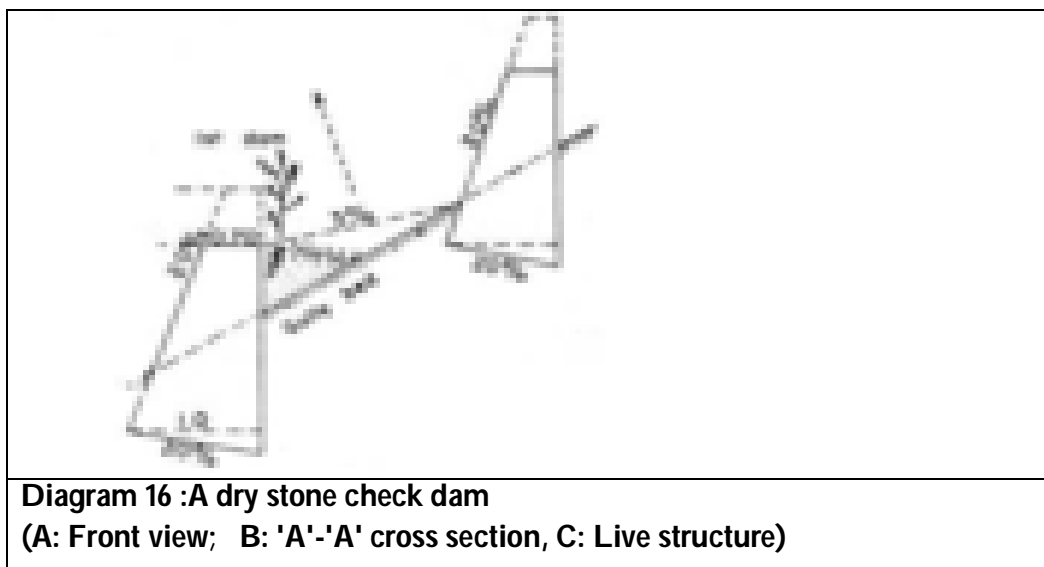
7.7. Stone check dams:-For constructing R.R. dry stone check dams, the site where it is to be constructed is cleared and the sides are sloped 1:1. The bed of gully is excavated for foundation to a uniform depth of 0.45 m to 0.60 m and dry stones are packed from that level. Over the foundation, R.R. dry stone masonry super structure of check dam can be constructed. The stone are dressed and properly set in with wedges and chips. The width of check dam at the base should be approximately equal to maximum height and successive courses are narrower so the section is roughly a trapezium. It is common to find upstream face of check dams vertical with all slopes on the downstream face but while there is sound engineering reason for this in case of large dams but it is not of any consequence in small gully control dams. In the

centre of the dam portion sufficient waterway is allowed to discharge the maximum run off. The dry stone work should go up to 0.30 m to 0.60 m in the stable portion of the gully side to prevent end-cutting. Sufficient apron should be provided to prevent scouring of the structure. The thickness of the apron packing should be about 0.45 m and gully sides above the apron have to be protected with packing to a height of atleast 0.30 m above the anticipated maximum water level to prevent side scour being formed by the falling water.

7.8. Crate wire or wire mesh check dams:-

When a dry stone check dam is held down with woven wire netting, the life and strength of the structure is enhanced many fold. The mesh of wire is generally 0.15 m x 0.15 m and care should be taken that stones used are larger than the mesh size so that stones do not pass through the mesh. The wire netting is spread below the stone foundation and in the sides before stone work and after completion of stone work the wire netting is tied, covering the masonry tightly so that the whole structure becomes one piece. The stability is secured by careful masonry work, setting and wedging. Wire mesh stone check dams have proved very useful and more lasting than ordinary stone check dams (Diagram 16). However, in our opinion this practice must be discontinued and machine woven gabion must be used.





A dry stone check dam

7.9. Diversion Drains:- Diversion drains intercept the storm water which could otherwise flow down from higher ground on to the arable land which it protects. It is the first line of defence and vital for protection systems and structures below down as it effectively controls the runoff from outside the arable land and conducts it safely to natural outlet. The diversion drains should be aligned on non erosive and non silting grades. It must also be protected from silting. A narrow and deep ditch does not get silted up as rapidly as a broad and shallow ditch of the same cross sectional area and is therefore, self maintaining. The soil excavated from the diversion drain shall be deposited on lower side of the drain, leaving a berm of 0.30 m and sectioned in a trapezoidal shape with side slopes not steeper than 1:1. The outlet end of the diversion drain should be taken to the existing or stabilized safe natural drainage lines or outlets so as to conduct the run off

properly without causing erosion. Suitable spreading type of grasses must be planted. *Panicum repens* has been found the best for the alluvial soil of Dehradun followed by *Brachiaria multica*, *Cynodon plectostachys*, *C. dactylon* and *Paspalum rotatum* (Sharda et al., 2006). The maintenance operations include periodical removal of weeds, filling of the patches with grass and proper cutting of grass.

7.10. Leveling /Bench Terracing Of Sloping Cultivation Fields:-Bench terracing is one of the most popular mechanical soil conservation practices adopted by the farmers in India and other countries. In the hills, intensive farming can only be adopted with bench terracing. It consists of construction of step like fields along contours by half cutting and half filling. Original slope is converted into level fields. Thus hazards of erosion are eliminated and manure and fertilizer applied are retained in the field. However, in hill areas, most of the cultivation fields are sloping and improperly terraced. These sloping fields need to be bench terraced by cutting and filling with filling supported by retaining stone wall (Diagram 17 and 18) .Terraces may be designed to collect runoff expected from storm of 4 years recurrence interval and 6-hour rainfall. For planning contour trenches, their horizontal and vertical spacing have to be decided. The trench cross section of trapezoidal, rectangular and triangular shape is usually constructed for runoff impoundment. The relationship between the spacing of the trenches, area of cross section and expected runoff can be expressed as follows (Sharda et al., 2006)

$$\text{Spacing(inmeters)} = \frac{\text{Crossectionareaofthetrench(cm}^2\text{)}}{100 \times \text{Expectedrunoff(cm)}} = \frac{Q}{A}$$

For continuous trenches, the following formula may be used for working out the horizontal spacing, assuming the trench to be rectangular

$$\text{HI (in meters)} = \frac{A \text{ (cm}^2\text{)}}{100 \times Q}$$

Where,

Q	=	Depth of the expected runoff from the area (cm)
W	=	Width of the trench (cm)
D	=	Depth of the trench (cm), and
HI	=	Horizontal Interval (m)

For staggered trenches, with the in-between gap not equal to the length of trench

$$\text{HI} = \frac{W \times d}{100 Q (1 + X/L)}$$

Where,

X = Gap between the trenches

L = Length of the trench

The vertical spacing between the trenches is determined by the equation

$$VI = \frac{S}{100} \times HI$$

Where,

VI = Vertical Interval(m),

S = Landslope(%) and

HI = Horizontal Interval(m).

Trench specifications designed to store 25 mm runoff produced by 4 years 6 hours storm of 80 mm on different land slopes is given in Table 20 and Diagram 17.

Table 20: Trench specifications to store 25 mm runoff

Slope(%)	Trench+spoil bankwidth(m)	HI(m)	VI(m)
10	1.65	5.50	0.55
20	1.85	5.50	1.10
30	2.10	5.50	1.10

(After Sharda *et al.*, 2006)

Diagram 17: Trench specifications to store 25 mm runoff on different land slopes

Farmers are generally interested in the construction of irrigated (levelled) bench terraces for reason of higher productivity. The specifications of such terraces are mentioned in Table 21 which shows that by constructing a steep stone riser, the area lost due to bench terracing is reduced considerably (Diagram 18). The shoulder bund may also be put under leguminous crops like beans or peas.

Table 21 : Specifications for irrigated benches in N-W Himalayas

Slope (%)	VI (m)	Bench width(m)	Terrace width (HI)	Depth of cut (m)	Depth of soil required(m)	Bench length (m)	Area lost(%)
7	0.6	8.5	8.6	0.3	0.6	1163	1.4
10	0.75	7.5	7.6	0.4	0.7	1307	2.0
20	1.0	5.0	5.2	0.5	0.8	1923	3.8
30	1.2	4.0	4.2	0.6	0.9	2358	5.6
40	1.5	3.8	4.0	0.8	1.0	2469	7.4
50	1.8	3.5	3.9	0.9	1.2	2590	9.3

1=(After Sharda *et al.*, 2006)

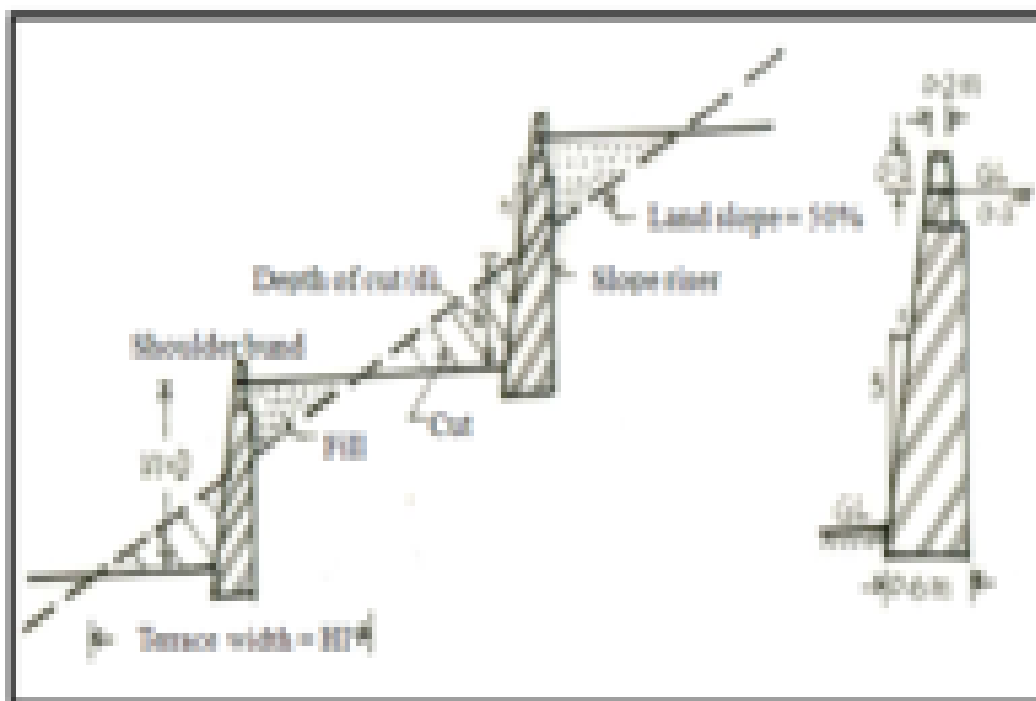
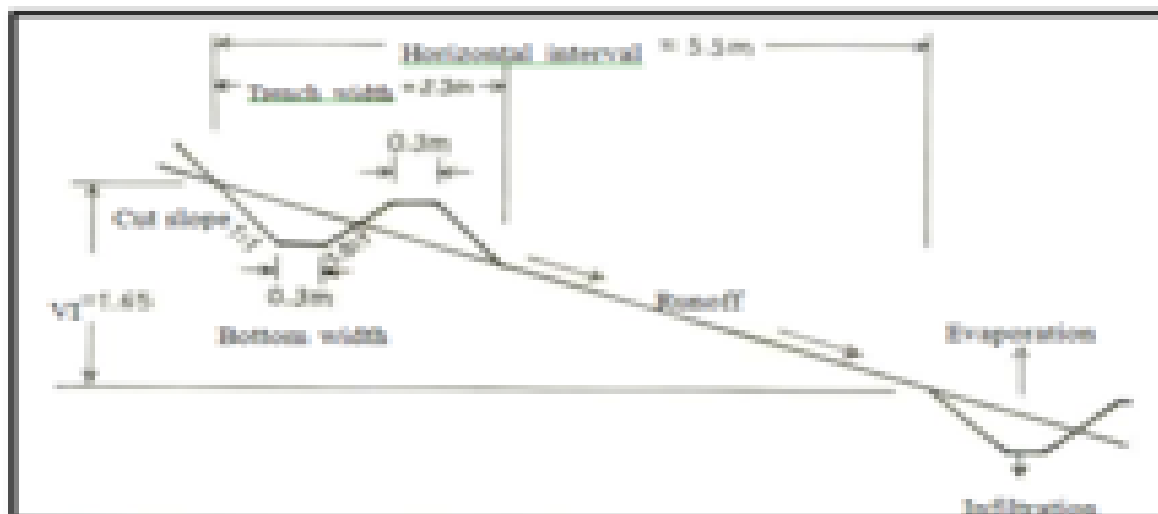


Diagram 18: Bench terrace constructed by cutting and filling

7.11. Contour Trenching

Contour trenches are widely used for moisture conservation in plantation areas. It is a practice of excavating trenches along a uniform level across the slope of land. Bunds are formed along the trenches on the downstream side with material taken out of them. The expected service life of a trench is about 3 to 4 years, after which, the vegetation is supposed to perform the conservation function. Contour trench break the velocity of runoff and store whole or part of runoff. If contour trenches are constructed on the slope at the interval, just before runoff water attains erosive velocity; their life will be much more. Trenches should be designed to store 60-70 per cent of runoff from 6 hours storm with 4 years return period in coarse textured soil (Sharda et al., 2006). The intercepted runoff percolates through the soil slowly and is made available to the plants. The structural details of a contour trench have been mentioned in Diagram: 19.

They are normally used in the upper portion of watershed for the plantation of forestry/horticultural plants. Fodder grasses should be planted on the bund and trees may be planted just downstream of the trench or in the trench itself in gravelly soil. Contour trenches are of two types:



a) **Continuous trenches:**-The trenches are called continuous when there is no break in length and can be 10-20 m long across the slope depending upon the width of the field. Trenches are generally used in low-rainfall areas and dug with a cross section varying from 30 cm to 45 cm x 45 cm.

Diagram 19: Sketch of a contour trench showing various details

b) **Staggered trenches:**-These are generally made in high rain fall areas as there is a danger of overflow and breach in case of continuous trenches in such areas. In staggered trenching, the trenches are located directly below one another in alternate rows and in a staggered fashion. These may be 2 m to 3 m long and the spacing between the rows may vary from 3 m to 5 m

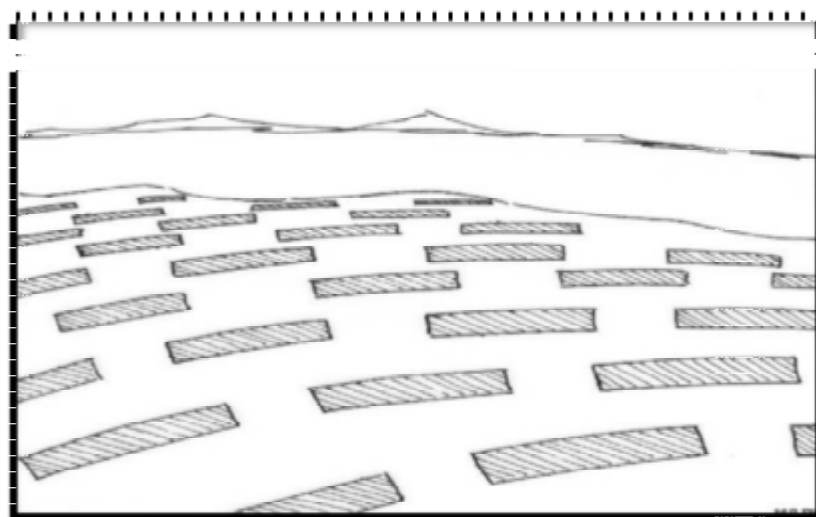


Diagram 20: Staggered trenching

7.12. Stabilization of Landslides:-

- a) **Stream bank protection:-**One of the main reasons for the frequent occurrence of landslides in the hill areas is toe cutting by streams and rivers. In order to confine the flow and protect the bank, construction of spur walls/retards is desirable to deflect water of torrents from toe cutting of banks particularly at the curves. As a matter of fact R.C.C. block spur wall involves large scale work with heavy cost. Therefore, wire mesh boulder or stone spur walls must be constructed as there is no dearth of boulders or stones in the hills. A method for locating the spur wall or retard is shown in Diagram 21. The first major retard at A is located by the intersection of the projected centre line of flow with the concave bank. In locating the second major retard C, a line HB is drawn parallel to the above projected centre-line and through the end of retard A. The intersection of this line with the concave bank locates point B. AC is then made equal to twice AB. Additional retards are located by intersection of a line connecting end points of two previous retards with concave bank (see D). An auxiliary retard at K is located at a distance AB upstream from A and is extended into the stream about one half the lengths of other retards.

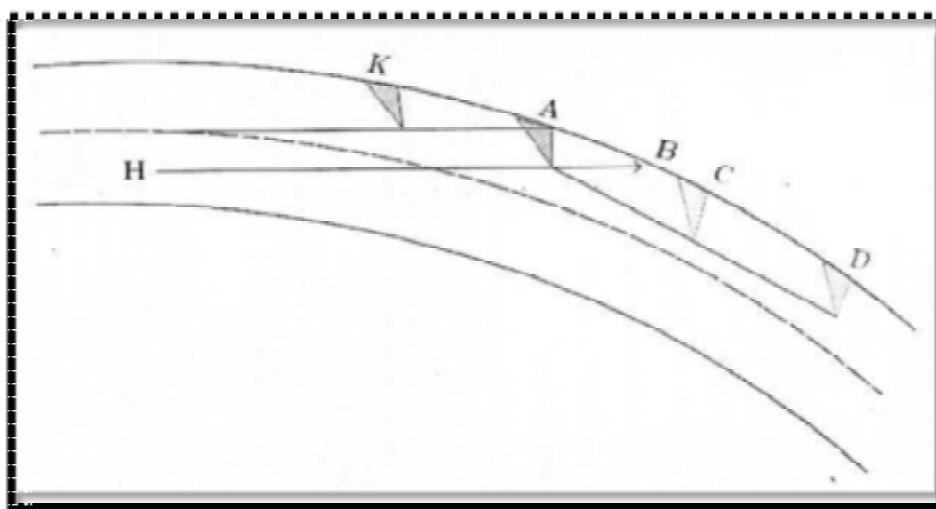


Diagram 21: Design and location of retards

- b) The retard of spur walls should extend into the stream at an angle of 45 degree for a distance of about 30 per cent of the channel width. On small streams the spacing of retards may be made equal to stream width and length 0.25 times the spacing. In the silt setting between parallel lines of spur walls, species which grow well near stream beds should be planted e.g. *Alnus nepalensis*, *Ipomoea carnea*, *Populus ciliata*, *Salix*, *Vitex negundo* and local grasses etc.

c) **Stabilization of Land Slipped Slopes:-** Following measures are suggested for stabilization of land slipped slopes:

- i. **Protective measures against biotic pressure:-**Four strand barbed wire fencing should be erected around the affected area to prevent cattle, sheep, goats and other animals grazing in the area.
- ii. **Structural measures:-**Stone retaining walls along contour should be constructed to withhold and help in stabilizing the land slip.
- iii. **Vegetative measures:-**Slip area should be planted and well covered with quick establishing species of trees and shrubs e.g. Agave, Alnus nepalensis, Ipomoea, Populus ciliata, Salix, Vitex, Woodfordia, etc.
- iv. **Covering with netting:-**Wherever possible land slipped slopes should be provided with cover of wire netting, rope netting or sack (coarse jute fabric) etc. including wattling and mulching. Several types of netting can be used woven with wire, jute yarns or cannabis ropes etc. To use these nettings, slopes should be smoothened, seeded and fertilized and layer of mulch is spread and the netting unrolled over the mulch and anchored by wire staples.
- v. **Diversion channel:-** Diversion channel well above the landslide can check rain water coming to fragile site and divert it to safe natural course nearby.

7. 13. **Development of Natural Ponds, Lakes and Springs:-**Ponds and springs in the hills are of small size while lakes are quite large. Development of ponds and springs in the forest areas should be done according to the local conditions after consulting the villagers. If during consultation with the villagers technical shortcomings come to light, solutions should be decided again in consultation with the villagers for which a plan should be worked out keeping the following in mind:

- i. Topographic survey of ponds and springs falling in the area
- ii. Identification of problems such as premature silting, diversion of rain water, soil erosion etc. in the area.
- iii. Consultation with the local people and users.
- iv. Knowing the object of ponds, springs and lakes such as drinking water for cattle, irrigation and drinking water, seasoning of branches of 'Bhimal' and 'Bhang' for extracting fibre or any other purpose.

Few Soil Conservation Measures Structures Plate-5



Crate wire with loose boulders



Drain line treatment with stone wall.



Stream bank protection

7.14. Bio-Engineering:-Bio-engineering is the use of vegetation, either alone or in conjunction with civil engineering structures, to reduce instability and erosion on slopes. Bio-engineering is an effective way of enhancing civil engineering structures to increase stability as far as possible. This is mainly because it provides the best way to armour slopes against erosion, and can also provide a significant contribution to soil reinforcement and other anti-failure measures (Transport Research Laboratory, 1997). These bio-engineering measures have the following salient features:

- Involve use of local available materials and skills providing benefits through economically useful products.
- cost effective
- better slope stabilization and erosion control
- Designed as per prevailing condition of the site
- Environment friendly solution to stabilize cut slopes along the road alignment.

Under most circumstances, bio-engineering can be effectively combined with appropriate and low cost geotechnical applications to provide the most cost-effective, integrated solution to slope stability problems. This is important for places like Himachal Pradesh because, with the steep and dynamic slopes found in the Himalayas, most hill roads are engineered near to the margin of safety. The vegetative structures are also flexible, being capable of absorbing movement and recovering from damage. In this respect, bio-engineering is simply part of wise and sustainable asset management since it helps to ensure the life of physical structures, and reduces overall maintenance costs. Roadside plants reduce the flow of debris from degrading slopes. Debris is one of the greatest contributors to soil erosion and road maintenance costs through blocked drains and damaged pavements.

Table 22: Plantation types and Design and Function

Sr. No	System Type	Design And Function
1.	Grass Planting	Grass seed is spread on to the slope, armouring the surface. Alternatively, grass is hand-planted in lines
2.	Shrub and Tree Planting	Shrubs or trees are planted at regular intervals on the slope. As they grow, they create a dense network of roots in the soil. The main engineering functions are to reinforce and, later, to anchor. In the long term, large trees can also be used for slope support
3.	Brush Layering, Palisades and Fascines	Woody cuttings are laid in lines across the slope, usually following the contour, in particular configurations. These form a strong barrier, preventing the development of rill, and trap material moving down the slope. In the long term, a small terrace will develop. The main engineering functions are to catch debris, and to armour and reinforce the slope. If they are angled, these

Sr. No	System Type	Design And Function
		structures can provide a drainage function
4.	Composite Systems	A range of composite systems are commonly used. Examples are: Live check dams, which armour and reinforce gully beds and catch debris; vegetated stone pitching, which provides strong armour for ephemeral water courses; planted geo-textiles, where the geo-textile provides the armour, later supplemented by the vegetation, which also reinforces the soil.

7.15. Use of Bio-engineering in Slope Stabilisation and Protection

Vegetation can provide protection and reinforcement of backfill and surrounding slope areas, protection from scour and the undercutting of the foundations and sides of structures and a flexible extension to a wall through large bamboos, shrubs or trees close to it adding to the engineering functions of catching, supporting and buttressing. In practice, slope stabilisation depends on the use of a retaining structure, which can be drawn from a menu of standard and specialist techniques such as those shown in Table below.

Table 23: Comparison of Retaining Wall Types

Wall Type	Maximum Safe Height (metres)	Typical width: Height Ratio	Advantages	Limitations
Dry masonry	4	1:1 to 0.6:1	Well drained, flexible, relatively low in cost and blends well with the surroundings.	Low strength threshold (susceptible to lateral pressures and traffic vibrations); limited height of construction.
Composite masonry (crib construction)	8	0.75:1 to 0.5:1	Better drained and cheaper than mortared masonry.	Strength not as good as for mortared masonry.
Mortared masonry	10	0.75:1 to 0.5:1	Relatively easy to construct on steep terrain; most durable wall type	Requires good foundations and cannot tolerate settlement; Poor through drainage.
Gabion (wire crate)	10	Width = $\frac{1}{2} h + 0.5$	Flexible without rupturing; tolerates poor foundations, and weak and saturated ground conditions; well drained; relatively low cost for strength.	Construction requires a relatively wide foundation footprint to achieve the same shear strength of mortared masonry.

Wall Type	Maximum Safe Height (metres)	Typical width: Height Ratio	Advantages	Limitations
Reinforced earth	8	Depends on design; substantial horizontal clearance usually required to develop required tension resistance.	A high level of flexibility and the potential for a well landscaped, “natural” finish.	Reinforcing is expensive and relatively difficult to obtain in remote areas; stability calculations are complex and it is difficult to achieve the correct compaction and tension.
Soil nailing	5	Depends on design	A potential stabilisation option where space is limited for other types of retaining wall.	Costly; requires advanced technical skills and specialist equipment to build.
Mass concrete and reinforced concrete	10	Depends on design	Strongest type of retaining wall.	Relatively costly; requires large quantities of cement and Crushed aggregate and advanced technical skills to build; poor through drainage.
Anchored reinforced concrete	10	Depends on design	A strong wall type for certain situations where space is limited for other types of retaining wall	Very costly; requires a sound bedrock foundation, advanced technical skills and specialist equipment to build
Bored-pile wall built in situ	5	Depends on design	Allows through drainage between piles, in sites with identifiable failure planes within reach of piling.	Very costly; requires advanced technical skills and specialist equipment to build.

7.16. **Common Slope Stability Measures:-** These measures include providing breast walls/buttresses, sub-drains, soil reinforcement, surface protection, slope modification, retaining walls, gabion wall, etc. These measure have been found successful in mitigation in initial stages, however, later on have failed due to severity of erosion/slides as well as due to in-adequate dimensions designed without giving due attention to areal extent & causes of slides . Same measures can still be implemented by re-designing and re-constructing with locally available materials. Lack of appropriate drainage systems across & above slope is one of the major reasons behind the frequent occurrence of slides even in areas treated well. Majority of slides are occurring along roads, especially across the cuttings made in the hill sides for construction of roads by PWD/BRO. These cuts leave over hangs and affect the angle of repose thus adversely affecting the slope stability. Most of the common civil engineering measures mentioned above are seen to be designed and implemented by PWD/BRO. However, the biggest gap in civil engineering measures being designed & implemented is found to be the lack of drainage control measures across high steep slopes. Some of the unique designs of engineering suggested by USGS are highlighted below.

7.17. **Backfilling with lightweight material:** - A technique related to height reduction is to excavate the upper soil and replace it with a lightweight backfill material such as woodchips or logging slash. Then, covered with a thin layer of coarse aggregate, the backfilled material can form a foundation for limited-use traffic.

7.18. **Stream channel linings:-** Channel linings are another way of stabilizing a stream or creek channel and the sides of the stream or creek. The lining is usually slush grouted with high-quality concrete, preferably reinforced by steel fiber mat to resist abrasion. Protruding boulders are set in the concrete to dissipate the energy of water flow. Channel linings can reduce the incidence and volume of debris flows. They are also effective in maintaining channel alignment upstream from a bridge and for protecting the abutments. Channel linings are most effective if applied over the entire reach of an unstable channel. Linings are usually much less costly than, for example, check dams, especially if a long reach is to be stabilized. Check dams are preferable, however, if the banks are very unstable because a dam can be keyed into the bank, providing toe support and thereby enhancing stability.

CHAPTER 8

GUIDELINES FOR PES (PAYMENT FOR ENVIRONMENT SERVICES) & SOCIOECONOMIC INTERVENTIONS THROUGH PES (AGRICULTURE HORTICULTURE AND ANIMAL HUSBANDRY)

8.1 Payment for Environment Services (PES):- H.P .Forest Department Guidelines for Catchment Area Treatment Plans provide 10% of the CAT Plan funds for utilisation for Payment for Environment Services. The nature of environmental services that may be provided by the people vary with the locations, living surroundings and the ecological status of each catchment area. As such it is difficult to create precise hard and fast instructions for application of these funds. However, the common consensus is always been to provide these funds to the communities and not to individuals. The Thana Plaun HEP has a provision for Rs. 506.5 lacs under PES Component to be utilized as per the Government Instructions from time to time. This amount is to be utilized towards construction of community storage tanks, village ponds, crematorium, power tillers, energy saving devisesand rewards for providing help to the forest department for protection of forest from fire, aniti poaching operations etc. This, on the one hand, will go in a long way in improvidig the economic conditions of the farmers and on the other hand reduce pressure on the forests.

8.2. The Payment for Environment Services was introduced with an objective to ensure that the people in the catchment area get adequately enthused to participate in conservation of ecology in the catchment. The expenditure on this account must, therefore, be made to ensure firstly, that the activity results in substantial contribution to conservation of ecology, which in turn should conserve the soil and moisture regime in the catchment and secondly, it should ensure that the amount spent under this head must be for the common good of the community. It must also be ensured that any reference to the expenditure incurred on PES must receive vide publicity so that other villagers and people in the catchment get equally enthused and encouraged to contribute their part.

8.3. The available amount for PES (10% of CAT plan) in Thana Plaun HEP is Rs. 50,656,033/- sub divided further into following components: -

1	Solar lights and energy saving devices	4,380,000
2	Community Storage tanks	13,200,000
3	Village Ponds	5,600,000
4	Crematoriums	6,000,000
5	Community Power Tillers	4,400,000
6	Village Rewards	17,076,033

Solar lights: - - The NERIL team visited the villages in the immediate vicinity of the catchment. The team interacted with the local population and carried out discussions with different groups. In Thana Plaun the population density is very high in some ranges like Dharampur range and Kotli range due to electricity problem the beat guards also recommended the solar lights in these two ranges. In our study we found that Children in rural areas of Dharampur range spend significant portion of their time in household activities in day time. They do not have light to study at night. A few hours of electricity to study at night can result in major improvements in the performance of the students. This will also help the women in these areas who spend 2-6 hours a day for collecting fire wood due to lack of electricity. Rural electrification is considered as basic necessity to improve socio-economic condition in these ranges. We held discussions with the officials of HPPCL on the feasibility of Solar lights specially in these two ranges.

- a. Community Storage tanks:** -The purpose of water storage tanks is usually to meet peak demands. Second, the water system needs to be reliable; the required amount of water needs to be available 24 hours a day, 365 days a year. During survey visit we found that several villages are suffering huge hardship for their daily needs of water. To meet this long-term problem, it is important to enhance/increase the demand for better water use, sanitation and hygiene. 44 Number of community storage tanks are therefore proposed in the villages in these ranges. The recommended numbers are: 16 in Dharampur range, 5 in Drung range, 8 in Joginder nagar range, 7 in Kotli range, 1 in Ladhbadhol Range, 6 in Urla range and 1 in Mandi Range.

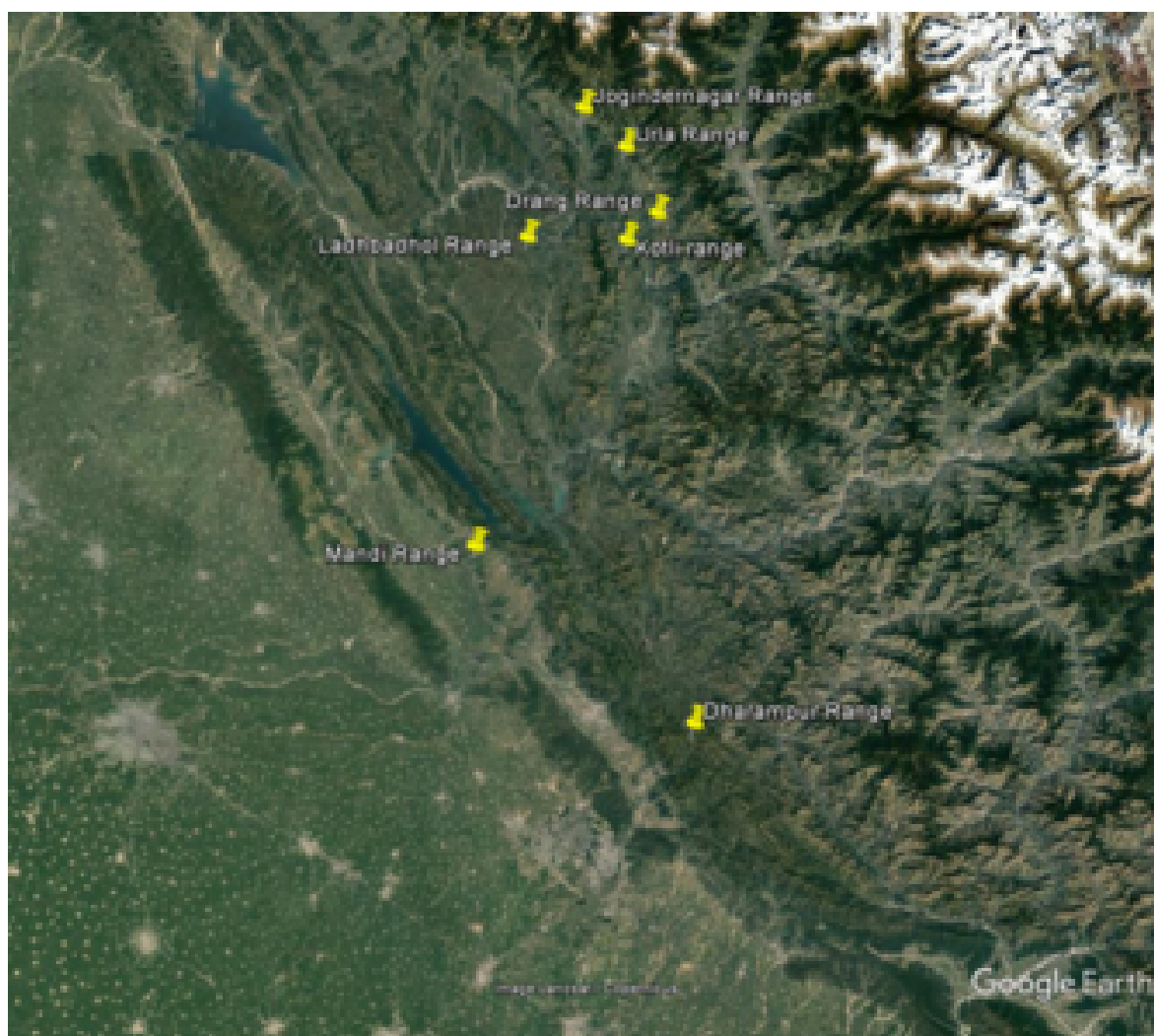
- b. **Village Ponds:** - The ponds protect and preserve a wide variety of organisms. Water is needed to ensure food security, feed livestock, maintain organic life, and take up production and to conserve the biodiversity and environment. Construction of village ponds can help in several ways. 24 village ponds are proposed in all beats of Dharampur range, 19 in all beats of Drung, 80 in Joginder Nagar, 7 in Kotli range, 4 in Ladbahol range, 18 in Urla Range and 8 in Mandi range. A total of 160 Village ponds have been proposed under this CAT Plan.
- c. **Crematoriums:** -
One of the most sensitive needs of these villages is to have a proper crematorium within a reasonable distance. As per discussion with the locals and the forest staff this plan provides for 20 crematoria in these ranges. The details are listed under respective ranges and beats.

8.4. NTFP Processing & Marketing Cluster. The CAT Plan proposes plantation of medicinal plants in the catchment. It is proposed to set up a Medicinal Plant Processing, Extraction and Marketing set up under the PES at an appropriate site. This will create a highly remunerative alternate employment while inherently protecting the surface soil and also provide a very cohesive and beneficial communication between the forest department staff and the communities.

8.5 Socio economic Interventions through PES: The benefits listed above such as village ponds, community storage tanks, crematorium are at community level. In order to minimise silt erosion, it is important to collaborate with the villagers who own the lands other than the forest lands in the Catchment. Such a collaboration can be achieved by correct application of PES funds. NERIL carried out a study of the villages in the catchment with a view to club them under respective ranges and beats so that the community and individual rewards can be effectively administered and monitored. In order to do socio-economic study and assess the extent of Horticultural, Agricultural, Vegetable Production and Animal Husbandry development, NERIL collected secondary data at district and block level. Beat wise data giving details of blocks panchayat and villages is tabulated here under. It is intended that the benefits through PES that have to be awarded out of the cash provision made for this reason for activities such as voluntarily doing bench terracing, drip irrigation, stall feeding, rain water harvesting, forest fires prevention and anti-poaching activities. These rewards can be in the form of following specific items:

- a) Natural Insemination Centre at Group Panchayat Level for improving livestock;
- b) Solar lights and other energy saving devices.
- c) Fuel and fodder plantation by Forest Department jointly with the villagers on the village land.
- d) Improvement to Ghasnies by Forest Department jointly with the villagers.

An amount of Rs. 21,500,000/- is distributed among ranges in proportion to the no. of households that come under these ranges for distribution of these specific payments for environmental services. The discretion in this regard is to be exerted by the Divisional Forest Officers at Division level.



Beat wise data for socio economic interventions under Thana Plaun HEP CAT Plan**Forest Division: Mandi. Forest Range: Kotli**

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Nagan	Kotli	559	1246	1292	2538	Gujra ra Ropru, Sakswal (3)	Mandi Sadar
2	Janitary	Lagdhar,	Mentioned under Mhan Beat of Dharamur Block.				Surari Bunail, Surar Upri, Lagdhar, Saploh,	Mandi Sadar
		Uperli Surwari	450	952	1076	2028	Dawali Bedehed, Barnota, Khalanoo,	Mandi Sadar
		Khalanoo	303	621	707	1328	Arthi Sikkanmat, Kalag. (12)	Mandi Sadar
		Total:	753	1573	1783	3356	12	
3	Bani Kumrah	Dhanyara	337	688	796	1484	Samrahan, Dhandhal, Chalahar, Fagla, Dhanyara, Kuamal, Sain (7)	Mandi Sadar
4	Saigalu	Sai	406	912	955	1867	Sai, Chaloh, Tadu, Ghamdhol, Nalson, Batahar (6)	Mandi Sadar
		Sadoh	355	756	784	1540	Sadoh, Khd Kalyana, Jalon (3)	Mandi Sadar
		Sadiyana	493	1098	1095	2193	Kot, Paprahal, Chanon (3)	Mandi Sadar
		Total:	1254	2766	2834	5600	12	
5	Birh	Bari Gumanu	460	1128	1080	2208	Bari Gumanu, Dhanyar, Arthi, Bhaled (4)	Mandi Sadar
		Bir	403	887	963	1850	Bir, Kathyana, Dhiun, Kuthwar (4)	Mandi Sadar
		Tarnoh	310	676	710	1386	Jandrola, Kutal, Tarnoh, Khad Kalyana (4)	Mandi Sadar
		Total:	1173	2691	2753	5444	12	
6	Koon	Bhargoun	357	729	788	1517	Bhargou, Badyar-1, Sikkan Matt, Lohard, Badyar-II. (5)	Mandi Sadar
		Kot	614	1241	1428	2669	Drubbal, Mandhokhar, Koon, Badoha, Kot, Dhawan Sari (6)	Mandi Sadar
		Dawahan	337	688	796	1484	Dawahan, Taryashal, Ropa Matyal, Kalothar (4)	Mandi Sadar
		Total:	1308	2658	3012	5670	15	
7	Kotli	Kotli	Sl.No. 4 above.				Kotli, Gharwan, Arnodi, Balahar, Hart (5).	Mandi Sadar

[Type text]

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Kassan	351	757	820	1577	Nalasn, Kasan I , Kasan II, Pata,Saigaloo.(5)	Mandi Sadar
		Total:	351	757	820	1577	10	
G. TOTAL	7	14	5735	12379	13290	25669	71	

Beatwise data for socio economic interventions under Thana Plaun HEP CAT Plan.

Forest Division: Mandi. Forest Range Drung

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Tandu	Tandu	746	1612	1657	3269	Dwadu, Bhatog, Matha Neeul, Megal, Mehar, Tandoo, Pakhari. (8)	Mandi Sadar
2	Silag	Shilag	323	659	714	1373	Chaila, Chehar, shilag, Bara Gaon, Banogi, DPF Shilag (5)	Padhar
3	Kufri	Kufri	560	1424	1328	2752	Kufri, Shihli Khad, Jhand, Tharki, Lagdhar, Khil, Nihon, Maglana, Janahan,Nashdarah. (10)	Padhar
4	Sharda	Badidhar	745	1726	1656	3382	Panchayataqn, Hiyund, Bhatwari, Darug, Bah,Bebila, Ropa, Sadhyani dhar, Chahri, Kalera, Baddi Dhar, Padwahan,Dhanahan, Ropru,Gawahan, Dhundha, Kamahrara,Babli, Gajaun, DPF Sarda. (19)	Padhar
5	Kunnu	Kunnu	837	2032	1938	3970	Shingar, Kunnu, Cheli, Narla,She, Sari, Kajoit	Padhar
		Siun	260	665	652	1317	Dhar,Ghamrada,Garlog, Sahal, DPF Chhoti Shingar, DPF Bari Shingar,	Padhar
		Palli	673	1416	1467	2883	Sarahan,Shakrog, Siun, Fagni,Ghoghar Dhar, Satnog, Pali, Pipali,	Padhar

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
							Malog, Maserajn, Nagrota, Hiyun, Hullu, DPF Pali. (25)	
		Total:	1770	4113	4057	8170		
6	Padhar	Siun	Included at Sl.No. 5 above.				Badan, Ropa Padhar, Chharang, Gharon, Bhatwar. (5)	Padhar
		Padhar	403	993	918	1911		Padhar
		Total	403	993	918	1911		
7	Drung	Palli	Included at Sl. No. 5 above.				Badi Dhar, Katindi, Lanjnu, Runjha, Sadhala, Barnala, Nasyahan, Lihana, Mathidhar, Aran. (10)	Padhar
		Kathindi	446	1049	1047	2096		Mandi Sadar
		Total:	446	1049	1047	2096		
8	Trehmli	Kathindi	Included in Sl.No. 7 above.				Bassa, Kashala, Bnhanwar, Taryambali, Brogla, Dhakal Wahan (5)	Mandi Sadar
		Trehmli	273	723	714	1437		Mandi Sadar
		Total:	273	723	714	1437		
9	Sraun	Barhwan	280	646	624	1270	Bharwahan, Lohra, Saraun, DPF Saraun. (3)	Padhar
		Kunnu	Mentioned at Sl.No. 5 above.					Padhar
G. Total:	9	11	5546	12945	12715	25660	90	

Total Beats in Drung Range: 9. Total Panchayats under CAT Plan: 11. Total Villages: 90

All the Beats are under Thana Plaun HEP CAT Plan.

Beatwise data for socio economic interventions under Thana Plaun HEP CAT Plan.**Forest Division: Mandi. Forest Range Mandi**

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Randhara	Marathu	333	795	798	1593	Randhara, Ghera,Aalthu,Sani Mohri, Janed, Mandhlog, Marthu, Nanauan .	Balh
		Natned	471	1080	1112	2192		Balh
		Jaded	531	1217	1222	2439		Balh
		Sain	320	700	726	1426		Sadar
	Total:	4	1655	3792	3858	7650	8	
2	Bijni	Bijani	492	1127	1139	2266	Tamlot, Rajhan, Bhalana, Kufardhar, Sihnal,Sambal,Chipnu, Lower Bijani (8)	Sadar
3	Rehrhadhara	Nasloh	315	769	756	1525	Nasloh,Chowkibhald, Rao (3) Kathindi, Baridhar,	Sadar
4	Tamlot	Kathindi	446	1049	1047	2096	Kuthar,Radu,Bahala (5) Rani Bain,Chadyara, Bradhibir,	Sadar
5	Talyar	Talyar	831	1780	1824	3604	Sanyarad, Padhiun, Kathlag,	Sadar
		Padhiun	490	1100	1095	2195	Chambi, Banani, Sadyana,	Sadar
		Sadyana	493	1098	1095	2193	Larwhan, Mothal, Bathwar,	Sadar
		Sanyard	627	1313	1223	2536	Deodhar, Manthla, Rati Puhali, Panchati,Talyar.	Sadar
Total:		4	2441	5291	5237	10528	17	
6	Badsu	Bhangrotu	733	1709	1589	3298	Bangrotu, Manjethal Kasrala, Ner, Ratti, Nergharh,Badsu, Chambanal , Pasta, Luhardi, Nutnehar .	Balh
		Kasrala	404	977	941	1918		Balh
		Ner	856	2100	1830	3930		Balh
		Badsu	281	615	647	1262		Balh
		Behal	539	1187	1252	2439		Balh
Total:		5	2813	6588	6259	12847	11	
7	Kharnal	Tung	464	988	979	1967	Tabela, Bhiuli, Maswahan, Ropru (4)	Sadar
8	Rani Baain	Kothi Ghairi	393	825	876	1701	Gothi Ghari,Badahan Tilli,Bayar,Chanwari,Baul,Dayar i, Manyana	Sadar
		Tilli	540	1238	1253	2491		Sadar
Total:		2	933	2063	2129	4192	8	
9	Ratti	Galma	583	1223	1295	2518	Kotlu, Bhalwadi, Galma, Nalwadi, Pargi, Kamehda, Dahanu, Hawanu,Sidhyani, Banaul,Sadehra, Lakhwan,Ropari .	Balh
		Sidhyani	587	1390	1369	2759		Balh
10	Majheli	Samloun	379	856	882	1738	Patha, Samloun, Khakhariyana, Ghiun Dhar, Bushahar,Troh, Pipali.	Balh
		Troh	531	1230	1170	2400		Balh
Total:		2	910	2086	2052	4138	7	
11	Rewalsar	Reur	355	768	837	1605	Rewalsar, Dhar, Gudwahan,	Balh

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Rewalsar	878	1947	1953	3900	Chahari, Sarkidhar, Lahera, Garoru, Hawani, Garioni, Ghour, Riur, Chowki Chandrahan, Thana, Panyali, Hawani (Gujnoha)	Balh
Total		2	1233	2715	2790	5505	16	
12	Tarapur	Behana	464	1086	1070	2156	Behana, Malori, Baradhar, Dhar,	Balh
		Bhadyal	542	1267	1235	2502	Madhwal, Sindhal, Kandhi, Tarapur	Balh
Total:		2	1006	2353	2305	4658	8	
13	Kangni	Bharaun	413	916	945	1861	Bhroun, Dudar, Chadyana, Badog, Kalhyar, Maigal (6)	Balh
14	Sakroha	Chandial	350	800	806	1606	Kharsi, Obera, Kangu Bari,	Balh
		Gora Gagal	562	1374	1361	2735	Bangrain, Hadala, Bangot, Moveseri, Seri, Sakroha,	Balh
		Sakroha	606	1427	1415	2842	Chatroun, Sinh, Gagal, Bah, Gada Gagal, Bhat, Khandla, Chandyal.	Balh
Total:		3	1518	3601	3582	7183	18	
15	Nelha	Majhwar	38	85	83	168	Nella, Silha Kipper, Chatrot, Majhwar, Kutehad, Dhamyan, Sari, Maserna, Gihula, Ayala, Jhadwans (11)	Sadar
16	Chabwan	Dhar	507	1238	1208	2446	Dhar, Kot, Saun, Rakhoon, DPF. Chhabuan, Tarhana (6)	Sadar
17	Padhar	Majhwar	As mentioned at Sl.No.15 above.				As mentioned at Sl.No.15 above.	Sadar
G.Total :	17	33	16354	37274	37033	74307	149	

Beatwise data for socio economic interventions under Thana Plaun HEP CAT Plan.
Forest Division: Jogindernagar. Forest Range: Urla

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Khajri	Chukku	303	672	709	1381	Khajri, Paplan, Chah	Padhar
		Nauli	469	983	1099	2082	Bhraru, Sajerh, Batnaar (6)	Padhar
		Total:	772	1655	1808	3463		
2	Chuku	Chukku	As mentioned at Sl.No. 1.				Khadoond, Chuku, Choha, Salhana, Luni, Nagan, Gallu, Bhali Khat, Farah (9)	Padhar
3	Nagan	Chukku	As mentioned at Sl.No. 1 above.				Nausa, Badli, Badan (3)	Padhar
4	Urla	Urla	515	1190	1208	2398	Maswahan, Khabal, Badwan I, Badwan II, Gail, Dharta, Kraldi (7)	Padhar
5	Gwali	Gwali	389	931	917	1848	Gwali, Malshoo, Pundal Upper, Pundal Lower, Chatarihl, Ropi, Jandrag (8)	Padhar
6	Thorat	Kadhaar	267	640	647	1287	Thorat, Gaur Dhar, Dhar, Haar, Kharnal (5)	Padhar
7	Shilla Swarh	Kadhaar	As mentioned at Sl.No. 6 above.				Kadhaar, Shillaswarh, Seri, Bratu, Lakhwan, Swarh. (6)	Padhar
		Jilhan	346	864	822	1686		Padhar
		Total:	346	864	822	1686		
G. Total:	7	6	2289	5280	5402	10682	39	

There are total 10 Beats in Urla Range out of which only 7 fall under Thana Plaun CAT Plan. (Barot, Kahlot and Jatingri Beats do not fall under Thana Plaun CAT Plan and their data is not reflected above.)

Total Beats under Thana Plaun CAT Plan in Urla Range: 7. Total Panchayats: 6. Total Villages: 44

Beat wise data for socio economic interventions under Thana Plaun HEP CAT Plan.
Forest Division: Jogindernagar. Forest Range: Jogindernagar

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Jogindernagar	Jimjima	503	1165	1202	2367	Dohag, Arthi,	Padhar

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Masoli	403	993	918	1911	Dhelu, Jalpehar,	Padhar
		Dhelu	851	1920	1837	3757	Ghamrerh, Garodu,	Chauntra
		Dalt Bagla	725	1517	1553	3070	Jhalwan, Dalt Bagla, Pahloon, Masoli,	Padhar
		Garoru	574	1223	1193	2416	Khudlehr, Jimjima, Jogindernagar, Pandijan Suhji. (15)	Padhar
		Total:	3056	6818	6703	13521		
2	Ghatta	Baderh	557	1020	1291	2311	Ghatta, Mohanghati,	Chauntra
		Matru	516	1154	1306	2460	Baderh, Sujja,	Chauntra
		Aijoo	559	1206	1244	2450	Sundrar, Matru, Tharu, Radu, Bakherh, Aijoo, Kholi.(11)	Chauntra
		Total:	1632	3380	3841	7221		
3	Upper Chauntra	Tikri Mushaira	374	795	801	1596	Upper Marhola, Lower Marhola,	Chauntra
		Talkehar	491	1142	1109	2251	Tikri Mushair,	Chauntra
		Chauntra	754	1645	1709	3354	Talkehar, Maskerh,Satain, Chaunra. (7)	Chauntra
		Total:	1619	3582	3619	7201		Chauntra
4	Lower Chauntra	Bharyara	823	1637	1742	3379	Aarhoo, Passal,	Chauntra
		Sainthal	419	865	910	1775	Sagnehrh, Sainthal,	Chauntra
		Sagneharh	558	1179	1189	2368	Nagan, Trahmta,	Chauntra
		Passal	484	998	1042	2040	Bhagair, Lakrehr,	Chauntra
		Main Bharola	245	513	523	1036	Bharyara,Dhantytatar, Kalai, Bag. (11)	Chauntra
		Total:	2529	5192	5406	10598		
5	Banaun	Tikru	345	669	754	1423	Banaun, Jaghyara,	Chauntra
		Chalharag	376	777	798	1575	Tikru, Bala Rihra,,	Chauntra
		Balh	406	942	888	1830	Khetu. (5)	Padhar
		Total:	1127	2388	2440	4828		
6	Hara Bagh	Ropa Padhar,	403	993	918	1911	Har Gunain, Awayer, Digli, Ropa	Padhar
		Haar Gunain	528	1216	1180	2396	Padhar, Chhanag, Graun, Sellon, Mallan. (9)	Chauntra
		Total:	931	2209	2098	4307		
7	Bagra	Gallu	372	826	848	1674	Gallu, Dramman,Banad, Bagra, Patt, Naherna, Nihara. (7)	Chauntra

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
8	Chhaprot	Nerghar Wasda	954	2082	2039	4121	Nerghar Wasda, Majharnoo, Bassi, Chhaprot, Mende, Machhyalu, Bhalendu (7)	Padhar
9	Bhararu	Kas	272	591	634	1225	Bhararu, Kas, Katwali, Khroadn, Khaprotu, Makoda, Batolu, Kothi, Bohra (9)	Padhar
		Bhararu	As mentioned at Sl.No. 10					Padhar
		Total:	272	591	634	1225		
10	Nainpur	Bhararu	689	1372	1520	2892	Bihun, Kund, Madhota, Sapru, Roparu, Athrah, Baserh, Banaroo, Chhumb (9)	Padhar
		Batta Ri Bihun	422	761	897	1658		Padhar
		Total:	1111	2133	2417	4550		
11	Drahl	Kutherha	427	701	944	1645	Drahl, Makredi, Kudnu, Darkoti, Kuthera, Spedu, Balh, Sanketar, Bhara Yara Buhla	Chauntra
		Bhara Yara Buhla	248	525	584	1109		Chauntra
		Drahl	267	530	666	1196	Bhara Yara Buhla, Samkhetar, Kufru Morchakka, Bharayara Uparla, Bela, Samoli. (15)	Chauntra
		Total:	942	1756	2194	3950		
12	Darubbal	Pipli	428	855	954	1809	Drubbal, Ladhwan, Kunkar, Banaun, Thana, Nagan, Balh, Pipli, Khurati, Ropra, Chadon. (11)	Chauntra
		Drubbal	498	953	1007	1960		Chauntra
G. Total:	12	32	15471	32765	34200	66965	116	

Total Beats in Joginder Nagar Range: 12. All the beats fall under Thana Plaun HEP CAT Plan.

Total Panchayats under CAT Plan Beats: 32. Total Villages: 116

Beatwise data for socio economic interventions under Thana Plaun HEP CAT Plan.

Forest Division: Jogindernagar. Forest Range: Ladhbadhol

Sl.No.	Beat	Panchayats in the Beat and their	Revenue Villages in	C.D. Block
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		population					Panchayat/Beat	
		Name	H.H.	M.	F.	Total		
1	Aahl	Dhar	249	452	538	990	Chimnu, Pabo, Aall, Jamehr,Aamba Ri Gahru,Chir Chakka.	Chauntra
G. Total:	1	1	249	452	538	990	6	

Out of Total 9 Beats of Ladhbadhol Range only 1Beat (namely Aall) falls under CAT Thana Plaun. Panchayat:1 Villages: 6

Beatwise data for socio economic interventions under Thana Plaun HEP CAT Plan.

Forest Division: Jogindernagar. Forest Range: Dharampur

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Name	H.H.	M.	F.	Total		
1	Bahi	Longni					Sajao Piplu, Bharari, Jodhan, Syathi-I, Syathi II, Baldwara (Chowki), Groru, Triambla, Longni, Khalag, Hukal, Papli, Siddi, Mohan Kot Gadhoval, Gadhyara Marnohal, Ratkel, Parchhu-I, Parchhu-II, Sajori. (21)	Dharampur
		Suja Piplu	1161	2220	2467	4687		Dharampur
2	Mandap	Tor Jajar	600	1178	1322	2500	Heun, Drumman, Tor Jajar, Sundal, Chowki, Chah, Putli Fald, Brahmh Fald (8)	Dharampur
3	Sidhpur	Dharam pur	Mentioned at Sl. No. 4 below.				Bardana, Banwar Kalan, Chhapanu, Mathi Banwar, Bharatpur, Bahari, Sidhpur, Dedal, Naraingarh, Tatoli	Dharampur
		Bahri	287	541	673	1214	Pardana, Malaua, Kot, Jange I, Tabehar, Balhra, Tarohla, Dhwali. (18)	Dharampur
		Tanerh	318	627	684	1311		Dharampur
		Bhrauri	391	974	956	1930		Dharampur
		Dhwali	236	535	556	1091		Dharampur
		Total:	1232	2677	2869	5546		
4	Dharam pur	Dharam pur	500	1069	1061	2130	Banal, Reur, Hwani, Tara, Siram, Sarskain,	Dharampur
		Banal	351	704	783	1487		Dharampur

Sl.No.	Beat	Panchayats in the Beat and their population					Revenue Villages in Panchayat/Beat	C.D. Block
		Saraskan	529	1036	1194	2230	Rakhehra, Sapri, Rara Kusri, Roh, Pangoh, Kandhapatan, Bhaliar, Gantrelu, Thakar, Chalelu, Dharapur, Sarohali (18)	Dharampur
		Total:	880	2809	3038	5847		
5	Baroti	Banala	As mentioned at Sl.No. 4 above.					Tharara, Kulhan, Dharampur
		Pehad	As mentioned at Sl.No. 6 below.					Maloun, Banehardi, Dharampur
		Langerh	556	1135	1284	2419	Lavanpur, Banala, Langehar, Banjal, Geun, Ubak Dedal, Chhir-Jajar. (11)	
		Total:	556	1135	1284	2419		
6	Ludhiana	Pehad	650	1197	1458	2655	Ludhiana, Hyolag, Jatehari, Pehad, Konsal, Bhataur, Sihan, Kumharda, Tharera. (8)	Dharampur
7	Mhan	Lagdhar	446	891	985	1876	Mahan, Dhalwani, Barnog, Bhadiar (4)	Dharampur
8	Brang	Brang	353	738	752	1490	Didnoo, Kathali, Brang, Morla, Galu Chanota, Chhatar, Chanehar, Bari, Pantehra. (9)	Dharampur
G.Total:	8	13	6378	12845	14175	27020	98	

Total Beats: 8. Total Panchayats: 13. Total Villages: 98

CHAPTER 9

INFRASTRUCTURE NEEDS OF HPFD

9.1. Infrastructure needs of HPFD Ranges in the Catchment Area.

Execution of this CAT Plan provides an opportunity to ensure better stocking of the forests in the catchment. It also adds a very large amount of work to be carried out by the Forest Department staff. It is, therefore, imperative that the department's infrastructure be strengthened to enable them to take on such a large task. NERIL has discussed and obtained the precise needs of the forest officials for strengthening of infrastructure. Considering the rugged and difficult terrain it is our considered opinion that the infrastructure facility available to the Range Staff has to be made substantially more robust than the existing available infrastructure. Our approach, therefore, has recommended appropriate infrastructure improvements. A detailed list of equipment, vehicles, offices, furniture and so on is made out and is sought to be modernised. Further, in order to achieve better survival of new plantations and NTFP Produce, the Territorial as well as WL staff has to be provided with proper mobility facilities including construction of bridal paths, jeep able roads up to Beat Guard Hut. This CAT Plan caters to providing adequate infrastructural facilities which include construction of Forest Guard Huts, B.O. Quarters, Gang Huts, Tool Stores, Outhouses, Repairs of staff quarters, R.O. Office, R.O. Residence, repairs at Divisional Headquarter level, Conference Hall, state-of-the art firefighting equipment, Office automation equipment like Scanners, DGPS, LCD Projectors, Patrolling kits etc. In addition, the CAT Plan also provides for providing Mobility facilities like four wheeler vehicle - its replacement in the sixth year and manpower support at Range/ Divisional Level for data updation. Provisions for construction of Boundary Pillars and Demarcation of forest are also made wherever required. The precise needs were assessed after inspection and discussions with the RFO together with all his BOs, guards and ministerial staff. The major points for improvements are either building / civil work, Fire Protection Measures, Forest Roads/ I Paths, Building for staff, FRH/I Huts, Tools, State of the art equipment, vehicles and Additional contracted manpower.

Rangewise details are given in the annexure giving details of costs under each component. for each range.

CHAPTER 10

Monitoring and Evaluation, Site Specific Planning and Contingency fund

10.1 Monitoring & Evaluation

Provision for in-house and 3rd party monitoring and evaluation studies including impact evaluation studies of the CAT Plan works is made. Indicators for monitoring impact of CAT Plan are as follows:

- a) Change in silt load
- b) Survival of plantation
- c) Change in the water discharge in natural springs
- d) Change in Man-Animal Conflicts
- e) Status of User Groups

10.2 Institutional/Departmental Charges:- Activities carried out under this heading are as:

- Establishment Cost (Refund of Salary of CAT Plan Division to Govt. & Contractual Emoluments)
- Motor Vehicle & POL.
- Amenities to Staff and Labour

Contracted drivers and Mobility Support to Forest Department at Range Level. The infrastructure component allows for this expenditure for a period of ten years. The computation is also provided in the cost annexures.

10.3 Contingencies: -Amount under this component kept for leeway to adjust any unforeseen expenditure and for payment to do site specific planning through experts and consultants. The forest infrastructure is also augmented by providing contracted manpower as watch and ward staff are included in the cost norm.



CHAPTER 11

DEBRIS DISPOSAL PLAN (Adopted from the ICFRE Report)

11.1. INTRODUCTION

S. No.	Name of component from where Muck are to be generated	Qty. Of Muck to be generated (Cum)	Add 20% for over breaks/land slides (cum)	Add 45% swell factor on Qty. of Muck generated (cum)	Total Qty. in cum.	Description & Location of Dumping Site	Capacity after use of 35% for construction material, use in coffer dam
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For construction of different components of the project substantial surface and underground excavation in over burden and rock for diversion tunnel, dam, spillway, powerhouse of main and regulating dam and appurtenant works shall be involved. The excavation shall result in large quantity of excavated material ,i.e., muck which shall have to be evacuated, disposed off and roller compacted or laid on mild slopes with the excavation work, to such designated areas where muck piles do not substantially interfere with either environment/ecology or the river flow regime and cause turbidity impairing the quality of water. The development of the disposal areas would advance with the progress of the job which it is catering for. First of all, any trees/property in the disposal area boundary would be dealt with as required. As the muck for disposal would be progressively received at the disposal site, it would be dozed and levelled in a manner as to gradually cover the designated area. Measures to protect/retain the toe of the muck fill would be adopted before hand so that no loss or injury is caused to the public/ property and no muck roles into the river or other water bodies.

The disposal of muck has been scientifically planned keeping in view the pecuniary aspects necessitating proximity of the muck generating component to the dumping site which reduces travel time of dumpers, no interference to surface flow & ground water aquifer, far away from habitation and on stable slopes away from the active landslides . So far as possible the dumping sites should be located adjacent to the existing approach roads.

In the present case, the total bulk quantity of the muck generated due to project will be 20 lac Cum. Assuming 35% of excavated material will be used in project work, the remaining bulk quantity of muck will be 13 Lac Cum. The disposed muck shall be properly stacked and roller compacted or dumped on slopes and treated to mix and match with the surrounding environment with least change in landscape. No disposal would be made in rivers or nalas. The toes of the disposal piles would be retained and protected by providing suitably designed gabion walls erected over concrete bases. Gabion walls would be preferred over conventional masonry or concrete toe walls because of various reasons. They are easy to build with locally available stones/boulders from the muck itself. They do not require any setting/strengthening time as in the case of concrete/masonry walls. Not much technical skill is required for making gabion walls. Prefabricated gabion boxes of different dimensions could be used for obtaining better quality and durability.

Based on the excavation quantities, a muck management plan has been formulated to manage the disposal of muck and restore such areas from further degradation of the environment. The disposed muck shall be either roller compacted to provide stable terraces for green belt development, or dumped in designated areas to provide stable slopes. The location of various dumping sites is depicted in **Annexure II** and details are furnished in **Table-22**. Layout plan and cross-sections of all the three dumping site are attached in **Annexure II**.

Table 2 : Details of Muck Generation in Thana-Plaun HEP

1	Diversion Dam	624580	124916	334273	1086769	Dumping Yard 1. Neri Kotla-I 2. Neri Kotla-II	706400
2	Diversion Tunnel	29746	5949.2	16063	51758	Dumping Yard Neri Kotla-I	33643
3	Head race Tunnel	13915	2783	7514	24212	Dumping Yard Neri Kotla-I	15738
4	Power House & Transformer Cavern	244220	48844	131879	424943	Dumping Yard Neri Kotla-II	276213
5	T.R.T	22465	4493	12131	39089	Dumping Yard Neri Kotla-II	25408
6	Road Cutting	60000	12000	32400	104400	Dumping Yard Neri Kotla-II	67860
7	Pressure Shaft	12361	2472.2	6675	21508	Dumping Yard Neri Kotla-II	13980
8	Adits	70741	14148.2	38200	123089	Dumping Yard Neri Kotla-II	80008
9	Intake	80000	16000	43200	139200	Dumping Yard Neri Kotla-II	90480
Total		1158028	231605.6	622335	2014968		1309730

Total Excavation Rock: 20,14,969 cum (say 20 Lac Cum)

35% of Excavated muck shall be used as construction material: 705239

Balanced muck quantity required to be dumped: 13,09,730 Cum (Say 13.10 Lac Cum)

Capacity of proposed dumping yards:

Neri Kotla-I: 7, 47,947 cum

Neri Kotla-II: 14, 70,759 cum

11.2. IMPLEMENTATION OF ENGINEERING & BIOLOGICAL MEASURES

Engineering measures like providing of GI wire crates and RCC retaining walls will provide stability to the profile of muck pile (whether stacked temporarily or permanently).

11.2.1. Engineering Measures

It has been observed that after excavation, disposal of muck creates problem as it is susceptible to scattering unless muck disposal yards are supported with engineering measures such as retaining structures, crate walls and gabions. In the present case, two muck disposal sites are proposed to be located near the river banks, and therefore, needs proper handling to avoid spilling of muck into the river water while dumping and in the post dumping stages. The muck disposal sites have to be developed from the ground level by providing in. It is proposed to develop of the muck disposal sites for terraces for labour colonies etc., by erecting RCC toe wall with wire crates.

After placing of the boulder at the toe of muck disposal sites, along the flow and towards the hill side to protect the muck from spilling into the river, the muck shall be brought in dumpers and spread in layers behind the wire crate walls and, then, roller compacted till the level of top most tiers is achieved. The retaining wall shall be laid with proper berm and the muck dumped behind it in layers and compacted by rollers. The process shall be repeated upto the desired height (approximately average 12-15 m) with provision that no dumping shall be done once the maximum slope of 45° (max slope 1:1) is met. A buffer of 1.5 m height will be kept to avoid the rollover falling into the river.

11.2.2. Biological Measures

Biological measures require special efforts as the muck disposed in disposal yards will in general be devoid of nutrients and soil contents to support vegetation. The selection of soil for spreading over such an area would require nutrient profiling of soil for different base elements. Suitable ad-mixture of nutrients such as NPK would be done before placing the soil on the top surface of muck disposal areas to support growth of vegetation.

In addition to this, isolation and screening of specialised strains of mycorrhizal fungi, rhizobium, azotobacter and phosphate solubilizers (bio-fertilizers inoculum) in accordance with the suitability of the spoil tips will be done at the site based on the following:-

- Inoculation of plants with specific biofertilizers and mycorrhizal strains.
- Periodical evaluation of rhizosphere development for physical, chemical, and microbiological parameters.
- Monitoring of growth response in different plant species periodically and identification of corrective measures, if necessary

11.2.3. Plantation Technique

In view of the peculiar site conditions, particularly soil conditions, the planting technique for all categories of plants has to be very site specific and suited to stress conditions as anticipated and discussed above. The plantation areas would need to be considerably improved to support the plants in their initial stages of establishment. Moisture retention capability, availability of nutrients and soil aeration, permeability and porosity would require intervention and assistance.

Multistoried and multipurpose plantations are proposed to be raised on the muck dumping sites as also on-road side strips using grasses, shrubs and bushes in the under storey and trees in the upper storey. Nursery raised grass slips, seedlings of shrubs and bushes and trees species would be planted in the area combined with grass sowing in patches. In addition, cuttings of bushes and shrubs can also be planted to supplement nursery raised stock but this would substitute requirement of raising the nursery of these species. Intimate mixture of species would be avoided right at the planning stage and would be strictly followed during planting. Each patch should contain maximum of two species. Grasses would be mixed by groups in rows, shrubs and bushes by group again in rows.

Grass slip planting and grass seed sowing would be done in strips at 0.10 m x 0.10 m spacing in the prepared staggered patches of 1 m x 0.5 m with a depth of 0.30 m. Soil mixture would be used while filling the patches. Balance dug up soil/muck will be stacked along the patch on the downhill side for rain water tapping and enhanced percolation in the patch. Number of such patches in each hectare is proposed to be 500.

Shrubs and bushes would be planted in elongated strips of 1.5 m x 0.5 m with a depth of 0.45m. Soil mixture would be used while filling the patches. Balance dug up soil/muck will be stacked along the patch on the downhill side for water tapping and better percolation in the patch. These would be staggered throughout the area numbering 500 per hectare. Each patch would have two rows of planting with staggered spacing between the plants in a row as 15 cm and distance between rows as 15 cm.

Planting of trees would be done in contour staggered pits of 0.60 m x 0.60 m x 0.60 m size numbering 800 per hectare. Out of these 800 plants, about 200 plants per hectare are meant for planting along the periphery of the area. If the periphery gets filled up with lesser numbers, the remainder would be planted in the core/main area. Soil mixture would be used while filling the pits.

Balance dug up soil/muck will be stacked on downhill side of the pit for tapping the rain water and allowing it to percolate in the pit.

It is proposed to use soil mixture in the pits and patches consisting of soil imported from nearby areas mixed with compost or humus or vermi-compost or all of these. The ratio for the mix would be 5 parts compost: manure 2 parts: Sand 2 parts and humus or vermi-compost 1 part. This will make nutrients really available for the plants in the preliminary stages and also help increase soil aeration, porosity & permeability and improve moisture available for the plants.

The stabilization sites from the time of execution of biological measures would be protected with barbed wire fencing on 2m high RCC posts and provided with inspection paths. Since the muck dumping sites are being provided with RCC tow walls with the wire crate (gabion) wall on the valley side (towards river) which is not negotiable by animals and human being, fencing would not be required along the entire perimeter. Hence, it would be done on the vulnerable sections, i.e., towards the hillside only.

The proposed costs include nursery costs for initial planting and also for mortality replacement.

The biological measures shall be taken up towards the end of construction. The plantations would be maintained for a period of 5 years by irrigating the plantation during dry seasons, mortality replacement and repair of fencing and inspection paths within the area. The task of irrigation would be performed by the watch & ward staff provided in the cost estimate.

Although the sites would be either leveled or finished in a grade. However, due to rains and sliding etc, it tends to develop rills and gulley causing acceleration in the rate of erosion. Therefore, while carrying out plantation suitable soil conservation measures would also be taken.

11.3. COST ESTIMATE FOR MUCK DISPOSAL PLAN

The cost estimate for muck disposal plan indicating engineering, biological measures and maintenance is provided in **Table-23**.

Table 23 : Cost estimate for muck disposal plan

Sl. No.	Particulars	Qty	Unit	Rate (IN.)	Amount in INR
A.	Engineering Measures				
1	Supplying and placing in position GI wire crate 8 SWG, 10 cm size (2.25m x 1.25m x 1.25m) at toe on dumping site MD-1 and MD-2. Total length = 366m; no of wire crates in one row : $366/2.25 = 163$; Total no of rows : $6 \times 163 = 978$	978	No	4500	4401000
2	CC (M-20) for RCC wall as Toe of wire crates; a) Base = $366 \times 1.85 \times 0.30$ b) Stem = $366 \times 1.00 \times 0.45$	203 165	m ³ m ³	5500 5500	1116500 907500
3.	Cost of Centering and shuttering				

Sl. No.	Particulars	Qty	Unit	Rate (IN.)	Amount in INR
	a) 2 x 366 x 0.30	220	m ²	200	44000
	b) 2 x 366 x 1.00	732	m ²	200	146400
4.	Cost of Steel reinforcement	22	MT	57500	1265000
	Sub Total (A)				7880400
B.	Biological Measures				
1.	Plantation of muck disposal sites	15	Ha	500000	7500000
2.	Barbed wire fencing on 2m high RCC posts	15	Ha	30000	450000
3.	Cost of portable pump with accessories	3	No	150000	450000
4.	Cost of sprinkler system of irrigation	5	No	40000	200000
5.	Watch and ward 3 no. @ Rs. 6000 p.m. for 5 years (3 x 12 x 5)	180	Man Months	6000	1080000
	Subtotal (B)				9680000
	Grand Total (A + B)				17560400
	Say (in Lac)				176.00

- L.S : Lump Sum
RM: Running Meter

CATCHMENT AREA TREATMENT PLAN FOR THANA PLAUN HEP

SECTION 2

BEAT WISE TREATMENT & COSTING FOR JOGINDERNAGAR FOREST DIVISION

The Catchment of Thana Plaun project falls under Joginder nagar and Mandi forest divisions. The catchment area of the project comprises 61 forest beats falling in 7 ranges of these two divisions. Mandi forest division comprises 3 ranges and Joginder nagar forest division comprises 4 ranges. In Mandi division, Drung range Comprises 9 beats in which all beats are falling under Thana Plaun catchment area., Mandi Range itself comprises 17 beats, all beats fall under catchment area of Thana plaun where as Kotli range comprises 10 beats in which 7 are in catchment of Thana Plaun and the other 3 beats does not fall under Thana plaun.

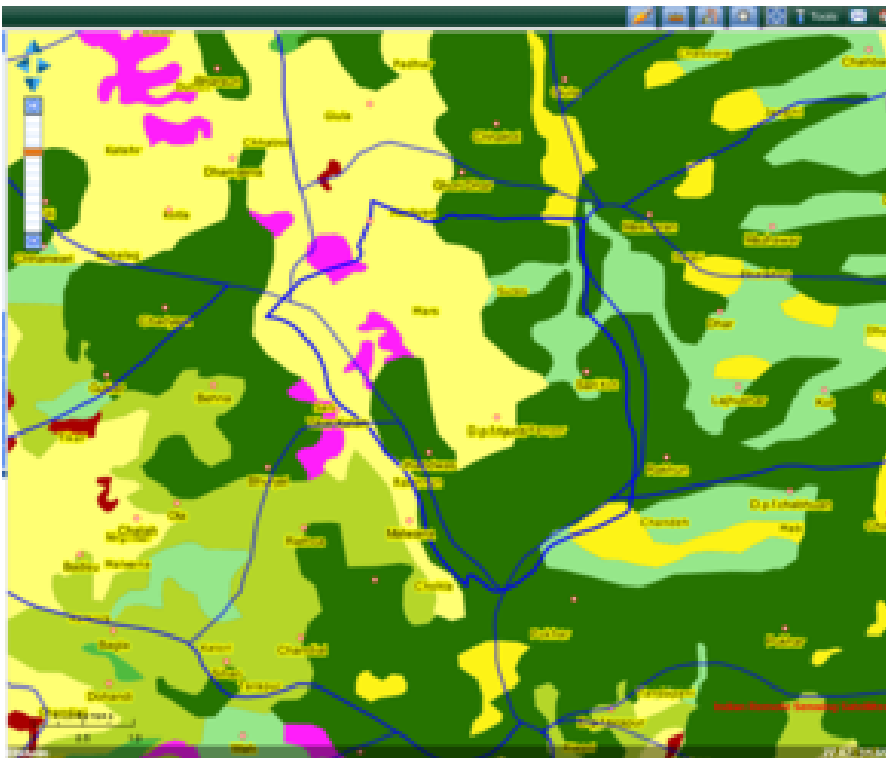
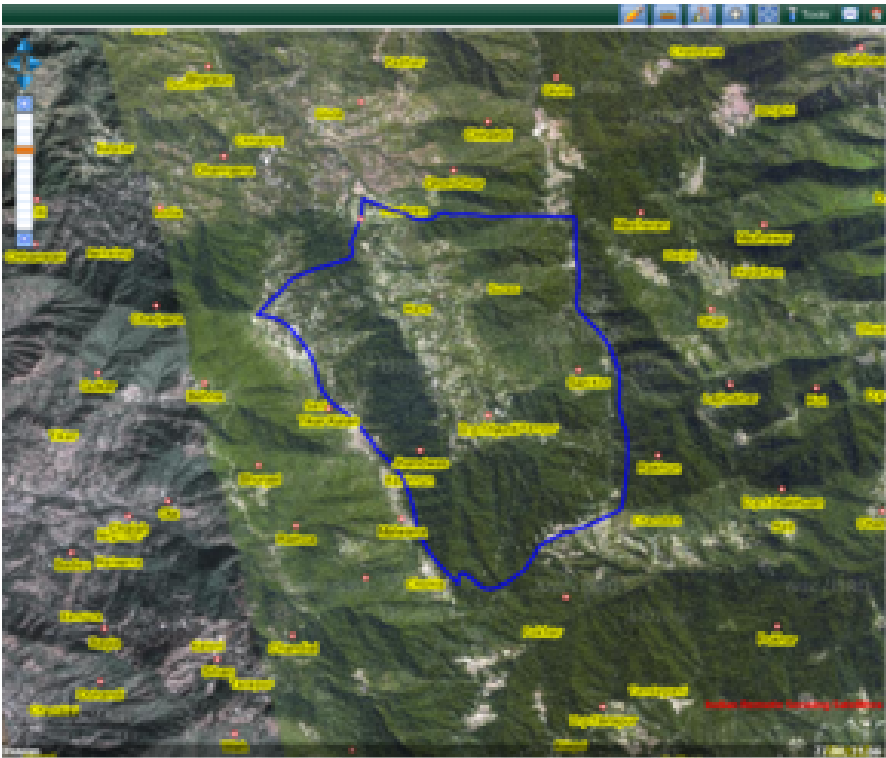
Location of each Beat is shown followed by its brief description, status of its land use together with Land Use Land Cover (LULC) satellite interpretation map. This is followed by details of Forest Land and satellite interpreted maps for Elevation, Aspect, Slope and Erosion, which are helpful to decide the species and the nature of plantation possible. The site specific plantation and designs for

Division	Range	Block	Beats	Remarks
Mandi	Drung	Drung	Tandu, Silag, Drung, Trehmli	All 9 Beats fall under the Catchment of Thana Plaun HEP.
		Kufri Paddar	Kufri, Sharda, Sraun Padhar, Kunnu	
	Mandi	Majhwar	Chabwan, Nella, Padhar	All 17 Beats fall under the Catchment of Thana Plaun HEP.
		Rewalsar Tarapur	Ratti, Majheli, Rewalsar Kangni, Tarapur, SAKroha	
		Sadar	Badsu, Talyad, Kharnal, RaniBaain.	
	Kotli	Rehradhar	Tamlot, Bijani, Rehradhar, Randhara.	Out of 10 Beats only 7 fall in the catchment. 3 Beats namely Baglu, Sardwar and Gokhra do not fall under the catchment of TP.
		Kotli	Beer, Saigalu, Kotli, Koon	
		Nagan	Nagan, Bagloo, Gokhra, Sardhwar	
		Janitary	Janitari, Bannu Kumrah.	

soil and moisture conservation is thereafter tabulated together-with cost thereof

BEAT WISE TREATMENT & COSTING FOR MANDI FOREST DIVISION This Section starts with the Catchment Area Treatment for each beat of the Mandi forest division. Geographically this is a small area with varied temperatures (minimum 9.8°c to 10.9° to the maximum of 24.8° to 26°) and is located on a very fragile landscape. In Mandi Forest division there are only three ranges i.e. Drung, Mandi and Kotli, with 33 beats.

**MANDI FOREST RANGE - MAJHWAR BLOCK:
CHABWAN BEAT:-**



- Built-up/Urban
- Built-up/Rural
- Built-up/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Semi Forest
- Grass/Grazing
- Bareness/culturable/Waterlands, (Inland)Barrenous Land
- Bareness/culturable/Waterlands, Sandy land
- Bareness/culturable/Waterlands, Sandy area
- Bareness/culturable/Waterlands, (Barren rocky
- Wetlands/Water Bodies, (Inland Wetland)
- Wetlands/Water Bodies, (River/Stream/Canal)
- Wetlands/Water Bodies, (Reservoir, Lakes/Ponds)
- Snow and Glacier

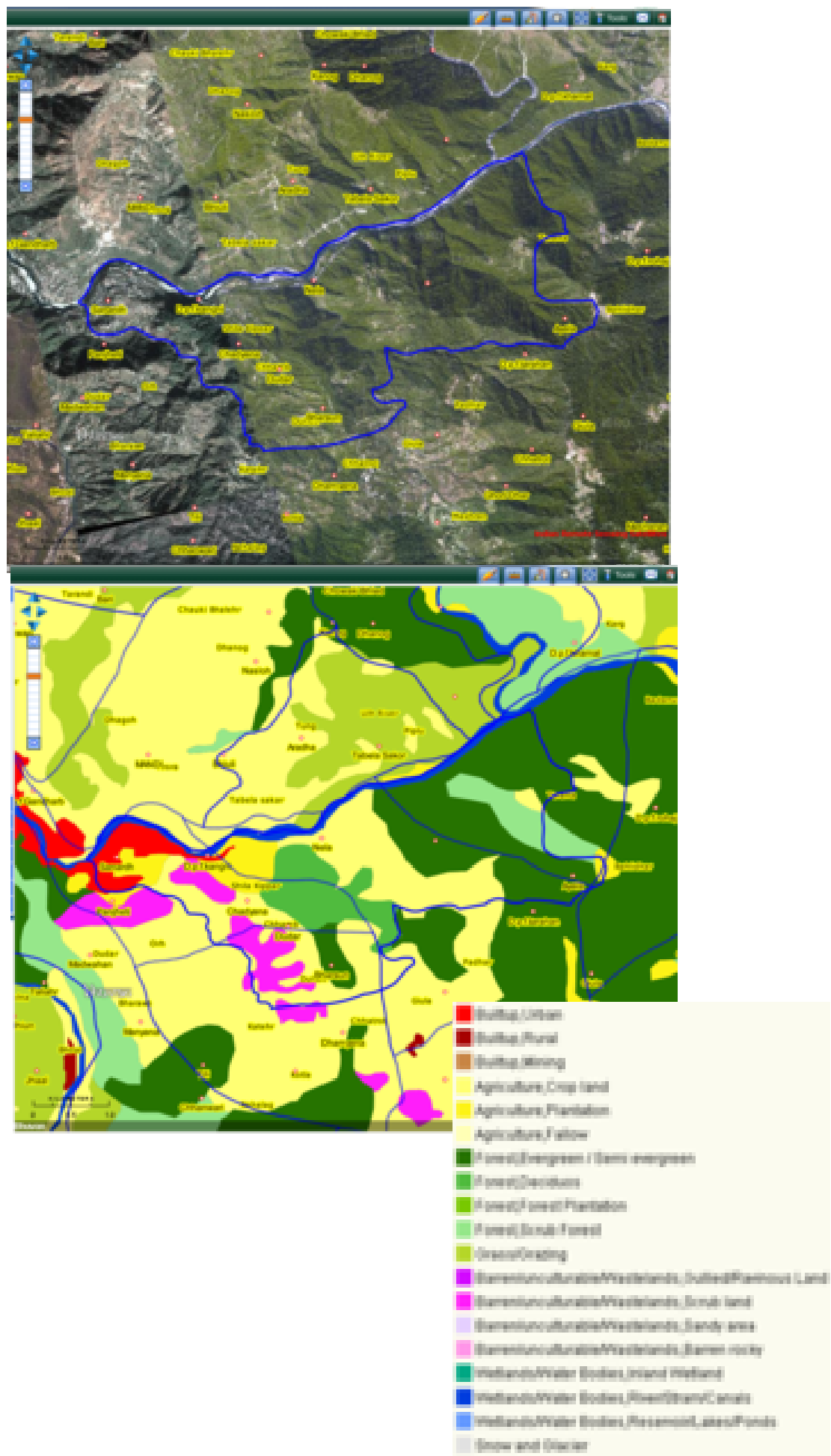
CHABWAN BEAT:**AFFORESTATION:**

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Chabwan	N31 39'34.23"	E76 0'24.9"	5	76750	383750	
2	Enrichment	Chabwan	N31 39'34.23"	E76 0'24.9"	10	70500	705000	
3	Natural Regeneration/ Closures	Chabwan New	N31 39'55.34"	E77 0'11.28"	15	37100	556500	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	3	56150	168400	
6	Pasture Development	..	..	..	3	21650	64950	
7	Eradication of Noxious Weeds				50	15050	752500	
8	Nurseries:							
i.	Upgradation of Existing Nursery	Chiladhar	N31 40'58.23"	E76 59'51.77"	0.5	0	0	Upgradation required.
ii.	New Nursery	Kotmos	..	..	0.5	770000	770000	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Saryal Nala 1.5KM	N31 39'31.29"	E77 0'29.61"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
2	Chabwan Nala 1KM	N31 39'23.09"	E77 0'34.31"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
3	Jagar Nala 1KM	N31 39'37.30"	E77 0'30.12"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
4	Deoli Nala 1KM	N31 38'59.83"	E76 59'56.67"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m	..	17230	5	86150
5	..	..	..	Gabion Retaining Walls	..	..	0	0	0
6	Chabwan C-1	N31 39'31.29"	E77 0'29.61"	Water Harvesting Structures	..	No	62150	1	62150
	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
7	..	..	..	Trenching	..	..	15.3	100	1530

NELHA BEAT:



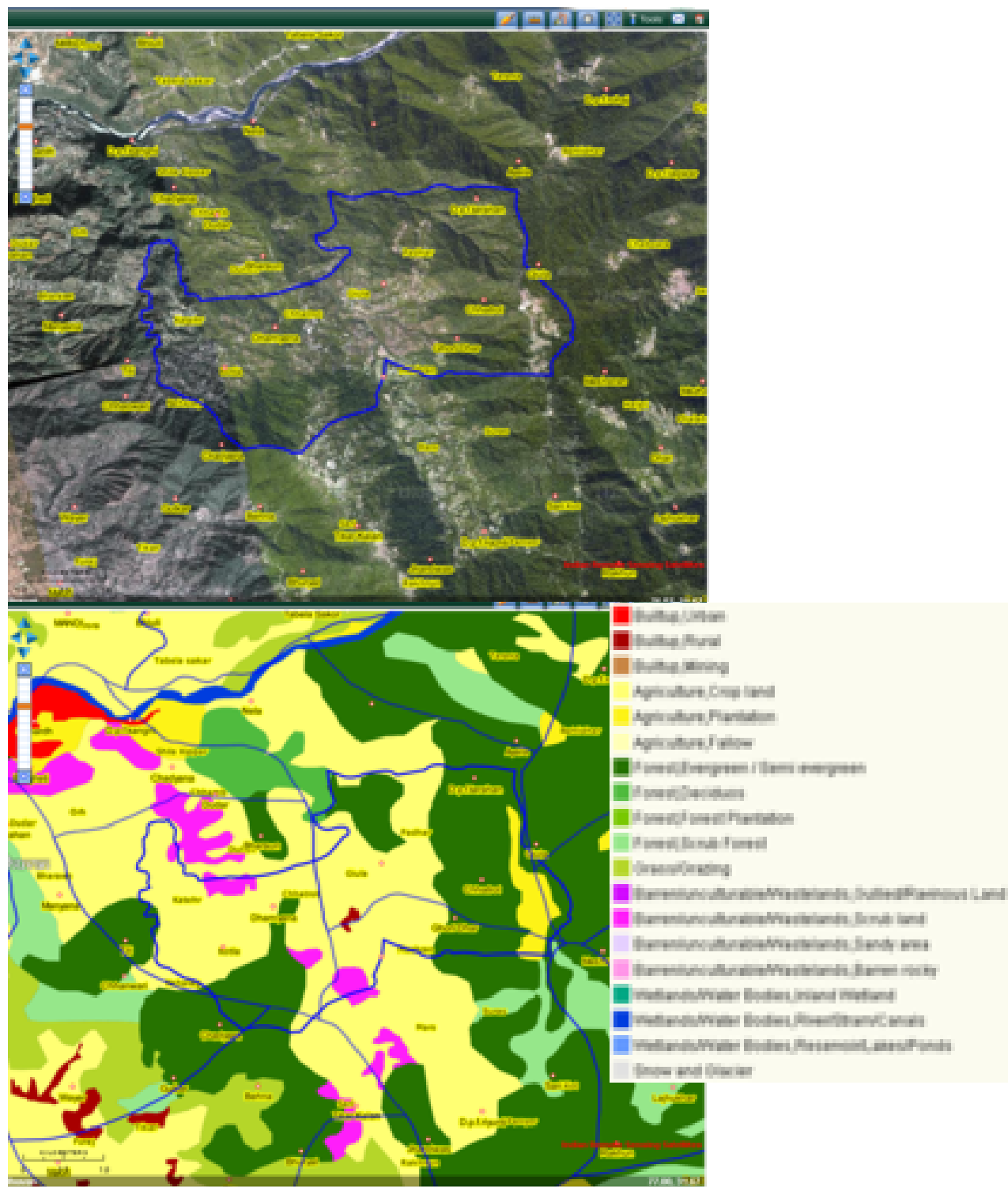
AFFORESTATION:

Sl. No	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	0	0	
2	Enrichment	Silha Kipper	N31 41'44.05"	E76 58'11.39"	10	70500	705000	Ban, Deodar
3	Natural Regeneration/ Closures	Rihnidhar	N31 41'15.86"	E76 58'48.21"	10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	5	56150	280750	
6	Pasture Development	..	..	..	5	21650	108250	
7	Eradication of Noxious Weeds				30	15050	451500	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Kamlu Nala 2KM	N 31 42'4.08"	E77 0'1.82"	Gabion Checkdam	1.5m x 1.5m	No	10000	30	300000
					2m x 2.5m		17230	15	258450
2	Tarhana Nala 1KM	N31 42'12.51"	E76 59'52.72"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
3	Binu Nala 0.5KM	N31 40'25.12"	E76 59'16.41"	Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
					2m x 2.5m		17230	3	51690
4	Kadhani Nala 2KM	N31 42'5.25"	E76 59'32.67"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m	..	17230	10	172300
5	..	..	..	Gabion Retaining Walls	..	..	0	0	0
6	DPF Rihnidhar	N31 41'26.00"	E76 58'47.52"	Water Harvesting Structures	..	No	62150	1	62150
7				Waterhole		No	856920	1	856920
	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
8	..	..	..	Trenching	..	..	15.3	100	1530

PADHAR BEAT:-



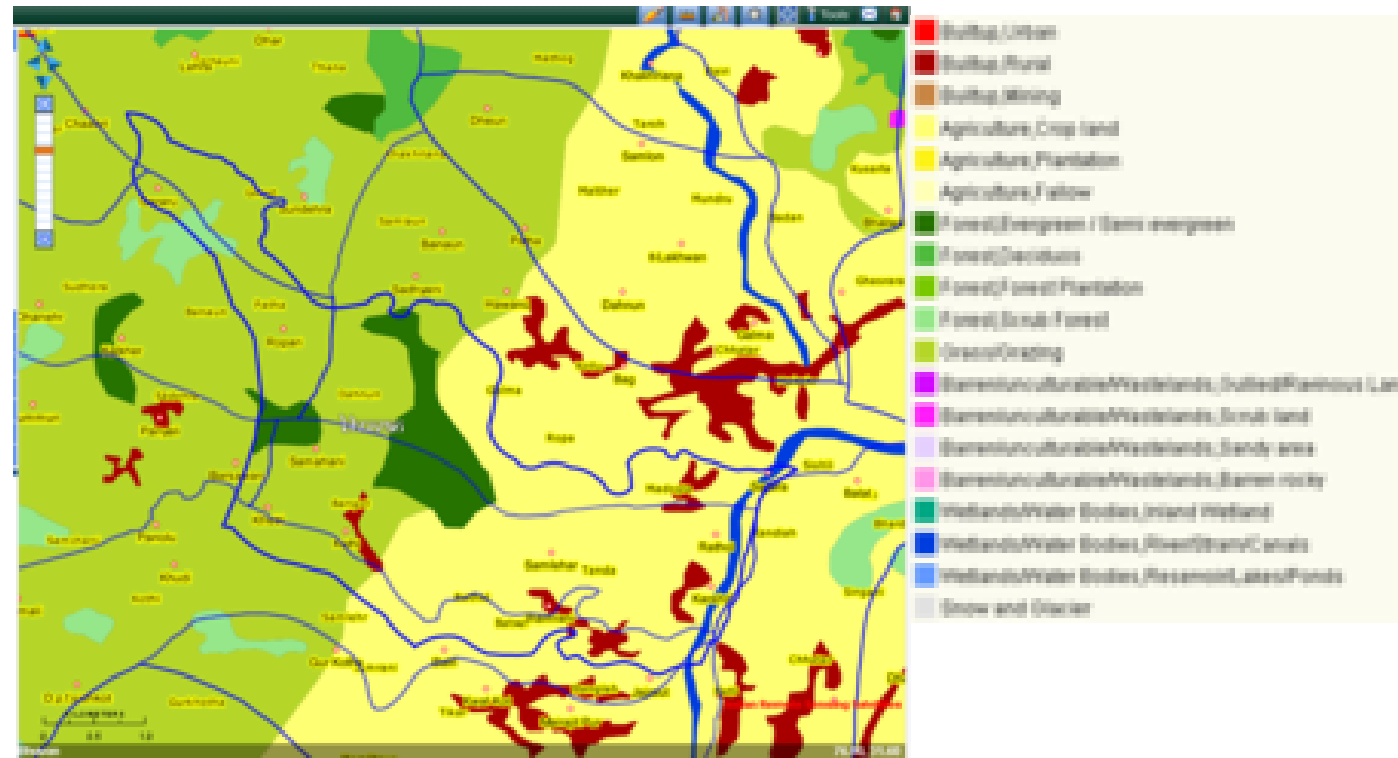
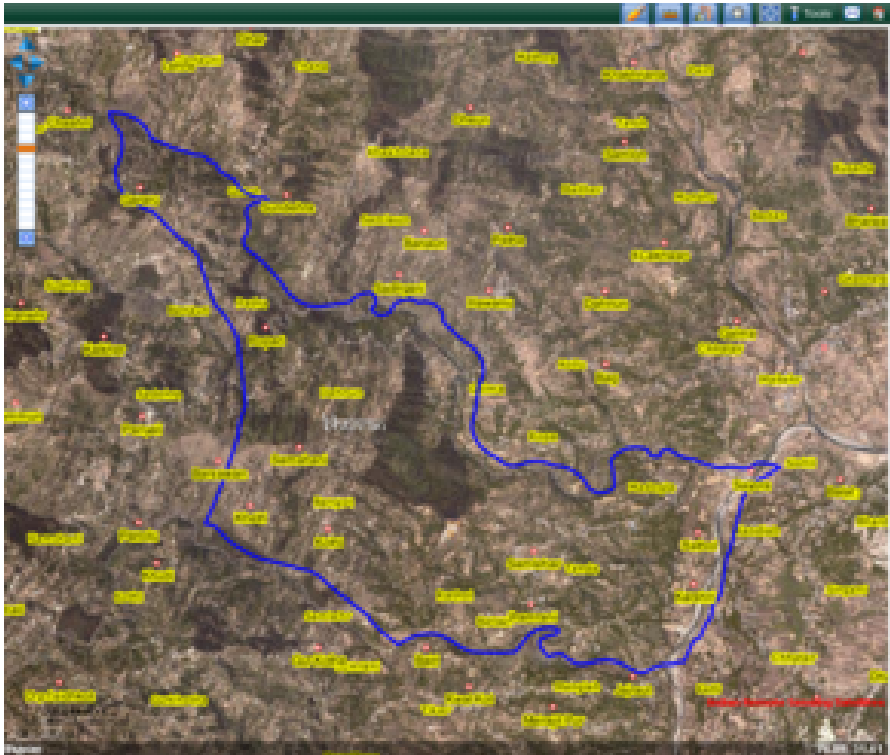
AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	0	0	
2	Enrichment	Nihalag	N31 41'33.70"	E76 59'55.88"	10	70500	705000	
3	Natural Regeneration/ Closures	Padhar	N31 41'11.39"	E76 59'28.08"	10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	5	56150	290750	
6	Pasture Development	..	..	..	5	21650	108250	
7	Eradication of Noxious Weeds				30	15050	451500	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Sun Sana Nala 1.5KM	N31 41'25.30"	E76 59'56.49"	Gabion Checkdam	1.5m x 1.5m	No	10000	18	180000
					2m x 2.5m		17230	5	86150
2	Langwar Nala 2KM	N 31 41'32.78"	E76 59'56.49"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
3	Nihalag Nala 2KM	N 31 40'12.07"	E76 58'40.31"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
4	Chatrot Nala 2KM	N31 40'47.59"	E76 58'47.81"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m	..	17230	10	34460
5	..	..	..	Gabion Retaining Walls	..	..	0	0	0
6	DPF Nihalag	N 31 40'12.07"	E76 58'40.31"	Water Harvesting Structures	..	No	62150	1	62150
	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
7	..	..	..	Trenching	..	..	15.3	100	1530

RATTI BEAT:



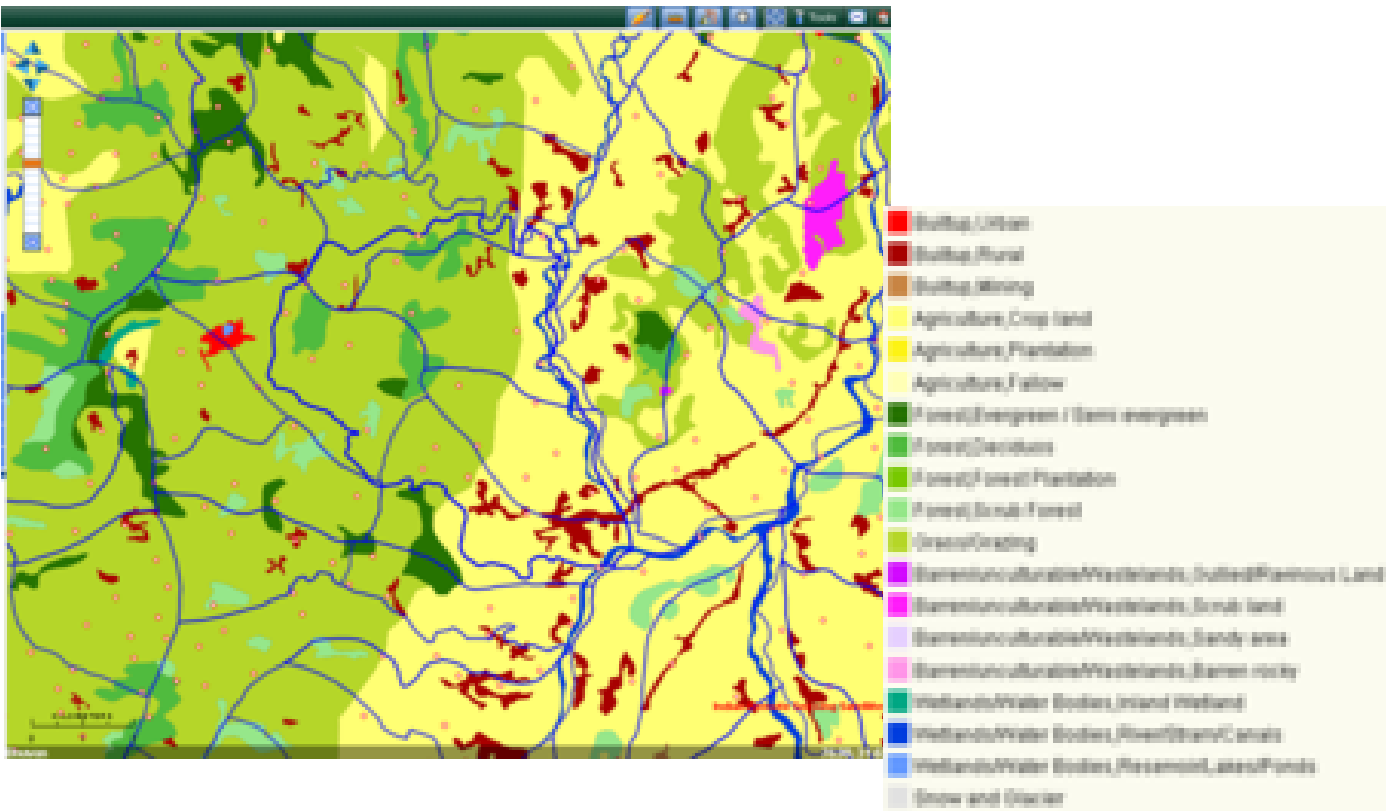
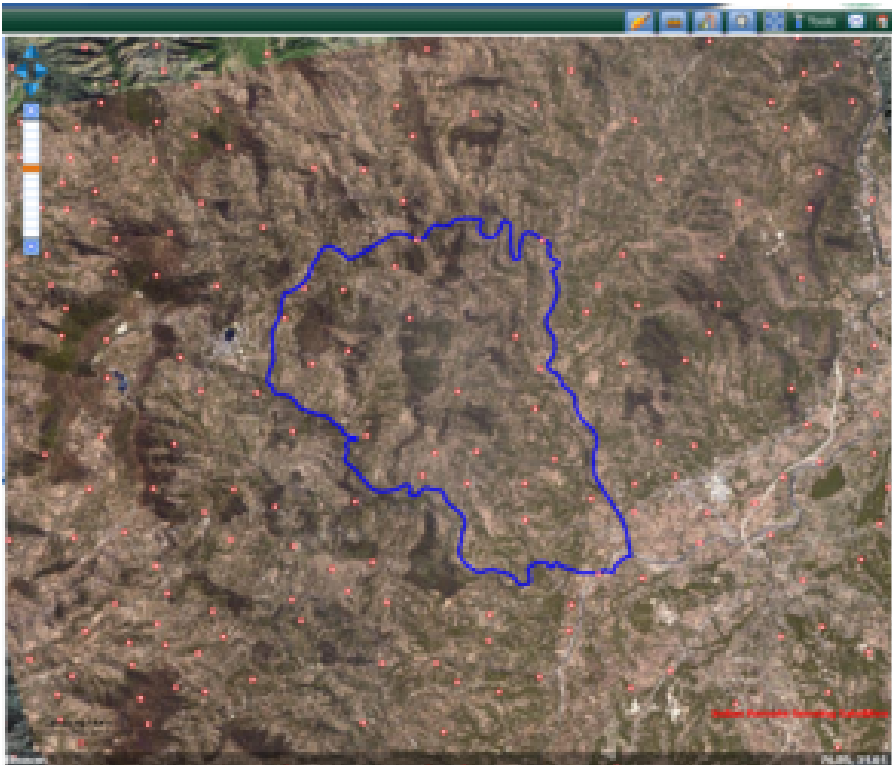
AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	76750	0	
2	Enrichment	Mehasra	N 31 35'55.3"	E 76 52'28.8"	10	70500	705000	
3	Natural Regeneration/ Closures	Dola	N 31 36'24.1"	E 76 50'38.02"	10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	6	56150	336900	
6	Pasture Development	..	..	..	6	21650	129900	
7	Eradication of Noxious Weeds				30	15050	451500	
8	Nurseries:							
i	Upgradation of Existing Nursery	Ratti	N 31 43'46.97"	E 76 56'39.41"	0.5	770000	770000	To be maintained as model nursery.
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Hawanu Nala 2.5KM	N 31 35'19.4"	E 76 51'11.9"	Gabion Checkdam	1.5m x 1.5m	No	10000	25	250000
					2m x 2.5m		17230	10	172300
2	Mahesara Nala 2KM	N 31 35'55.3"	E 76 52'28.8"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	10	172300
3	Nahlot Nala 2KM	N 31 35'55.40"	E 76 53'0.74"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
5				Gabion Retaining Walls	..	..	0	0	0
6				Waterhole	..	No	856920	1	856920
	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
9	..	..	..	Trenching	..	..	100	15.3	1530

MAJHELI BEAT:



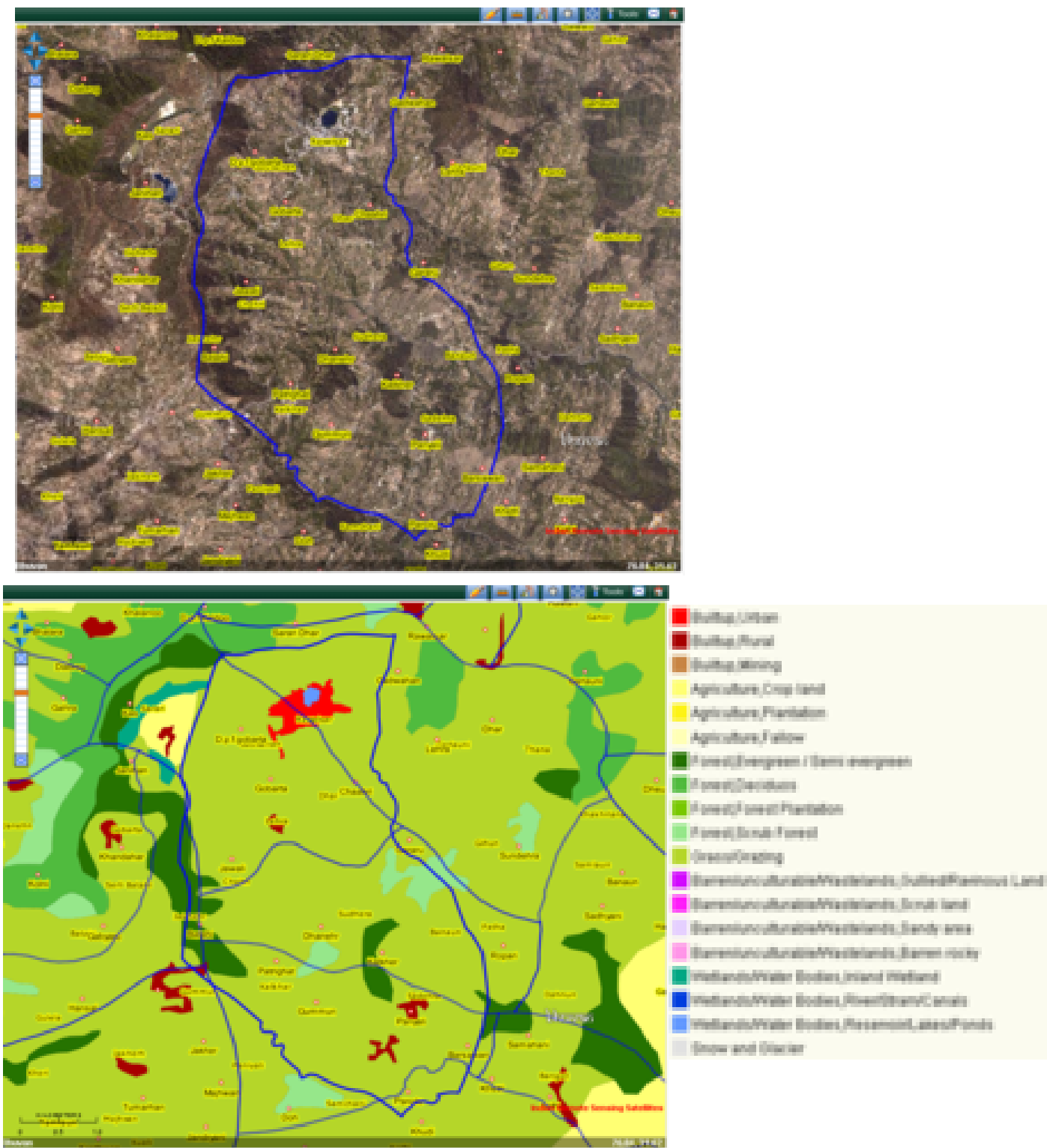
AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	76750	0	
2	Enrichment	Pipali	N 31 38'4.9"	E76 51'42"	10	70500	705000	
3	Natural Regeneration/ Closures	Pipali	N 31 38'4.9"	E76 51'42"	5	37100	185500	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	3	56150	168450	
6	Pasture Development	..	..	..	3	21650	64950	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Samloun Nala 2KM	N 31 36'49.4"	E76 51'48.9"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
2	Safru Nala 2KM	N31 37'51.3"	E76 51'13.1"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
3	..	..	..	Gabion Retaining Walls	..	..	0	0	0
4	..	..	..	Waterhole	..	No	856920	1	856920
5	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
6	..	..	..	Trenching	..	No	100	15.3	1530

REWALSAR BEAT:



AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	76750	0	
2	Enrichment	Choradhar	N 31 38'4.9"	E 76 50'40.6"	5	70500	352500	
3	Natural Regeneration/ Closures	Jalpadhar	N31 38'24.4"	E76 50'31.9"	5	37100	185500	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	8	56150	449200	
6	Pasture Development	..	..	..	8	21650	173200	
7	Eradication of Noxious Weeds				15	15050	225750	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	Range Level Nursery	..	..	2	1220000	1220000	

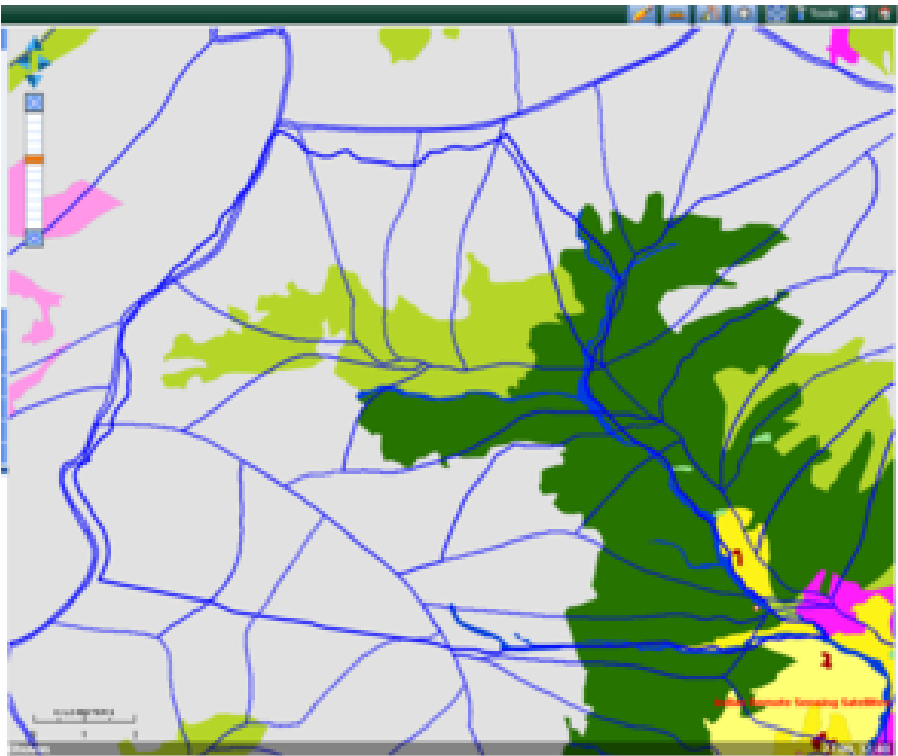
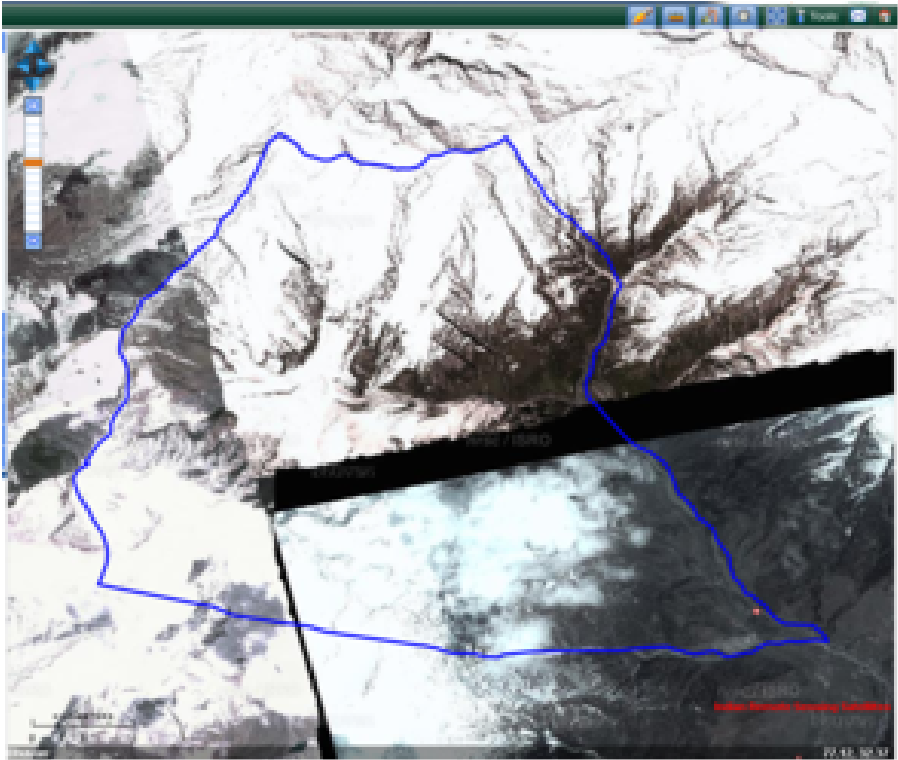
2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Chora Nala 2KM	N31 38'84.4"	E76 50'40.6"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
2	Jhair Nala 2KM	N31 36'96.9"	E76 49'33.9"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
3	Charhi Nala 2.5KM	N31 36'64.4"	E76 49'78.1"	Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	10	172300
4	Godana Nala 3KM	N 31 38'16.8"	E76 49'34.00"	Gabion Checkdams	1.5m x 1.5m	No	10000	16	160000
					2m x 2.5m		17230	4	68920
5	Rewalsar Nala 1.5	N31 38'36.1"	E76 50'03.4"	Gabion Checkdams	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
6	..	..	..	Gabion Retaining Walls	..	..	0	0	0
7				Waterhole		No	856920	1	856920
8	Rewalsar Nala for Zoo	..	..	Water Harvesting Structures	..	..	62150	1	62150
9	..	..	..	Deflecting Spurs	..	..	0	0	0

MANDI FOREST RANGE - TARAPUR FOREST BLOCK.

KANGNI

BEAT:



AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	76750	0	
2	Enrichment	Kangni I	N31 42'11.46"	E76 56'18.13"	15	70500	1057500	
3	Natural Regeneration/ Closures	Kangni II	N31 41'50.49"	E76 56'33.76"	10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	3	56150	168450	
6	Pasture Development	..	..	..	3	21650	64950	
7	Eradication of Noxious Weeds				60	15050	903000	
8	Nurseries:							
i	Upgradation of Existing Nursery	Kangni	N31 41'44.66"	E076 56'37.89"	.5	250000	250000	Upgradation required.
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

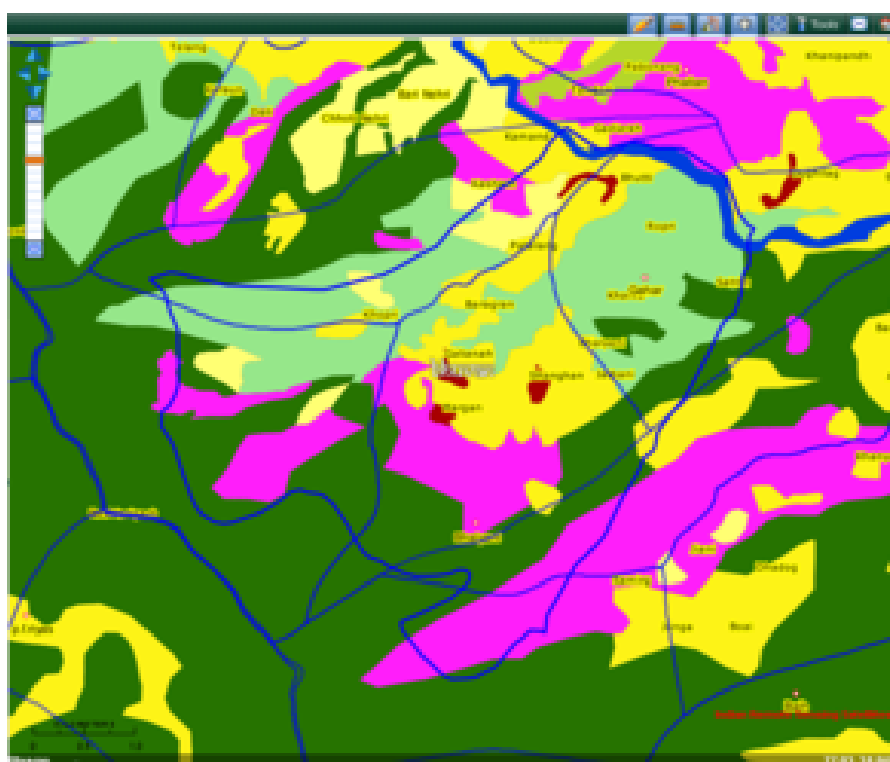
Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Gallu Nala 3KM	N31 40'43.87"	E076 57'13.34"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
2	Badog Nala 3KM	N31 43'31.48"		Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
3	Maigal Nala 2KM	N31 44'11.40"	E076 57'35.87"	Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
4	Kangni Nala 2KM	N31 41'44.66"	E076 56'37.89"	Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
5	Malori Nala 4KM	N31 40'8.65"	E76 56'53.91"	Gabion Checkdams	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
6	Bahadur Nala 4KM	N31 41'22.37"	E076 57'24.61"	Gabion Checkdams	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
7	Sauli Khad 6KM	N31 41'36.16"	E076 57'24.61"	Gabion Checkdams	1.5m x 1.5m	No	10000	20	200000

					2m x 2.5m		17230	10	172300
8	Suketi Khad	N31 41'17.44"	E76 56'13.79"	Gabion Retaining Walls	1.5m x 1.5m	No	10000	45	450000
					2m x 2.5m		17230	15	258450
9	..	..	..	Waterhole	..	No	856920	1	856920
10	..	.	.	Gabion Deflecting Spurs	.	No	0	0	0
11	Kangni	N31 41'50.49"	E76 56'13.79"	Trenching	1mx30cmx30 cm	No	15.3	100	1530

TARAPUR BEAT:



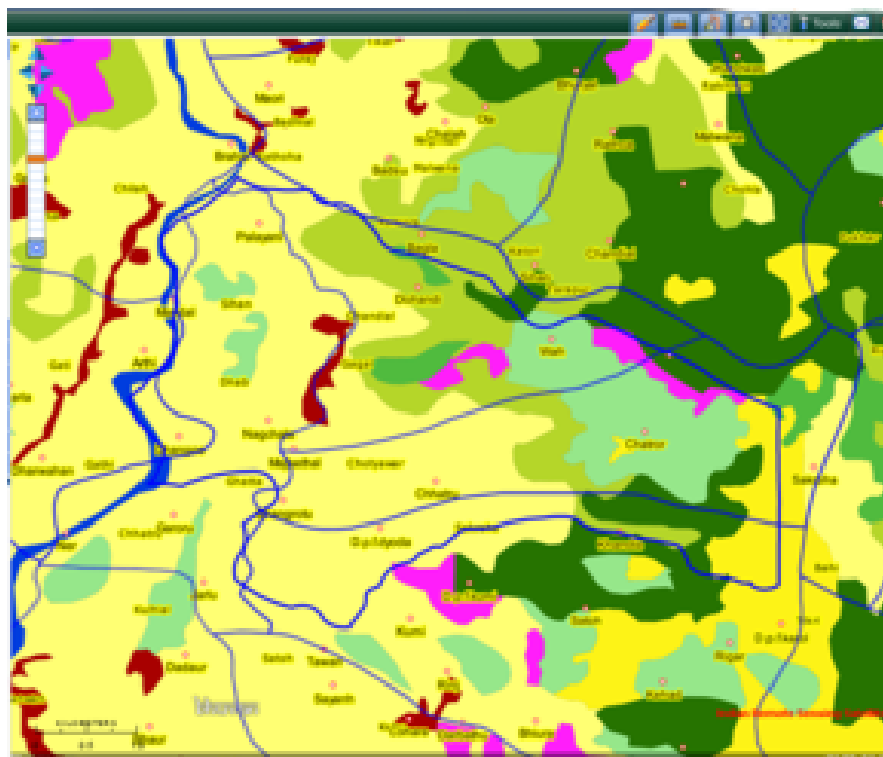
AFFORESTATION:



Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	76750	0	
2	Enrichment	Tarapur	N31 38'03.68"	E76 59'37.36"	5	70500	352500	
3	Natural Regeneration/ Closures	Reuinty	N31 39'10.79"	E76 59'35.06"	5	37100	185500	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	4	56150	224600	
6	Pasture Development	..	..	..	4	21650	86600	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Kharsi Nala 1.5 KM	N31 38'38.59"	E76 59'45.55"	Gabion Checkdam	1.5m x 1.5m	No	10000	12	120000
					2m x 2.5m		17230	3	51690
2	Ber Nala 1.5KM	N31 37'50.35"	E76 58'39.41"	Gabion Checkdam	1.5m x 1.5m	No	10000	11	110000
					2m x 2.5m		17230	4	68920
3	Nihar Nala	N31 39'12.23"	E76 58'20.17"	Gabion Checkdams	1.5m x 1.5m	No	10000	6	60000
					2m x 2.5m		17230	4	68920
4	Bhadyal Nala	N31 38'39.75"	E76 58'20.17"	Gabion Retaining Wall	1.5m x 1.5m	No	10000	6	60000
					2m x 2.5m		17230	4	68920
5	Kharsi Nala	..	..	Water Harvesting Structure	..	..	62150	1	62150
	Ber Nala			Water Harvesting Structure	..	..	62150	1	62150
6	Tarapur	N31 39'01.79"	E76 59'35.06"	Trenching	1mx30cmx30 cm	No	15.3	100	1530



- SoilUse/Urban
- SoilUse/Forest
- SoilUse/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Field
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Semi Forest
- Grass/Grass
- Barren/Unsuitable/Mastlands, Cultivated/Plains/L
- Barren/Unsuitable/Mastlands, Semi land
- Barren/Unsuitable/Mastlands, Sandy area
- Barren/Unsuitable/Mastlands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canal
- Wetlands/Water Bodies, Reservoir, lake/Ponds
- Snow and Glacier

AFFORESTATION:

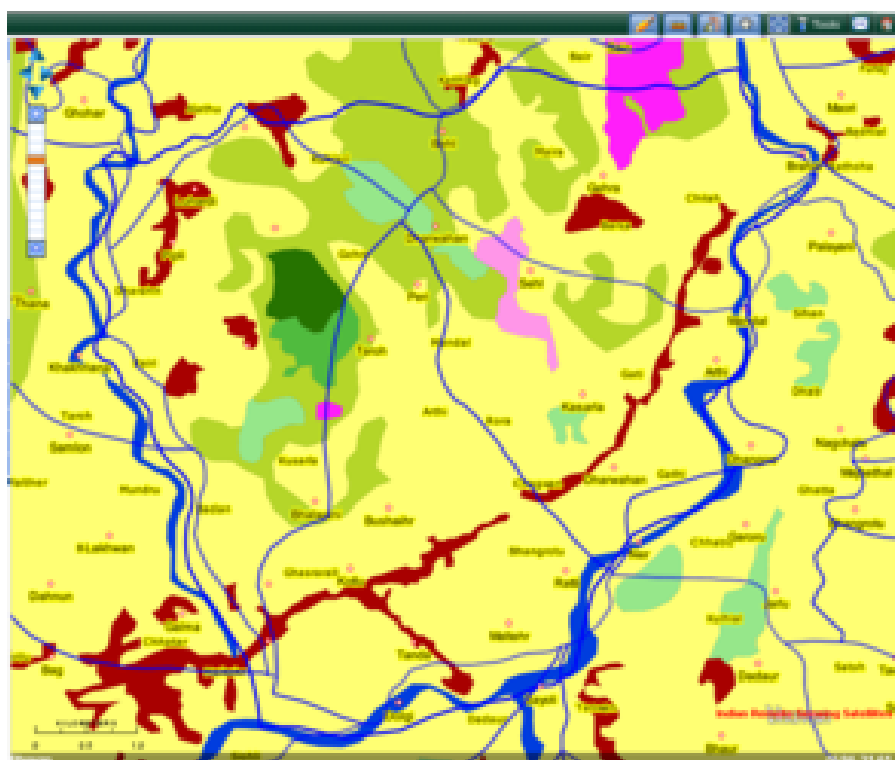
Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Kandhi Deo	N31 37'34.06"	E76 58'41.65"	5	76750	383750	
2	Enrichment	Naina Mata Temple	N31 37'13.80"	E76 58'55.57"	5	70500	352500	
3	Natural Regeneration/ Closures	Movi (Sakroha)	N 31 37'13.80"	E76 59'53.03"	5	37100	185500	
4	NTPF/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	9	56150	505350	
6	Pasture Development	..	..	..	9	21650	194850	
7	Eradication of Noxious Weeds				10	15050	150500	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Paje ra Nala 2KM	N31 36'58.56"	E076 59'12.42"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
2	Pindi Cho Nala 2.5 KM	N31 36'36.93"	E076 58'54.38"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5m		17230	5	86150
3	..	..	..	Gabion Retaining Wall	..	..	0	0	0
4	Pindi Cho Nala	..	..	Water Harvesting Structures	..	No.	62150	1	62150
5	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
6	Sakroha	N31 37'07.08"	E76 58'55.58"	Trenching	1mx30cmx30cm	No	15.3	100	1530

MANDI FOREST RANGE - SADAR BLOCK

BADSU BEAT:



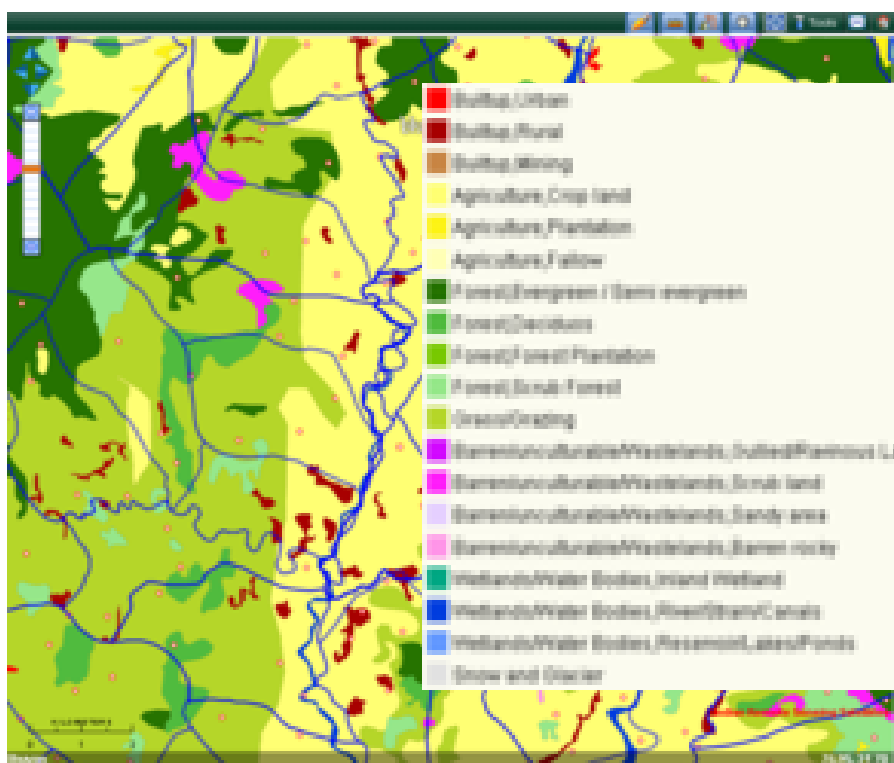
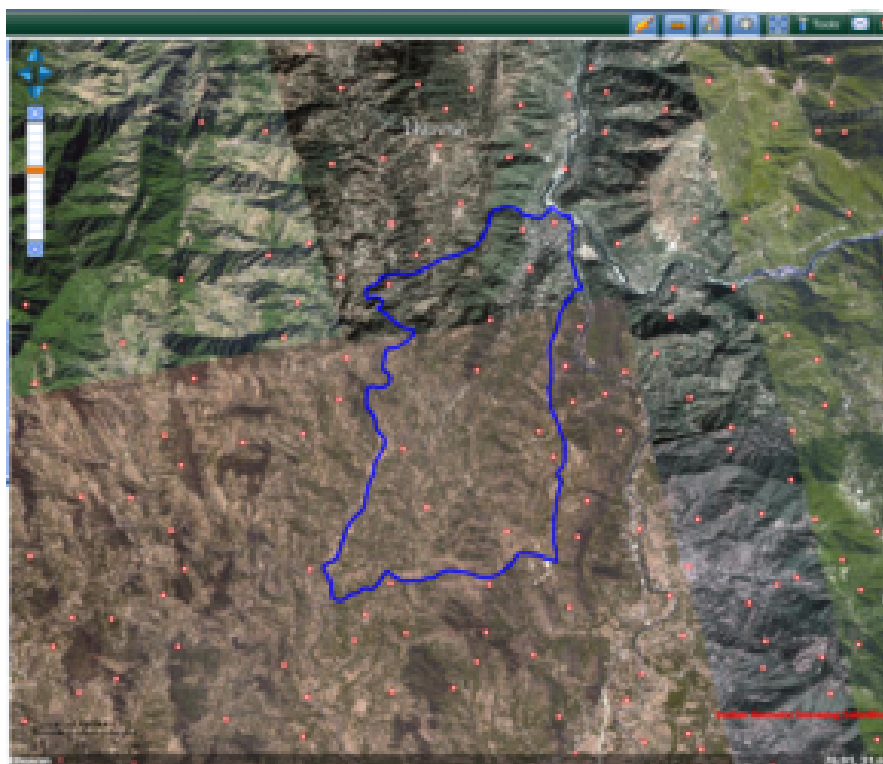
AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Sanora	N 31 38'00.01"	E76 53'45.72"	5	76750	383750	
2	Enrichment	Sanora			10	70500	705000	
3	Natural Regeneration/ Closures	Sanora	N31 36'50.45"	E76 54'29.42"	10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	5	56150	280750	
6	Pasture Development	..	..	..	5	21650	108250	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Sanora Nala 4KM			Gabion Checkdams	1.5m x 1.5m	No	10000	20	200000
					2m x2.5m		17230	10	172300
	Manglah Nala 3KM			Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x2.5m		17230	5	86150
	Saini Mori Nala 4KM			Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x2.5m		17230	5	86150
2	..	..	.	Gabion Retaining Walls	..	..	0	0	0
3	Saini Nal	..	.	Water Harvesting Structures	..	No	62150	1	62150
	Sanora Nala			Water Harvesting Structures	..	No	62150	1	62150
	Manglah Nala			Water Harvesting Structures	..	No	62150	1	62150
4	..	..	.	Gabion Deflecting Spurs	..	..	0	0	0
5	..	..	.	Trenching activities		No.	100	15.3	1530

TALYAR BEAT:



AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Gandharv	N 31	E76	5	76750	383750	
2	Enrichment		42'49.13"	55'29.07"	10	70500	705000	
3	Natural Regeneration/ Closures	Gandharv	N 31	E76	10	37100	371000	
			36'50.45"	54'29.42"				
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	8	56150	449200	
6	Pasture Development	..	..	..	8	21650	173200	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	Tawambra	N31	E76	0	250000	250000s	Modernization and upgradation required.
			41'46.61"	55'21.57"				
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty .	Cost (Rs.)
1	Tawambra Nala 4KM	N 31	E76	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
		41'45.61"	55'22.57"		2m x 2.5m		17230	5	86150
2	Gandharv Nala			Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	5	86150
3	Matt Nala	N 31	E76	Gabion Checkdam		No	10000	10	100000
		43'14.93"	55'37.2"				17230	5	86150
4				Gabion Retaining Wall		No	0	0	0
5	Twambra Nala	..	..	Water Harvesting Structure		No	62150	1	62150
6				Waterhole		No	856920	1	856920
7	..	..	..	Gabion Deflecting spurs		..	0	0	0
8	Gandharv	N31	E76	Trenching	1mx30cmx30cm	No	15.3	200	3060
		42'30.83"	55'21.27"						

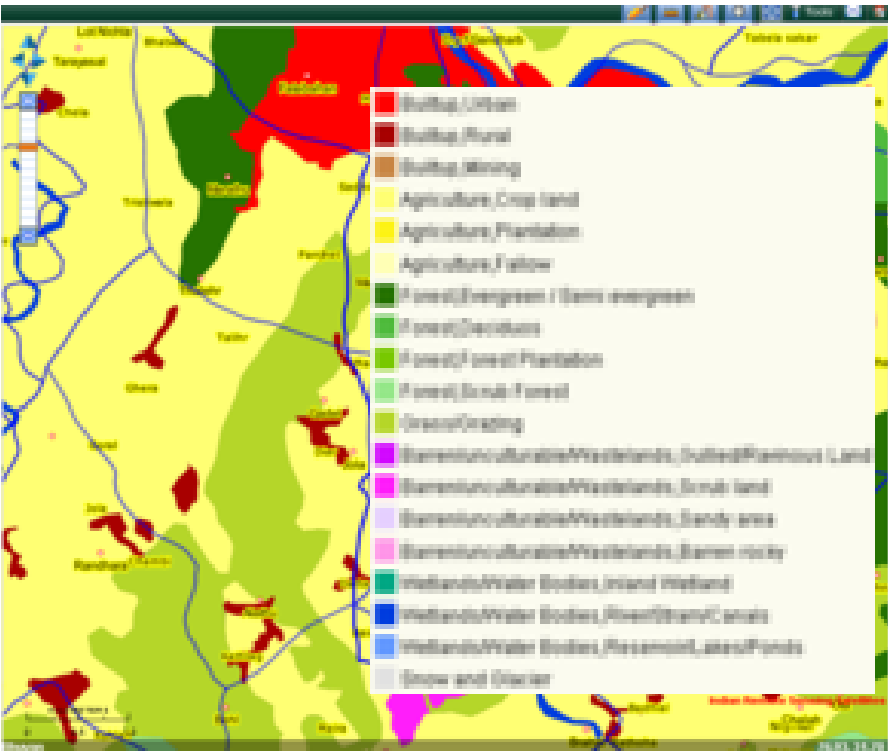
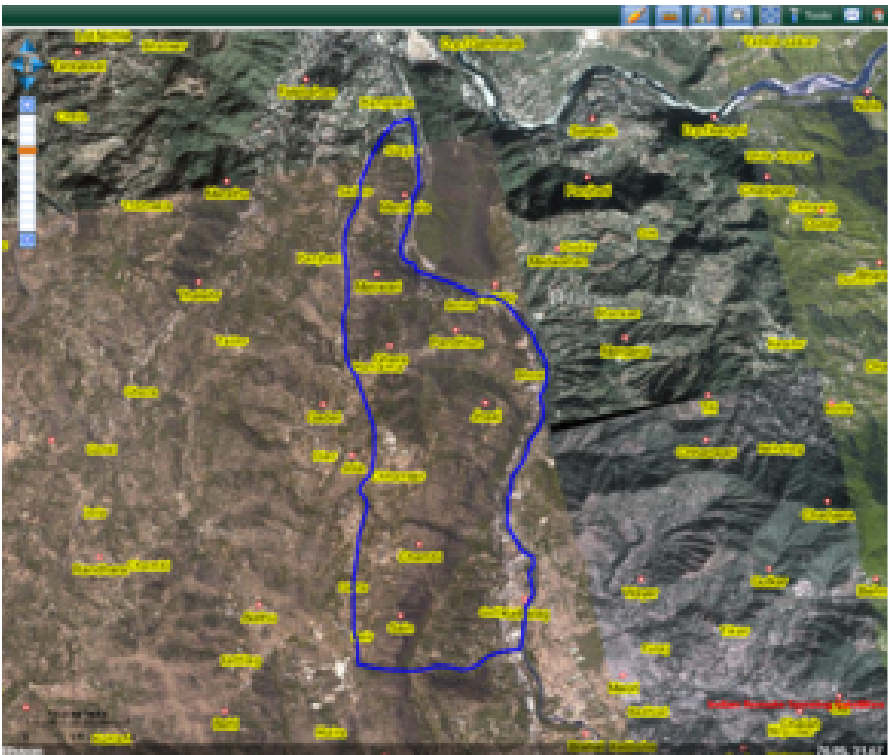
KHARNAL BEAT:- Satellite image is not available.

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Chadyara	N31 40'44.95"	E76 56'19.104"	0	76750	0	Ban, Chir, Kafal, Sheesham, Bamboo, Shimbai, Kambal, Tun, Sambha, Segal
2	Enrichment	Chadyara	N31 39'46.85"	E76 56'21.86"	5	70500	352500	Ban, Deodar
3	Natural Regeneration/ Closures	Jhmar	N31 49'36.34"	E76 45'20.26"	10	37100	371000	
4	NTPP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	0	56150	0	
6	Pasture Development	..	..	..	0	21650	0	
7	Eradication of Noxious Weeds					15050		
8	Nurseries:							
i	Upgradation of Existing Nursery				0.5	0	0	To be made as a Model Nursery.
ii	New Nursery	..	..	..	0	0	0	

1. SMC Measures:-

Sl.No.	Sub-Component/ Activity	Name of Nala/ Forest	Lat Long	Unit	Size	Unit Cost Rs.	Quantity	Total Cost Rs.
Gabion Checkdams/ Checkwalls								
1		Siharni Nala-3KM		Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
2.	Water Harvesting Structure			Nos.		62150	1	62150

RANI BAAIN BEAT:



Rani Baain Beat: AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Chadyara	N31 40'44.95"	E76 56'19.104"	5	76750	383750	
2	Enrichment	Chadyara	N31 39'46.85"	E76 56'21.86"	10	70500	705000	
3	Natural Regeneration/ Closures	Jhmar	N31 49'36.34"	E76 45'20.26"	10	37100	371000	
4	NTPP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	4	56150	224600	
6	Pasture Development	..	..	..	4	21650	86600	
7	Eradication of Noxious Weeds				40	15050	602000	
8	Nurseries:							
i	Upgradation of Existing Nursery	Rani Baain	N31 40'22.04"	E76 56'46.06"	0.5	250000	250000	To be made as a Model Nursery.
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Gati Nala 2KM	N31 37'42.90"	E76 55'58.05"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
2	Kunda Nala 4KM	N31 40'41.76"	E76 56'19.89"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m		17230	10	172300
3	Chanwari Nala	N31 40'36.19"	E76 56'39.09"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
4	Suketi Khad	N31 41'23.22"	E76 56'9.29"	Gabion Retaining Wall	1.5m x 1.5m	No	0	0	0
					2m x 2.5m	..	0	0	0
5	Nagchala Nala	N31 38'6.31"	E76 56'12.012"	Water Harvesting Structure	..	No	62150	1	62150
	Kunda Nala	N31 40'35.16"	E76 56'15.612"	Water Harvesting Structure	..	No	62150	1	62150
	Chanwari Nala			Water Harvesting Structure	..	No	62150	1	62150
6	..	..	..	Gabion Deflecting Spurs	..	..	0	0	0
7	Chadyara	N31 39'46.85"	E76 56'21.86"	Trenching	1mx30cm x30cm	Nos. .	15.3	200	3060

RANDHARA BEAT: Satellite imagery is not available.

AFFORESTATION:

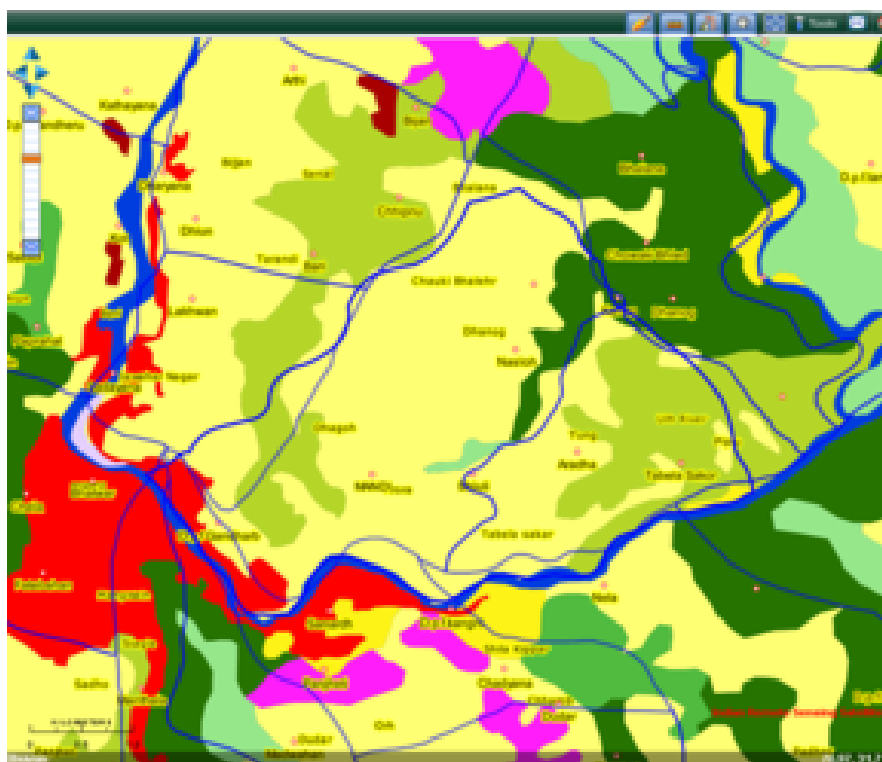
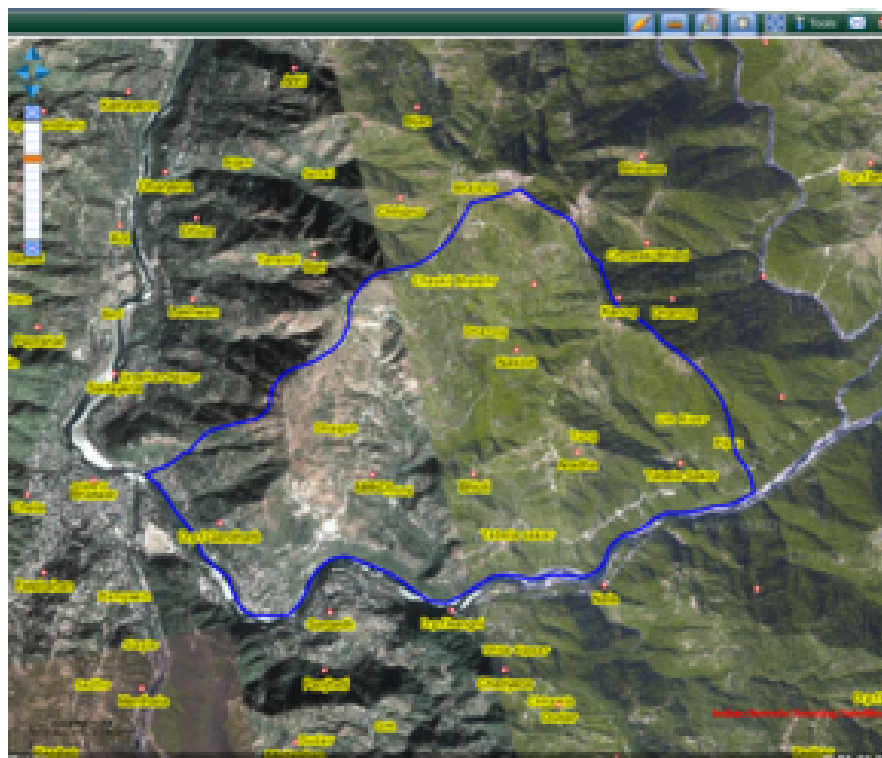
Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Banghera	N 31'39.64"	E76 42'45.55"	10	76750	767500	
2	Enrichment	Nain tunga	N 31'44.20.47"	E76 56'53.47"	10	70500	705000	
3	Natural Regeneration/ Closures	Banghera	N 31'49.19.64"	E76 52'45.55"	5	37100	185500	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	4	56150	224600	
6	Pasture Development	..	..	..	4	21650	86600	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Patroun Nala 2KM	N 31'39.42.89"	E76 52'04.10"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
2	Chahd Nala 3KM	N31 40'06.96"	E76 52'11.57"	Gabion Checkdam	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5m		17230	5	86150
3	Tandu Nala 2KM	N 31'40.05.02"	E76 52'28.92"	Gabion Checkdam	1.5m x 1.5m	No	10000	16	160000
					2m x 2.5m		17230	4	68920
4	Mandhlog Nala 3KM	N31 40'07.89"	N31 40'07.89"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m	..	17230	10	172300
5	Batahan Nala 4KM	N 31'39.42.89"	E76 52'04.10"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5m	..	17230	10	172300
6	Cherh Nal	..	..	Water Harvesting Structures	..	..	62150	1	62150
	Batahn Nala			Water Harvesting Structures	..	..	62150	1	62150
	Mandhlog Nala			Water Harvesting Structures	..	..	62150	1	62150
7	..	..	..	Trenching	..	..	100	15.3	1530

FOREST RANGE: MANDI - FOREST BLOCK: REHRADHAR

REHRADHAR BEAT:



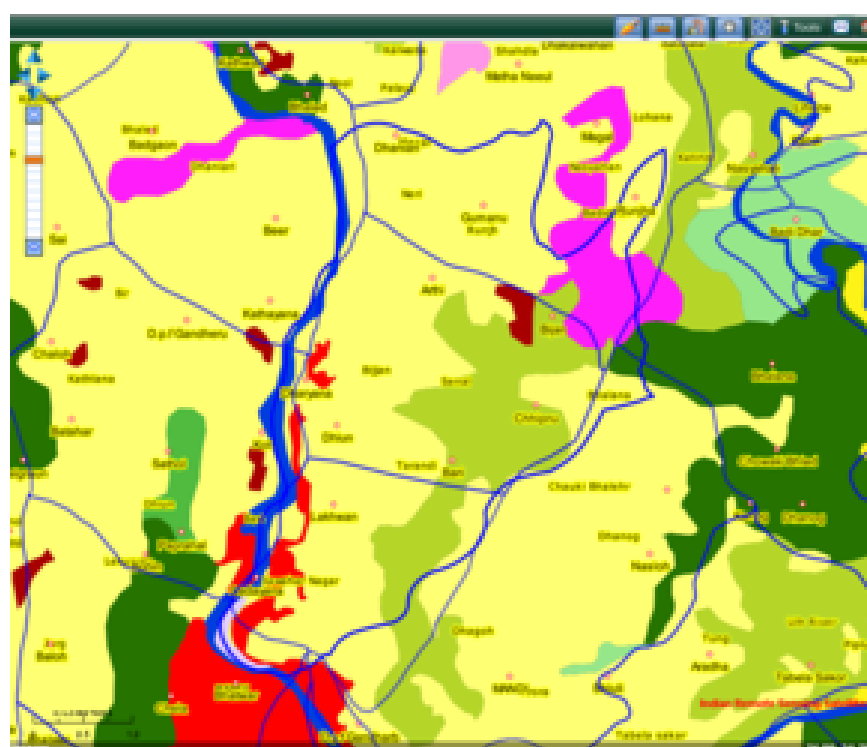
AFFORESTATION:

Sl. No	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Tandi	N 31°43'22.10" E 76°57'43.96"	20	76750	1535000	0
2	Enrichment	Samblidhar.	N 31°43'10.57" E 76°56'8.88"	20	70500	1410000	0
3	Natural Regeneration/ Closures		..	15	37100	556500	0
4	NTFP/ Medicinal Plantation	..	..	0	137825	0	0
5	Energy Plantation	..	..	2	56150	112300	0
6	Pasture Development	..	..	2	21650	43300	0
7	Eradication of Noxious Weeds			30	15050	451500	
8	Nurseries:						
i	Upgradation of Existing Nursery	Score	N 31°42'20.32" E 76°56'27.01"	0.2	250000	250000	..
ii	New Nursery	..	..	..	..	..	..

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Ropa Nala 3km	N31°42'56.3"	E 76°51'62.4"	Gabion Checkdams	1.5m x 1.5m	No.	10000	35	350000
					2m x 2.5m	No.	17230	15	258450
2	Scoh Nala 4km	N 31°42'33.08"	E 76°58'8.54"	Gabion Checkdams	1.5m x 1.5m	No.	10000	35	350000
					2m x 2.5m	No.	17230	15	258450
	Piplu Nala 3 km	N 31°42'56.24"	E 76°58'51.40"	Gabion Checkdams	1.5m x 1.5m	No.	10000	25	250000
					2m x 2.5m	No.	17230	10	172300
3	..	..	..	Retaining Walls/ Toe Walls	..	..	0	0	0
4	Scoh Nala	..	..	Water Harvesting Structures	..	No	62150	1	62150
5	..	..	..	Waterhole	..	No	856920	1	856920
6	..	..	..	Trenching	..	..	200	15.3	3060

BIJNI BEAT:-



- Builtup/Urban
- Builtup/Rural
- Builtup/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Scrub Forest
- Grass/Grazing
- Bareland/cultivable/Waterlands, Cultivated/Barren Land
- Bareland/cultivable/Waterlands, Scrub land
- Bareland/cultivable/Waterlands, Sandy area
- Bareland/cultivable/Waterlands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lakes/Ponds
- Snow and Glacier

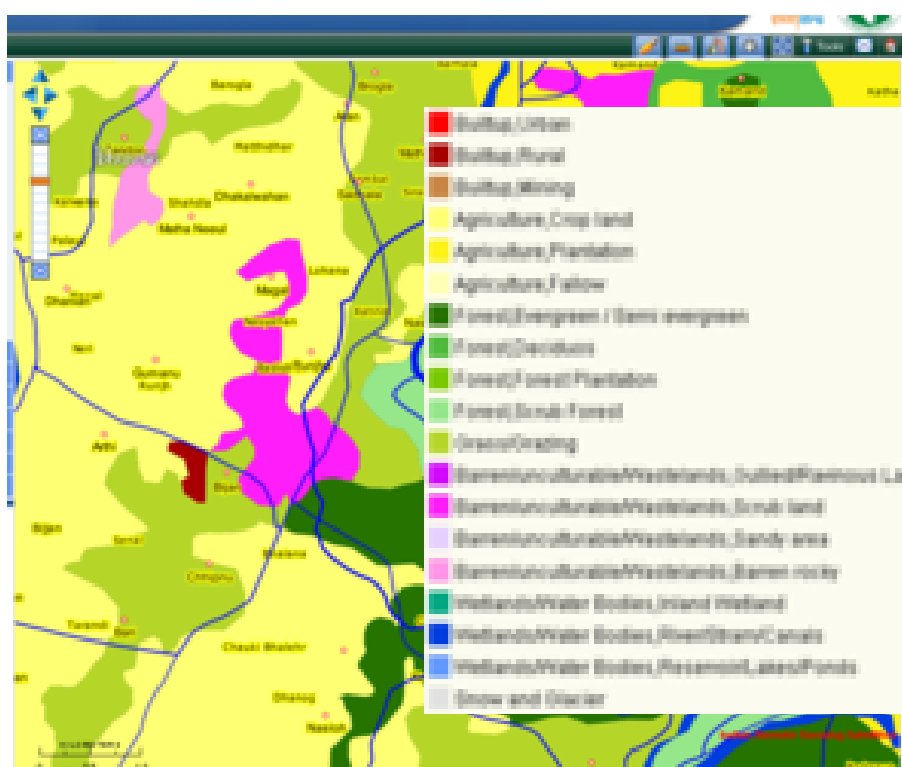
AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Chhipnu	N 31°43'22.10"	E 76°56'59.60"	10	76750	767500	
2	Enrichment	Sihnala	N 44°20.47"	E 76°56'53.47"	20	70500	1410000	
3	Natural Regeneration/ Closures	Magal	N 45°02.86"	E 76°56'37.56"	20	37100	742000	
4	NTFP/ Medicinal Plantation	..	..	..	0	0	0	
5	Energy Plantation	..	..	..	4	56150	224600	
6	Pasture Development	..	..	..	4	21650	86600	
7	Eradication of Noxious Weeds	Chhipnu	N 31 43	E 76 57	30	15050	451500	
		Sihnala	N31 44 15	E76 56 53				
8	Nurseries:							
i	Upgradation of Existing Nursery	Bijni (abandoned)	N 44°13.63"	E 76°57'11.32"	0.5	770000	770000	To be restarted and modernized.
ii	New Nursery	..	..	..	0	0	0	0

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Sih Nala-4KM	N 31 44°15.96"	E 76 56°53.89"	Gabion Checkdams	1.5m x 1.5m	No	10000	6	60000
					2m x 2.5M		17230	4	40000
2	Dhangsi Nala 1KM	N 31 42°49.21"	E 76 56°01.44"	Gabion Checkdams	1.5m x 1.5m	No	10000	6	60000
					2m x 2.5M		17230	4	40000
3	Labandi Nala 1.5KM	N 31 45°02.86"	E 76 56°37.56"	Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5M		17230	5	86150
4	Runjh Nala 4KM	N 31 44°50.67"	E 76 57°30.13"	Gabion Checkdams	1.5m x 1.5m	No	10000	28	280000
					2m x 2.5M		17230	12	206760
5	Magal Nala	N 31 45°1.96"	E 76 56°38.03"	Gabion Retaining/ Toe walls	1.5m x 1.5m	No	10000	20	200000
					2m x 2.5M		17230	10	172300
6	Chhipnu Nala	N 31 43°22.74"	E 76 56°59.17"	Water Harvesting Structure	..	No	62150	1	62150
	Runjh Nala			Water Harvesting Structure	..	No	62150	1	62150
	Sih Nala			Water Harvesting Structure	..	No	62150	1	62150
7				Waterhole		No	856920	1	856920
8	Sihnala	N 31 44°20.47"	E 76 56°53.47"	Trenching	1mx30cmx30cm	Nos	15.3	100	1530

TAMLOT BEAT-



Tamlot Beat:

AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Tamlot	N 31 44'09.60"	E 76 58'44.45"	5	76750	383750	
2	Enrichment	Tamlot	N 31 44'18.21"	E 76 58'49.84"	10	70500	705000	
3	Natural Regeneration/ Closures	Tamlot	N 31 44'37.53"	E 76 58'17.45"	20	37100	742000	
4	NTPP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	2	56150	102300	
6	Pasture Development	..	..	..	2	21650	43300	
7	Eradication of Noxious Weeds				20	15050	301000	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long		Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Tamlot Nala	N 31 44'09.73"	E 76 58'45.52"	Gabion Checkdams	1.5m x 1.5m	No	10000	10	100000
					2m x 2.5M		17230	5	86150
2	Runjh Nala	N 31 44'51.61"	E 76 57'31.16"	Gabion Checkdams	1.5m x 1.5m	No	10000	15	150000
					2m x 2.5M		17230	5	86150
3	..	..	..	Gabion Retaining Walls	..	..	0	0	0
4	Tamlot Nal	..	..	Water Harvesting Structure	..	No	62150	0	0
	Runjh Nala			Water Harvesting Structure	..	No	62150	0	0
5				Waterhole		No	856920	1	856920
6	..	..	..	Trenching activities	..	100	15.3	1530	0

DRUNG RANGE

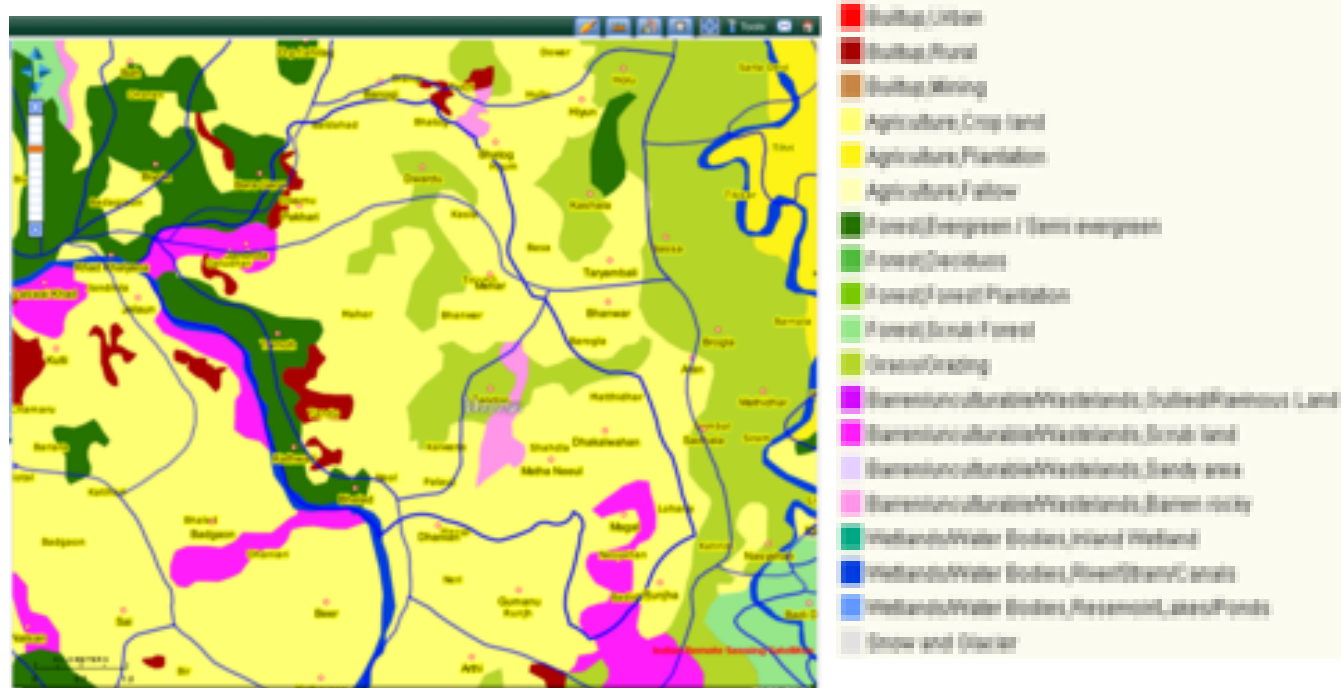
Drung Range:- Drung range comprises three blocks namely Drung, Kufri and Paddar.

Drung block:- Drung block has 4 beats namely Tandur, Silag, Drung, Trehml. Description of the same are as below: -

FOREST RANGE: DRUNG - FOREST BLOCK: DRUNG

TANDU BEAT-

Aforestation

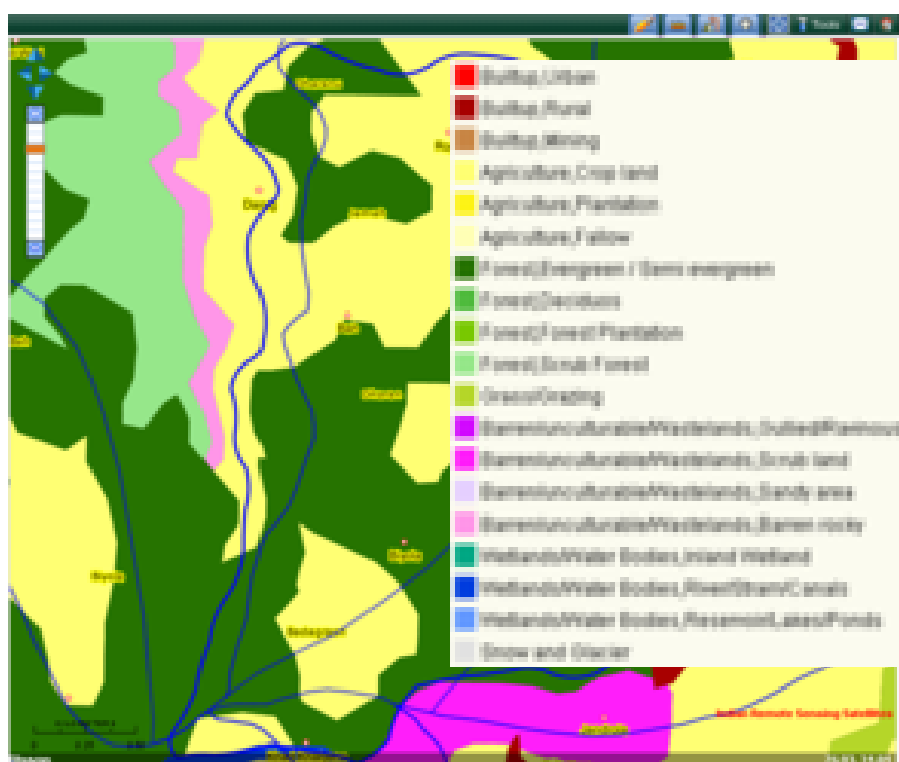
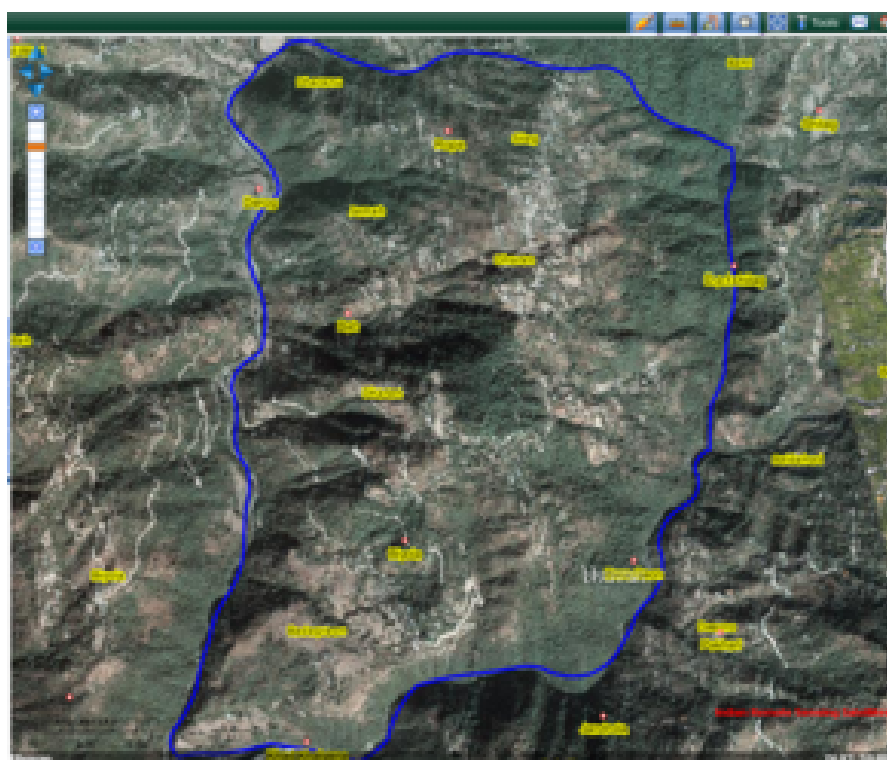


Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Galu Dhar		5	76750	383750	
2	Enrichment	..		0	70500	0	
3	Natural Regeneration/ Closures	..		0	37100	0	
4	NTPP/ Medicinal Plantation	..		0	137825	0	
5	Energy Plantation			10	56150	561500	
6	Pasture Development	..		8	21650	173200	
7	Eradication of Noxious Weeds	Bharadi Nala		10	15050	150500	
		Gallu Dhar		10	15050	150500	
8	Nurseries						
i	Existing Nurseries	..	..	0	0	0	
ii	New Nurseries	..	..	0	0	0	

1. SMC Measure: -

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost	Qty.	Cost (Rs.)
1	Bharadi Nala 2.5KM	N 31° 46.168m E076° 56.998	Gabion Checkdams	1.5mx1.5m	No.	10000	11	11000
				2m x 2.5m	No.	17230	4	68920
	Mehad Nala 2KM		Gabion Checkdams	1.5mx1.5m	No.	10000	10	10000
				2m x 2.5m	No.	17230	5	86150
	Hiun Nal 2KM	N 31° 47.709m E076° 57.109	Gabion Check dams	1.5mx1.5m		10000	11	11000
				2m x 2.5m	No.	17230	4	68920
	Total:		Total:				45	543990
	Bharadi Nala	N 31° 46.168m E076° 56.998	Gabion Retaining walls/ Toe walls		No.	10000	3	30000
	Hiun Nal 2KM		Gabion Retaining walls/ Toe walls		No.	10000	3	30000
	Total						6	60000
	Bharadi Nala	N 31° 46.168m E076° 56.998	Water Harvesting Structures		Nos.	62150	1	62150
	Mehad Nala		Water Harvesting Structures		Nos.	62150	1	62150
	Hiund Nala	N 31° 47.709m E076° 57.109	Water Harvesting Structures		Nos.	62150	1	62150
	Total		Water Harvesting Structures				3	186450

SILAG BEAT: -



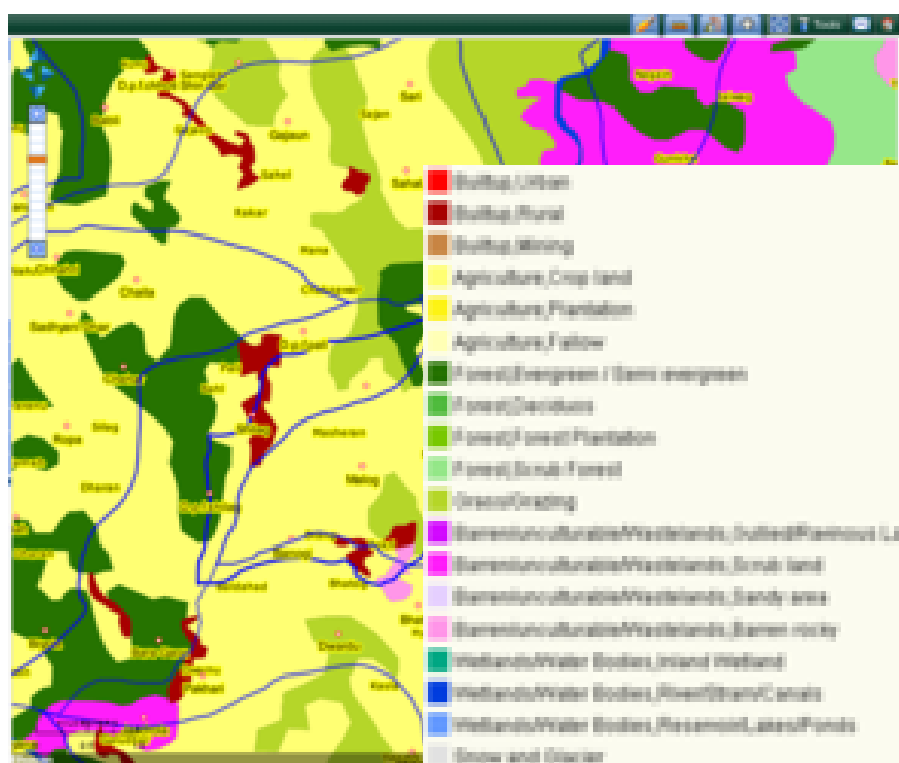
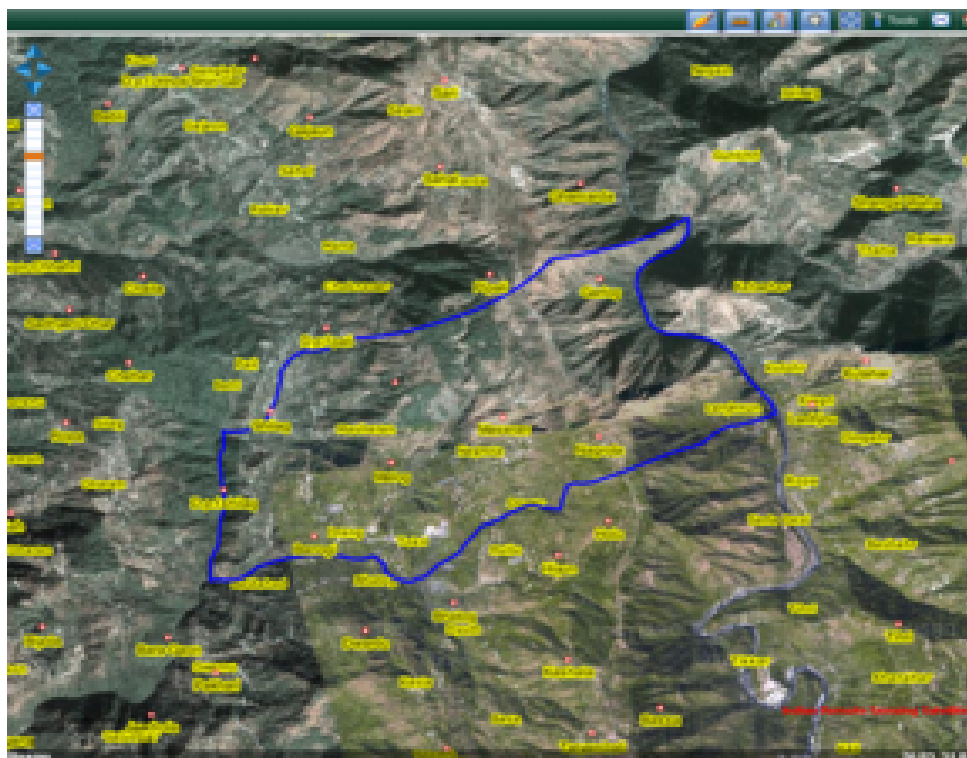
AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation			0	76750	0	0
2	Enrichment			0	70500	0	0
3	Natural Regeneration/Closures			0	37100	0	0
4	NTFP/ Medicinal Plantation			0	137825	0	0
5	Energy Plantation			3	56150	168450	0
6	Pasture Development			3	21650	64950	
7	Eradication of Noxious Weeds	Khuddi Nal DPF		5	15050	75250	
		Bada Gaon		5	15050	75250	
8	Nurseries						
i	Existing Nurseries	..	..	..	0	0	0
ii	New Nurseries	..	..	..	0	0	0

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Dohal Nala 2KM	N 31° 48.220m E076° 55.838m	Gabion Checkdam	1.5mx1.5m	No	10000	16	160000
			Gabion Checkdam	2mx2.5m	No	17230	4	68920
2	Pahi Nala	N 31° 49.398m E076° 56.066m	Gabion Checkdam	1.5mx1.5m		10000	8	80000
			Gabion Checkdam	2mx2.5m		17230	4	68920
		Total:					32	377840
3	Dohal Nala	N 31° 48.220m E076° 55.838m	Gabion Retaining Wall		No	10000	2	20000
4	Pahi Nala	N 31° 49.398m E076° 56.066m	Gabion Retaining Wall		No	10000	2	20000
		Total:					4	40000
5	Dohal		Water Harvesting Structure		No	62150	1	62150
6	Pahi Nala		Water Harvesting Structure		No	62150	1	62150
		Total:					2	124300

DRUNG BEAT:-



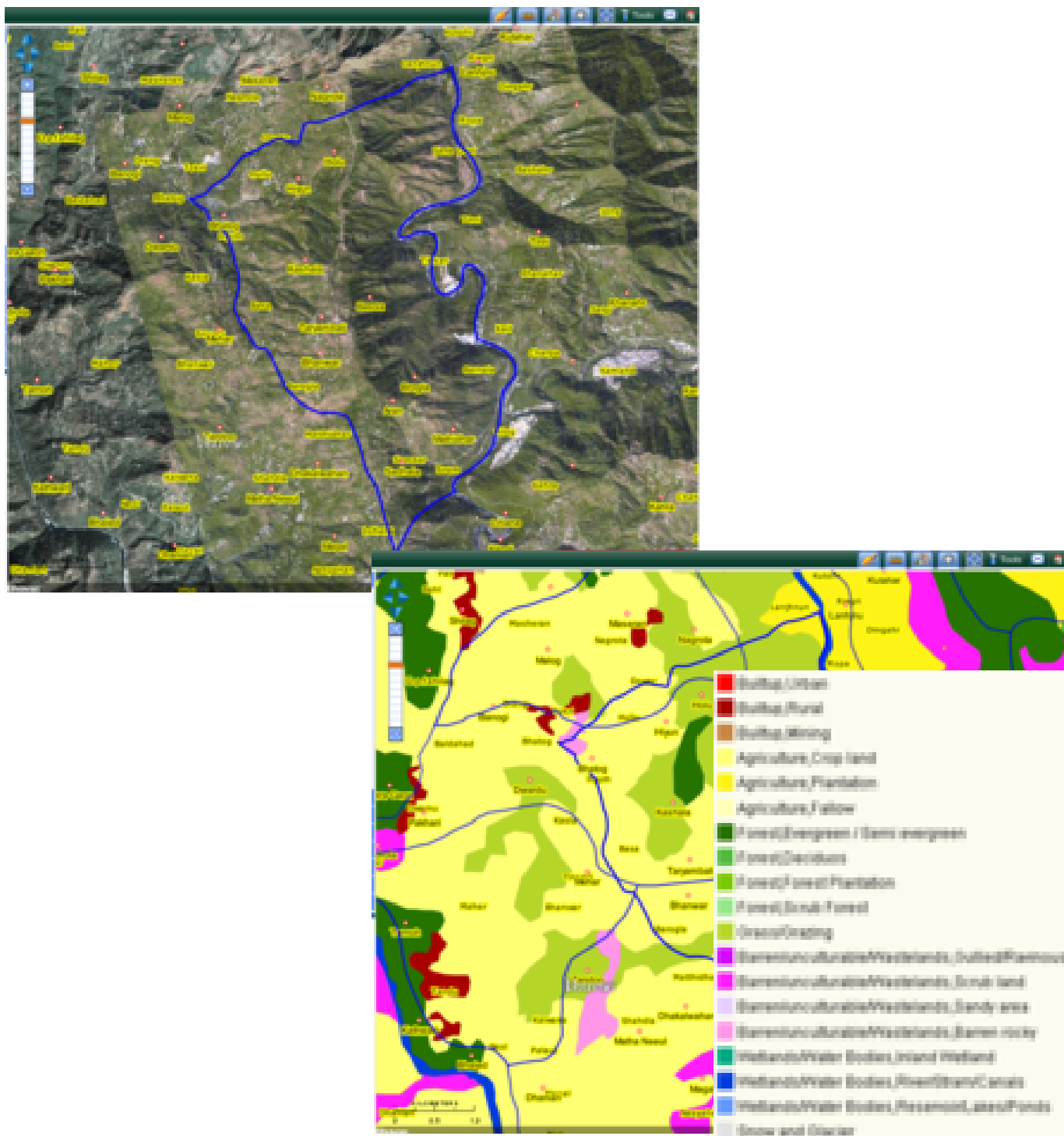
AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)
1	New Plantation	..	..	0	76750	0
2	Enrichment	..	..	10	70500	705000
3	Natural Regeneration/ Closures	Saigul Dugh DF	..	10	37100	371000
4	NTFP/ Medicinal Plantation	..	..	10	137825	1378250
5	Energy Plantation		..	10	56150	561500
6	Pasture Development	..	..	10	21650	216500
7	Eradication of Noxious Weeds	Nagrota Forest		5	15050	75250
		Masseran DPF		10	15050	150500
8	Nurseries					
i.	Existing Nurseries	Drung	N31 48.349m E-76 56.431m	0.5	250000	250000
ii.	New Nurseries	.	.	0	0	0

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size:	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Nagrota Nala 2KM	N 31° 49.530 E076° 56.883m	Gabion Checkdam	1.5mx1.5 m	No	10000	5	50000
			Gabion Checkdam	2mx2.5m	No	17230	3	51690
2	Mahna Nala 2KM		Gabion Checkdam	1.5mx1.5 m		10000	5	50000
		N 31° 49.687m E076° 56.730m		2mx2.5m	No	17230	3	51690
3	Nagrota Nala	N 31° 49.530 E076° 56.883m	Gabion Retaining Walls		No	10000	5	50000
4	Mahna Nala	N 31° 49.687m E076° 56.730m	Gabion Retaining Walls		No	17230	5	86150
5	Mahna Nala	N 31° 49.687m E076° 56.730m	Water Harvesting Structures		No	62150	1	62150
6	Saigal Dugh	N 31° 49.375 E076 °57.142	Village Pond (PES)		No	35000	1	35000

TREHMLI BEAT:-



AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	0	76750	0	0
2	Enrichment	..	..	5	70500	352500	0
3	Natural Regeneration/ Closures	Bassadhar DPF	..	10	37100	371000	0
4	NTFP/ Medicinal Plantation	..	..	0	137825	0	0
5	Energy Plantation	..	..	5	56150	280750	0
6	Pasture Development	..	..	5	21650	108250	0
7	Eradication of Noxious Weeds			0	15050	0	0

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Baahi Nala 2KM		Gabion Checkdam	1.5mx1.5m	No	10000	13	13000
			Gabion Checkdam	2mx2.5m	No	17230	7	120610
2	Sambal Nala 1.5KM		Gabion Checkdams	1.5mx1.5m	No	10000	9	90000
			Gabion Checkdams	2mx2.5m	No	17230	6	103380
3	Sangli Nala 2KM		Gabion Checkdams	1.5mx1.5m	No	10000	10	100000
			Gabion Checkdams	2mx2.5m	No	17230	5	86150
4	Hullu Nala 3KM		Gabion Checkdams	1.5mx1.5m	No	10000	17	170000
			Gabion Checkdams	2mx2.5m	No	17230	8	137840
5	Baahi Nal		Gabion Retaining Wall		No	10000	3	30000
					No	17230	2	34460
6	Sambal Nala		Gabion Retaining Wall		No	10000	3	30000
					No	10000	2	34460
7	Sangli Nala		Gabion Retaining Wall		No	10000	3	30000
8	Hullu Nala	N31° 47.634m, E076° 57.802m	Gabion Retaining Wall		No	10000	3	30000
			Gabion Retaining Wall		No	17230	2	34460
9	Jhajhru Kufru Nala	N31° 47.704m E076° 57.812m	Water Harvesting Structure		No	62150	1	62150

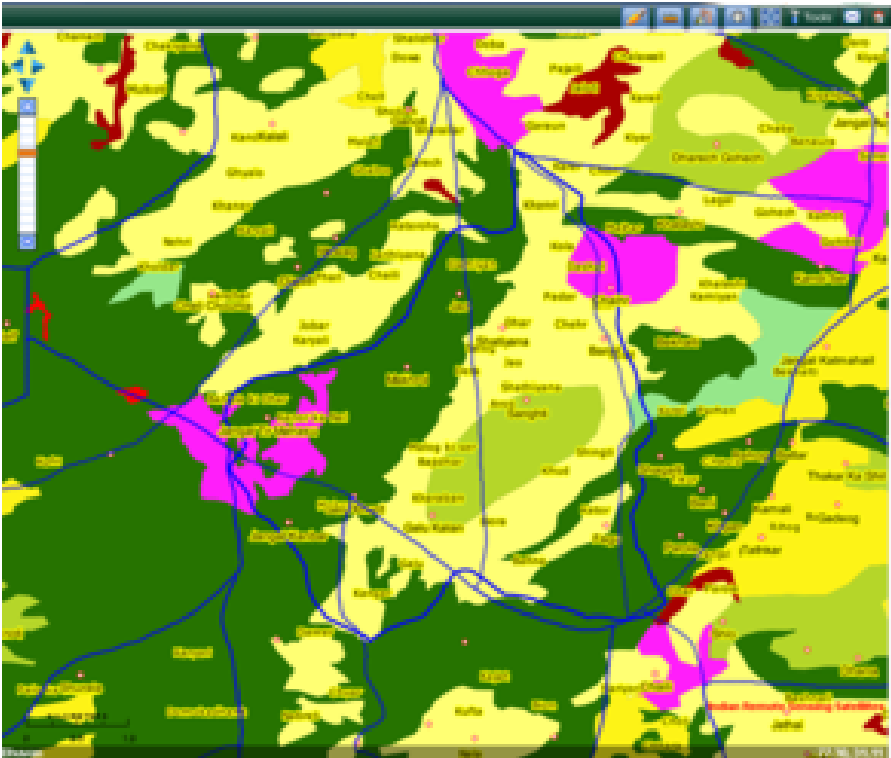
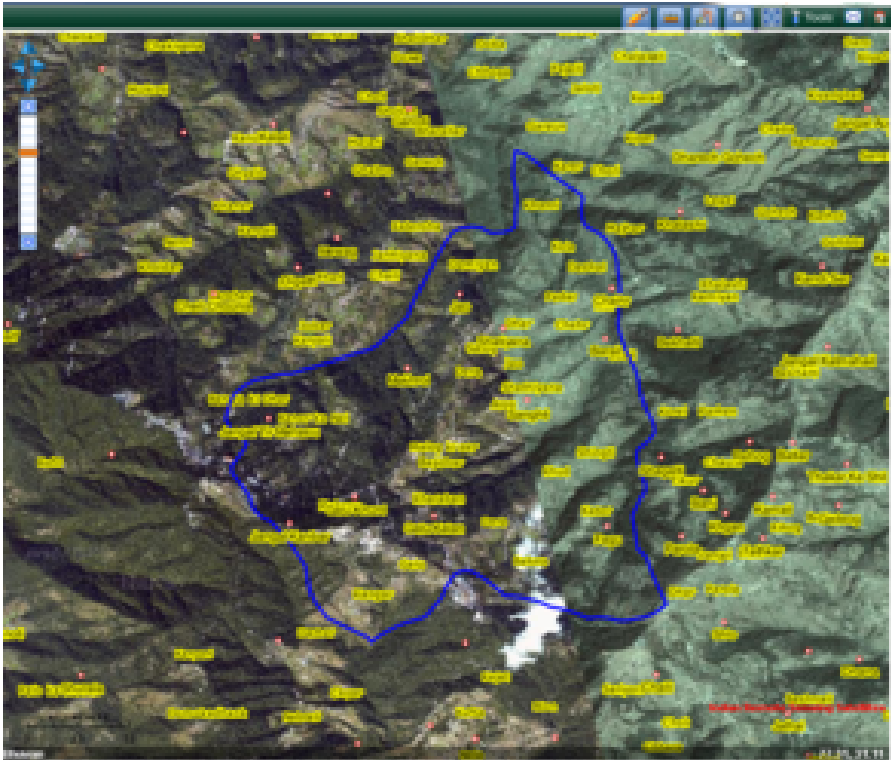
FOREST DIVISION: MANDI FOREST RANGE: DRUNG - FOREST BLOCK: KUFRI-**KUFRI BEAT:-****AFFORESTATION:**

Sl.No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Luhardi	N31° 50.350E076° 51.425	5	76750	383750	
2	Enrichment	..	..	0	70500	0	
3	Natural Regeneration/ Closures	..	..	0	37100	0	
4	NTFP/ Medicinal Plantation	..	..	0	137825	0	
5	Energy Plantation	..	..	5	56150	280750	
6	Pasture Development	..	..	5	21650	108250	
7	Eradication of Noxious Weeds			0	15050	0	0
8	Nurseries						
i.	Existing Nurseries	..	..	0	0	0	
ii	New Nurseries	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Shilli Khad-3KM	N 31° 31.50.287m E076° 52.693m	Gabion Checkdam	1.5mx1.5m	No	10000	10	100000
			Gabion Checkdam	2mx2.5m	No	17230	5	86150
		Total:					15	186150
2	Shilli Khad	N 31° 31.50.287m E076° 52.694m	Gabion Retaining wall	1.5mx1.5m	No	10000	7	70000
			Gabion Retaining Walls	2mx2.5m	No	17230	3	51690
		Total:					10	121690
3	Chaura Nal		Water Harvesting Structure		No	62150	1	62150
4	Shilli Khad	N 31°31 .50.287m E076° 52.694m	Water Harvesting Structure		No	62150	1	62150
		Total:					2	124300

SHARDA BEAT:-



- Built-up/Urban
- Built-up/Rural
- Built-up/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Semi Forest
- Grass/Grazing
- Barren/cultivable/Wastelands, Irrigated/Rainfed Land
- Barren/cultivable/Wastelands, Sandy land
- Barren/cultivable/Wastelands, Sandy area
- Barren/cultivable/Wastelands, Barren rocky
- Wetlands/Water Bodies, (Inland Wetland)
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lakes/Ponds
- Snow and Glacier

AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Sharda DPF	..	10	76750	767500	
		Dhundha DPF	..	5	76750	383750	
		Gwahan UPF	..	5	76750	383750	
2	Enrichment	..	..	0	70500	0	
3	Natural Regeneration/ Closures	Sharda	N31 50.096m E076 53.301m	5	37100	185500	
		Sharda	N31 50.031m E076 52.544m	5	37100	185500	
4	NTFP/ Medicinal Plantation	..	..	0	137825	0	
5	Energy Plantation		..	5	56150	280750	
6	Pasture Development	..	..	5	21650	108250	
7	Eradication of Noxious Weeds	Sharda, Bhatwadi, Gwahan, Dhundha and Drug DPFs @ 5 ha each		25	15050	376250	
8	Nurseries						
i	Existing Nurseries	..	..	0	0	0	
ii	New Nurseries	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Kharnali Nala 1KM	N 31 50.106m E076 53.348m	Gabion checkdams/Retaining walls	1.5mx1.5m	No	10000	7	70000
				2mx2.5M	No	17230	3	51690
2	Heund Nala 1KM	N31 49.864m E076 52.203m	Gabion checkdams/Retaining walls	1.5mx1.5m	No	10000	8	80000
				2mx2.5M	No	17230	2	34460
3	Chaura Nala 2KM	N31 50.287m E076 52.693m	Gabion checkdams/Retaining walls	1.5mx1.5m	No	10000	11	110000
				2mx2.5M	No	17230	4	68920
1	Gabion Checkwalls Walls			1.5mx1.5m	No	10000	4	40000
				2mx2.5M	No	17230	6	103380
1	Bhatwan DPF	N 31 49.092 E076 53.412m	Water Harvesting Structures		No.	62150	1	62150
	Sharda DPF	N 31 50.203m E076 53.400m	Water Harvesting Structures		No.	62150	1	62150



1. Afforestation:-

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Banwad DPF	N31 51.470m E076 53.740m	10	76750	767500	
2	Enrichment	..	..	0	70500	0	
3	Natural Regeneration/ Closures	Bari Singhari	N 31 51.08m E076 54.27	10	37100	371000	
4	NTPP Plantations	..	..	0	137825	0	
5	Energy Plantation	..	..	2	56150	112300	
6	Pasture Development	..	..	2	21650	43300	
7	Eradication of Noxious Weeds			0	15050	0	
8	Nurseries						
i	Existing Nurseries	Sraun (Block level)	N 3151'33.65m E076 53'17.78m		Lump Sum	250000	
ii.	New Nurseries	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Riggar Nala	N 31 51'24.68" E076 51'34.83"	Gabion Checkdam	1.5mx1.5m	No.	10000	10	100000
				2mx2.5m	No.	17230	5	86150
1	Rigger Nala	N 31 51'24.68" E076 51'34.83"	Gabion Retaining walls		No.	10000	5	50000
1	Rigger Nala		Water Harvesting Structure		No.	62150	1	62150
2	Lhaloo		Water Harvesting Structure		No.	62150	1	62150

FOREST RANGE: DRUNG- FOREST BLOCK: PADDAR**PADDAR BEAT:****1. Afforestation:-**

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Kalaun DPF	N31 53.148m	10	76750	767500	

			E76 55.396m				
2	Enrichment	..	..	0	70500	0	
3	Natural Regeneration/ Closures	Kalaun	N 31 53.403m E076 55.479m	4	37100	148400	
		Sakrog	N 31 52.822m E076 56.006m	3	37100	111300	
		Sakrog	N31 52.536mE07 6 55.920m	3	37100	111300	
4	NTFP Plantations	..	..	0	137825	0	
5	Energy Plantation	Surahan Forest	..	5	56150	280750	
6	Pasture Development	..	..	5	21650	108250	
7	Eradication of Noxious Weeds	Pateun DPF		20	15050	301000	
8	Nurseries						
i	Existing Nurseries	..	..	0	0	0	
ii	New Nurseries	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Narla Sanerh Nala 1KM	N31 52.439m E076m 55.583m	Gabion Checkdam	1.5mx1.5m	No	10000	10	100000
2	Sakrog	N 3152.538 E076 56.223m	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
3			Waterhole		No	856920	1	856920

KUNNU BEAT**1. Afforestation:-**

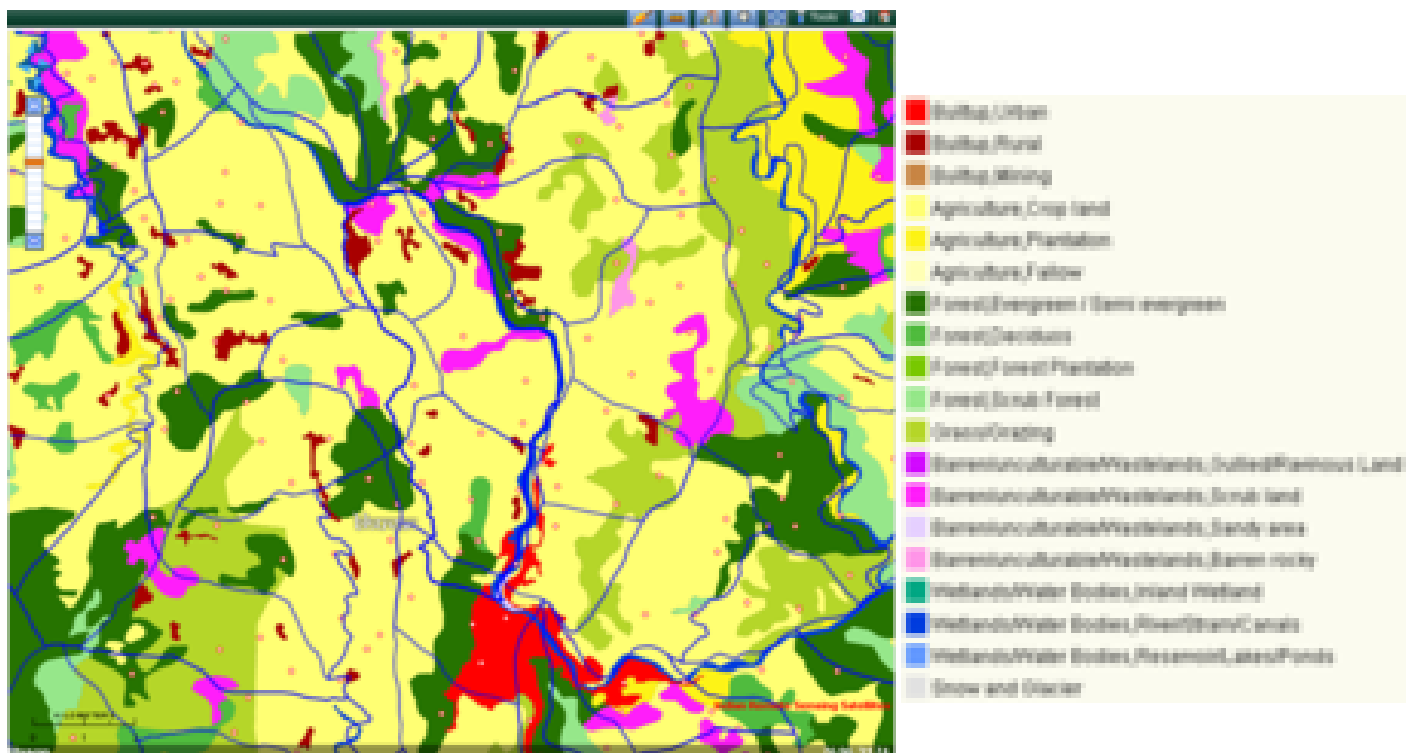
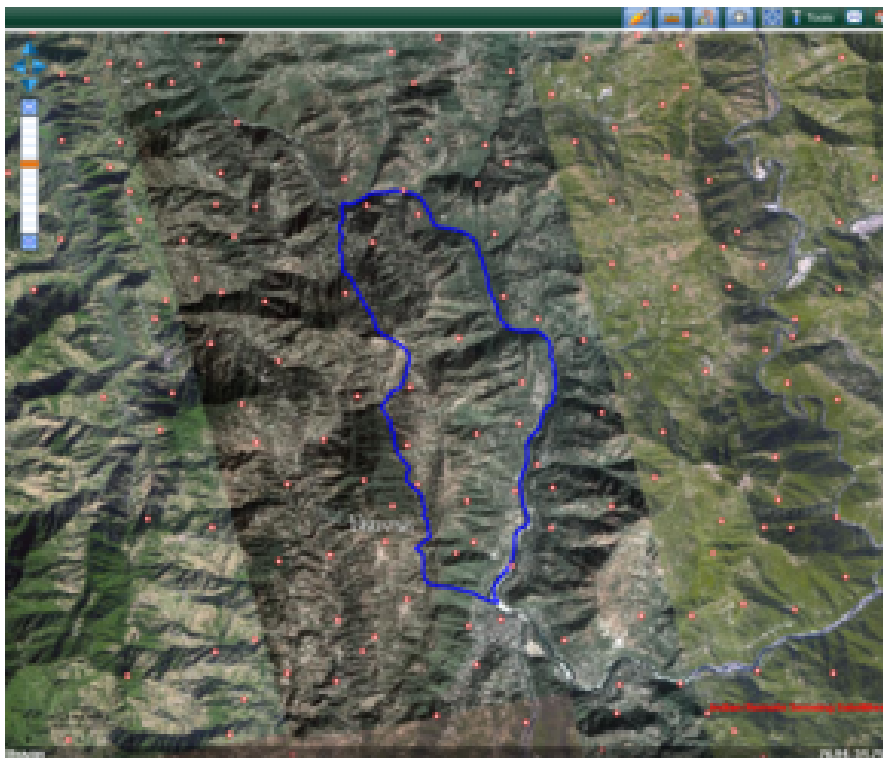
Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Sari	N 31 50.355 E076 56.65	5	76750	383750	
2	Enrichment		N 31 50.680mE076 55.031m	0	70500	0	
3	Natural Regeneration/ Closures	Kunnu	N 31 51.105mE076 55.479m	5	37100	185500	
4	NTFP Plantations	..	..	0	137825	0	
5	Energy Plantation	Kunnu	..	4	56150	224600	
6	Pasture Development	..	..	4	21650	86600	
7	Eradication of Noxious Weeds	Chhoti Singhari DPF		20	15050	301000	
8	Nurseries						
i	Existing Nurseries	Kunnu (BeatLevel)	N31 51.538m E076 55.534m	0.5	250000	250000	Upgradation required.
ii	New Nurseries	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Kunnu Nalla 1.5KM	N 31 50.543m E076 55.293m	Gabion Checkdams	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m	No	17230	3	51690
2	Chehar Nala	N 31 50.830m E076 55.246m	Gabion Checkdams	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m	No	17230	3	51690
3	Kunnu Nalla	N 31 50.543m E76 55.293m	Gabion Retaining Walls	1.5m x 1.5m	No	10000	5	50000
4			Waterhole		No	856920	1	856920

FOREST DIVISION: MANDI FOREST RANGE: KOTLI FOREST BLOCK: KOTLI

BEERH BEAT:

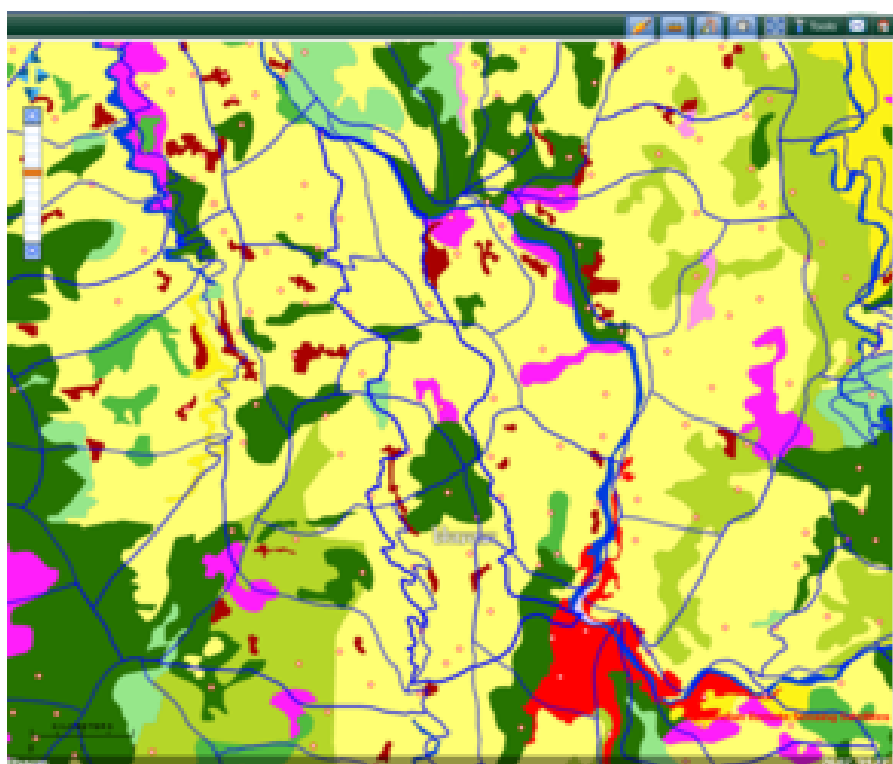
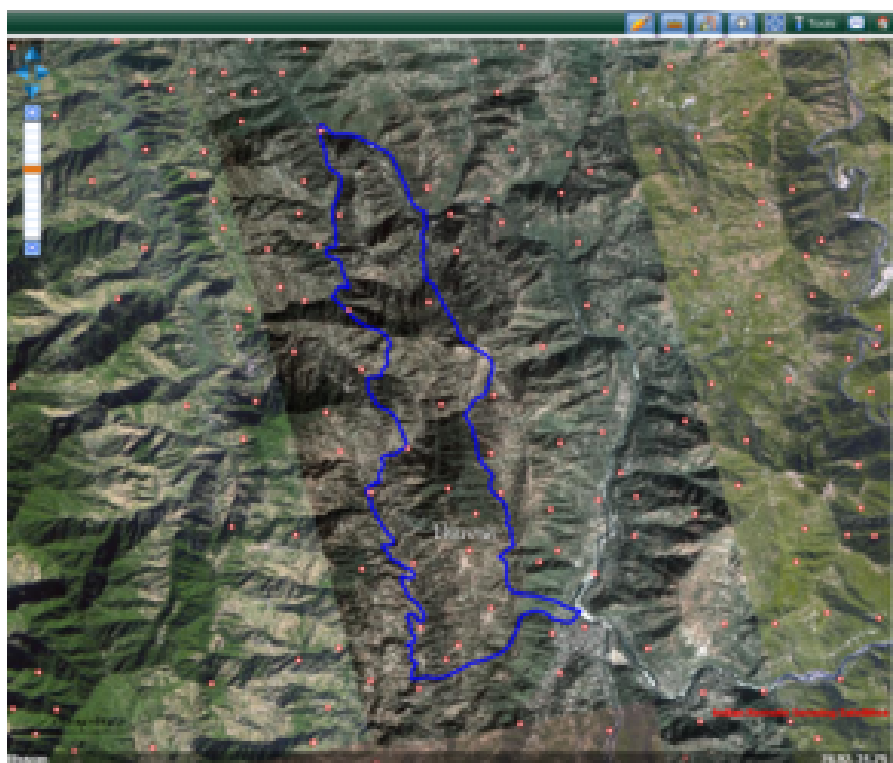


1. AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	0	76750	0	No scope
2	Gap Filling/ Enrichment	DPF Janjheru	..	5	70500	352500	
3	Natural Regeneration/ Closures	Jambher	..	10	37100	371000	
		Jamwana		20	37100	742000	
		Gandhiru		10	37100	371000	
4	NTFP/ Medicinal Plantation		..	5	137825	689125	
5	Energy Plantation	..		6	56150	336900	
6	Pasture Development	..	..	6	21650	129900	
7	Eradication of Noxious Weeds		..	2	15050	30100	
8	Nurseries:						
i	Upgradation of Existing Nursery	..	..	0	0	0	
ii	New Nursery	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/ Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Jamwana		Gabion Checkdam	1.5m x 1.5m	No	10000	6	60000
				2m x 2.5m		17230	4	68920
2	Jambher		Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m		17230	3	51690
3	..	..	Water Harvesting Structures	..	No.	62150	1	62150
4	..	..	Gabion Checkwalls/Toe Walls	..	..	10000 / 17230	0	0



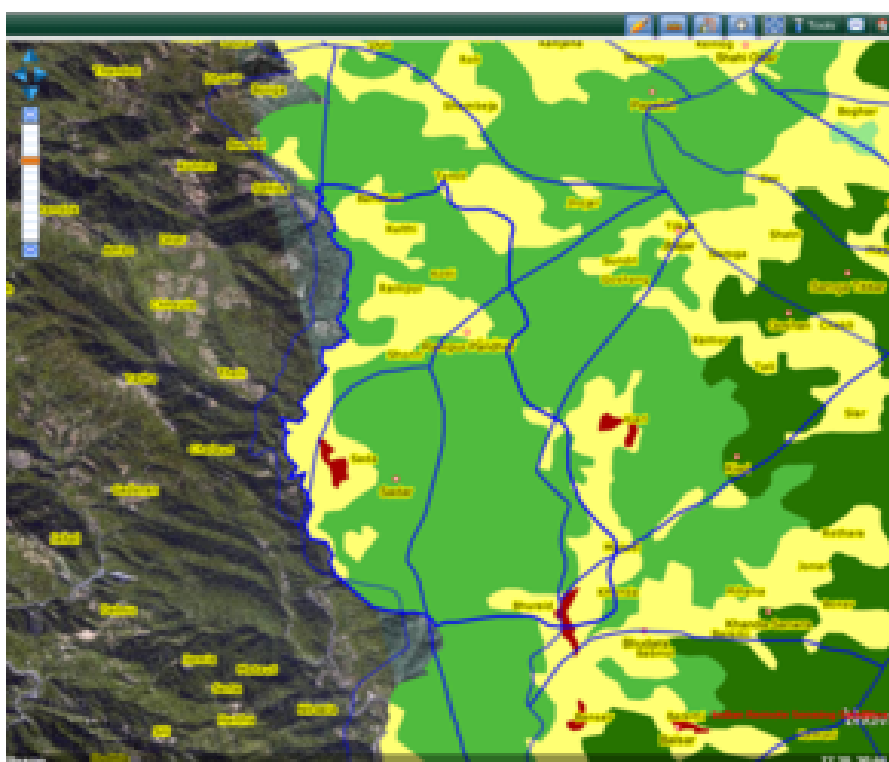
- Built-up, Urban
- Built-up, Rural
- Built-up, Mining
- Agriculture, Crop land
- Agriculture, Plantation
- Agriculture, Fallow
- Forest, Evergreen / Semi evergreen
- Forest, Deciduous
- Forest, Forest Plantation
- Forest, Scrub Forest
- Grass/Grazing
- Barren/uncultivable/Waterlands, Pasture/Barren Land
- Barren/uncultivable/Waterlands, Scrub land
- Barren/uncultivable/Waterlands, Sandy area
- Barren/uncultivable/Waterlands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir, Lake/Ponds
- Snow and Glacier

1.AFFORESTATION:

Sl. No	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	0	76750	0	No scope
2	Enrichment	Gandhiru		5	70500	352500	
3	Natural Regeneration/ Closures	Gandhiru		20	37100	742000	
		Tandu 1		10	37100	371000	
		Tandu II		2	37100	74200	
4	NTFP/ Medicinal Plantation		..	0	137825	0	
5	Energy Plantation	..	..	6	56150	336900	
6	Pasture Development	..	..	6	21650	129900	
7	Eradication of Noxious Weeds			2	15050	30100	
8	Nurseries:						
i	Upgradation of Existing Nursery	..	..	0	0	0	0
ii	New Nursery	Tandu (Beat Level)	..	0.5	770000	770000	

2. SMC Measures

Sr. No	Name of Nala/Forest	Lat	Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Devnala			Gabion Checkdam	1.5m x 1.5m	No	10000	2	20000
	Sadoh Nala				1.5m x 1.5m		10000	3	30000
	Dolabal Nala				1.5m x 1.5m		10000	3	30000
2	..			Gabion Checkdam	1.5m x 1.5m	No	10000	0	0
					2m x 2.5m		17230		
3	..			Gabion Retaining Wall	..	..	10000/ 17230	0	0
4	..	..	..	Water Hole	..	No.	856920	1	856920
7				Trenching	1mx30cmx30cm	No	15.3	250	3825
8	..	..	..	Bio Engineering	..	Ha.	111700	1	111700

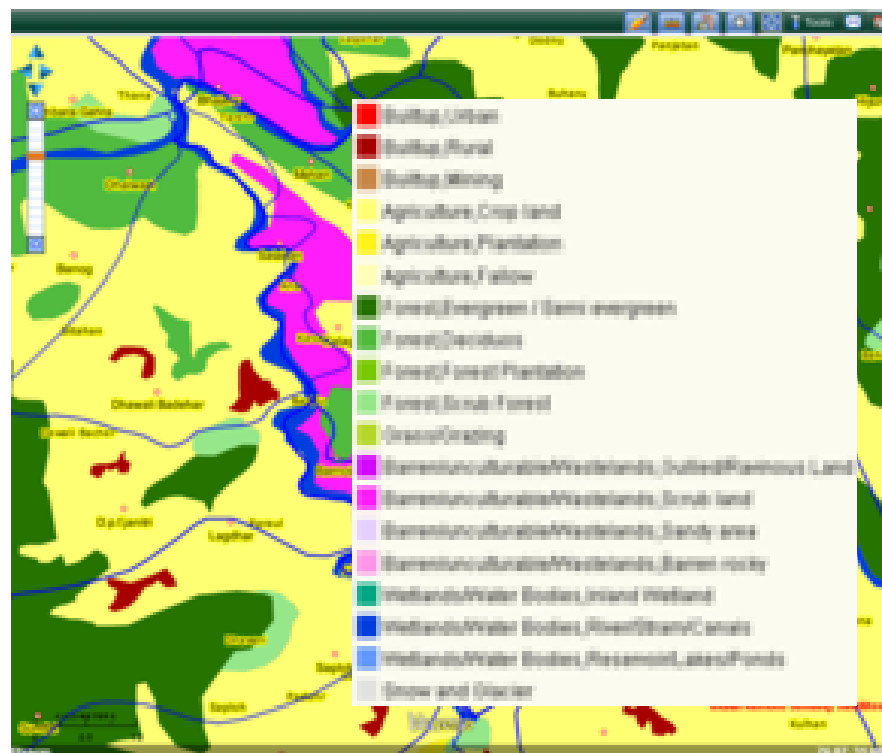
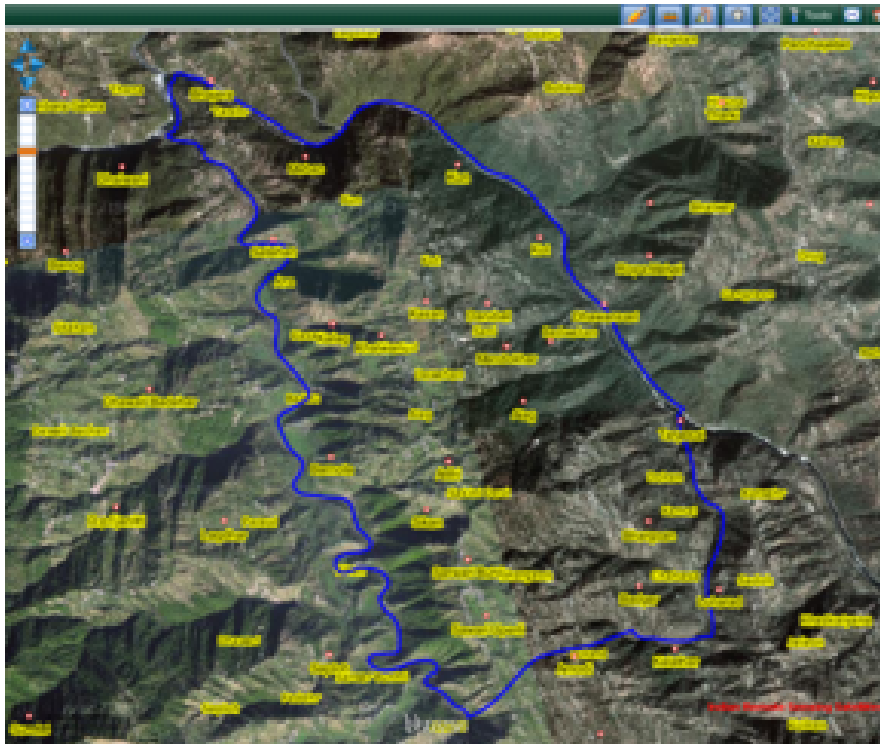


1. AFFORESTATION:

Sl.No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..			0	0	0	No scope
2	Enrichment	Shilgadyada			5	70500	352500	
3	Natural Regeneration/ Closures	Rachhera			26	37100	964600	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	5	56150	280750	
6	Pasture Development	..	..	..	5	21650	108250	
7	Eradication of Noxious weeds				2	15050	30100	
8	Nurseries:				0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Harnodi Khad		Gabion Checkdam	1.5m x 1.5m	No	10000	0	0
				2m x 2.5m		17230	3	51690
2	Harnodi Khad	N31 46'30.0" E076 51'957"	Gabion Checkdam	1.5m x 1.5m	No	10000	5	50000
3	Rachhera Nal		Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m		17230	3	51690
4	Bhourjol DPF		Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m		17230	3	51690
5	..		Gabion Retaining Wall	..	..	10000/ 17230	0	0
6	Rachhera	N31 45'235" E076 52'605"	Water Harvesting Structures	..	No.	62150	1	62150
9	..	..	Trenching	1mx30cmx30cm	No	15.3	300	4590
10		..	Bio Engineering	..	Ha.	111700	1	111700
11		..	Gulli Plugging	..	No	4710	0	0



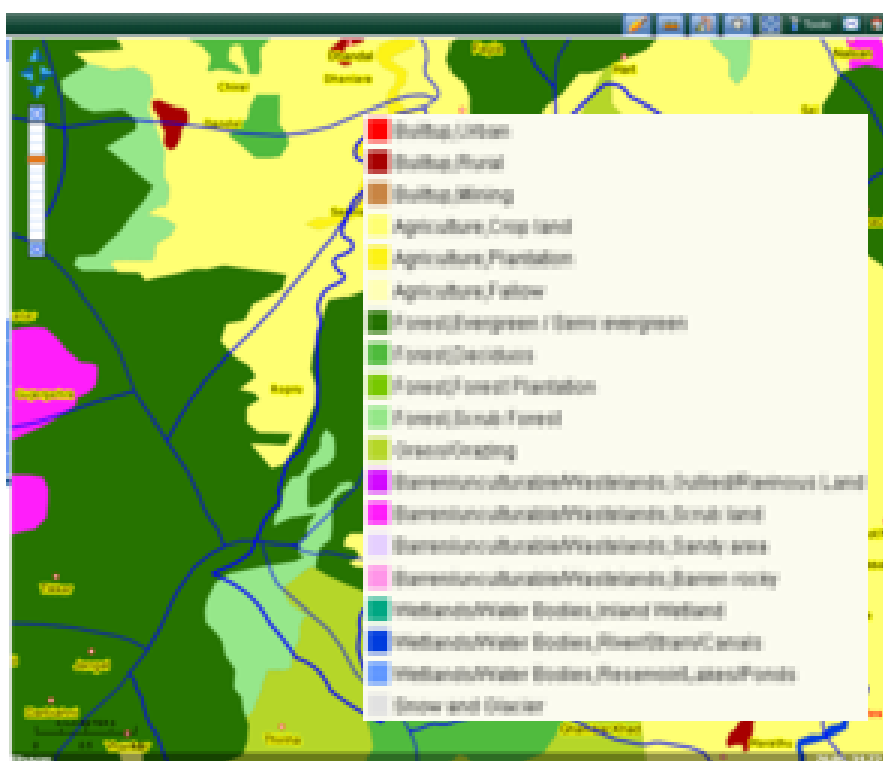
1. AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	0	No scope
2	Enrichment	..	..	..	70500	0	
3	Natural Regeneration/ Closures	Kangota		20	37100	742000	
		Koon		10	37100	371000	
4	NTFP/ Medicinal Plantation	..	..	0	137825	0	
5	Energy Plantation	..	..	6	56150	336900	
6	Pasture Development	..	..	6	21650	129900	
7	Eradication of Noxious Weeds	..	..	2	15050	30100	
8	Nurseries:						
i	Upgradation of Existing Nursery	..	..	0	0	0	
ii	New Nursery	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Koon Nala		Gabion Checkdam	1.5m x 1.5m	No	10000	12	120000
				2m x 2.5m		17230	8	137840
2	Mahog Nala		Gabion Checkdam	1.5m x 1.5m	No	10000	14	140000
						17230	6	103380
3	Koon Nala		Gabion Retaining Wall	.. 2m x 2.5m	..	17230	4	68920
4	Koon Nala		Water Harvesting Structures	..	No.	62150	1	62150
5	..	..	Trenching	1mx30cmx30cm	No	15.3	250	3825
6	..	..	Brushwood Checkdams	..	No.	78	45	3510
9			Bio Engineering	..	Ha.	111700	1	111700
10		..	Gulli Plugging		No	4710	0	0

FOREST RANGE- KOTLI FOREST BLOCK: NAGAN
NAGAN BEAT (PARTLY)



1. AFFORESTATION:

Sl. No	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..				0	0	No scope
2	Gap Filling/ Enrichment	Joondhar DPF			10	70500	705000	
		Nagan DPF			5	70500	352500	
3	Natural Regeneration/ Closures	..			..	37100	0	0
4	NTPF/ Medicinal Plantation	..			..	137825	0	
5	Energy Plantation	..	..	..	2	56150	112300	
6	Pasture Development	..	..	..	2	21650	43300	
7	Eradication of Noxious Weeds				2	15050	30100	
8	Nurseries:							
i	Upgradation of Existing Nursery	..	..	..	0	0	0	
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Nagan DPF		Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m		17230	3	51690
2	Ropru Ra Nala		Gabion Checkdam	1.5m x 1.5m	No	10000	6	60000
				2m x 2.5m		17230	4	68920
3	Nagan		Gabion Retaining Wall	2m x 2.5m	No	17230	1	172300
4	Nagan DPF 1		Water Hole	..	No.	856920	1	856920
5			Trenching	1mx30cmx30cm	No	15.3	200	3060
6			Brushwood Checkdams	..	No.	78	20	1560
7			Bio Engineering	..	Ha.	111700	1	111700
9			Gulli Plugging	..	No	4710	0	0

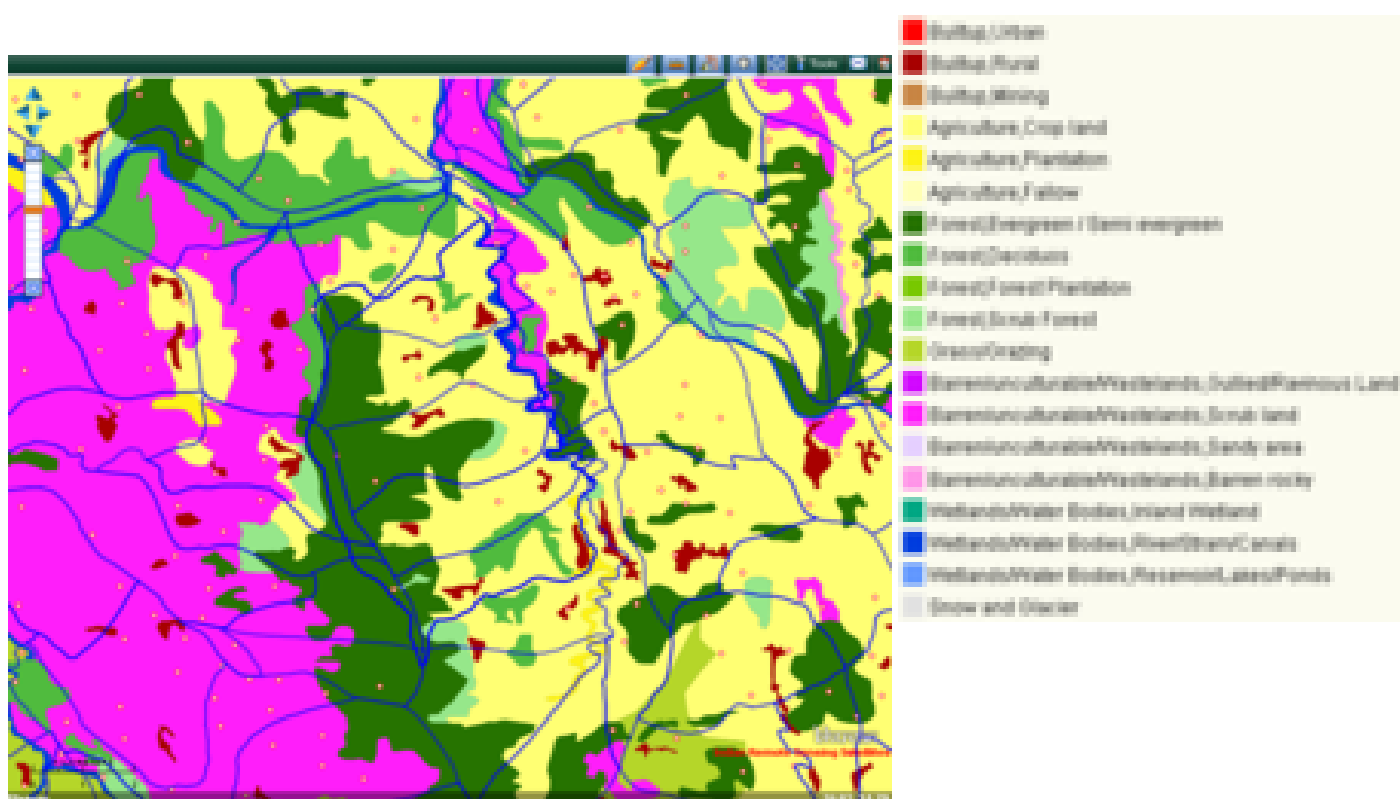
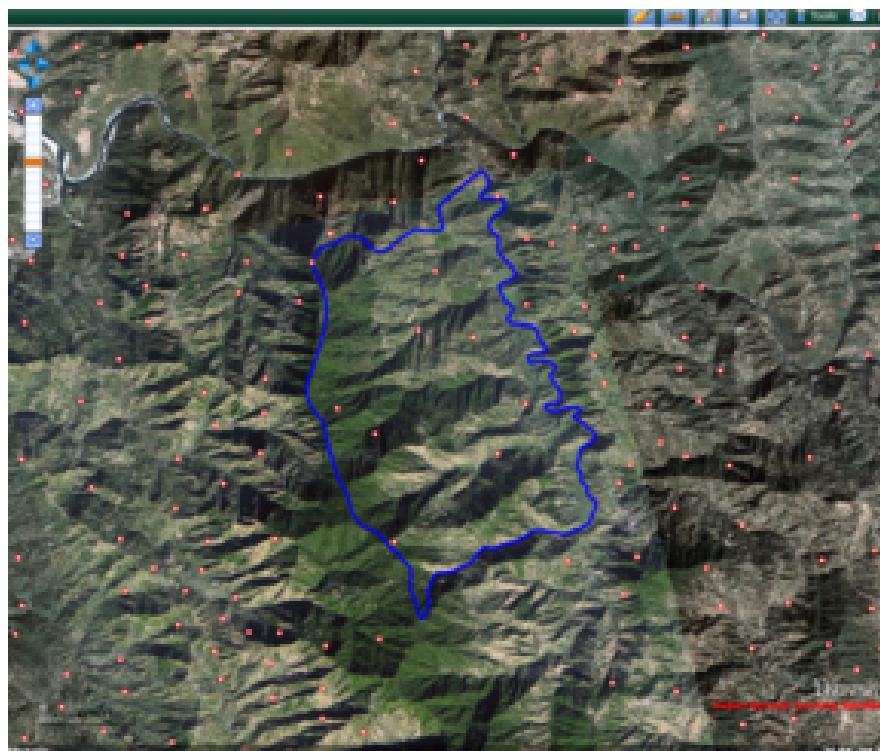
GOKHERA BEAT:

Although the Beat is out of Catchment area but included only for the purpose of upgrading the Range Level Nursery at Gokhera (for making provision for construction of Storage Tank with piped water supply , Water Harvesting Structure and construction of 15 Nos. checkdams for supporting nursery) which will cater to the nursery requirements of other beats in the CAT Plan area of Thana Plaun.

1. AFFORESTATION:

Sl. No	Component	Area Name	Lat Long	Unit	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..			0	0	0	No scope
2	Gap Filling/ Enrichment	..			0	70500	0	
3	Natural Regeneration/ Closures	..			0	37100	0	
4	NTFP/ Medicinal Plantation	..			0	137825	0	
5	Energy Plantation	..	..	..	0	0	0	
6	Pasture Development	..	..	..	0	0	0	
7	Eradication of Noxious Weeds	..	..	..	0	0	0	
8	Nurseries:							
i	Upgradation of Existing Nursery	Gokhera (Range Level Nursery)	..	..	0.5	0	1220000	Water Storage tank with piped water supply of 2" dia pipe.
ii	New Nursery	..	..	..	0	0	0	

JANETRI BEAT:

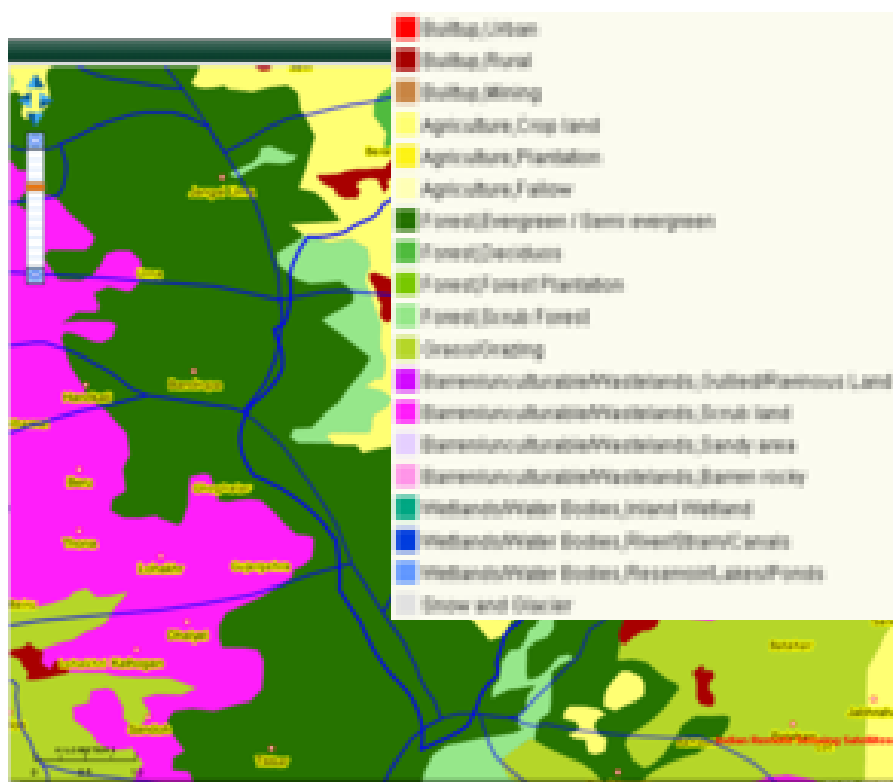
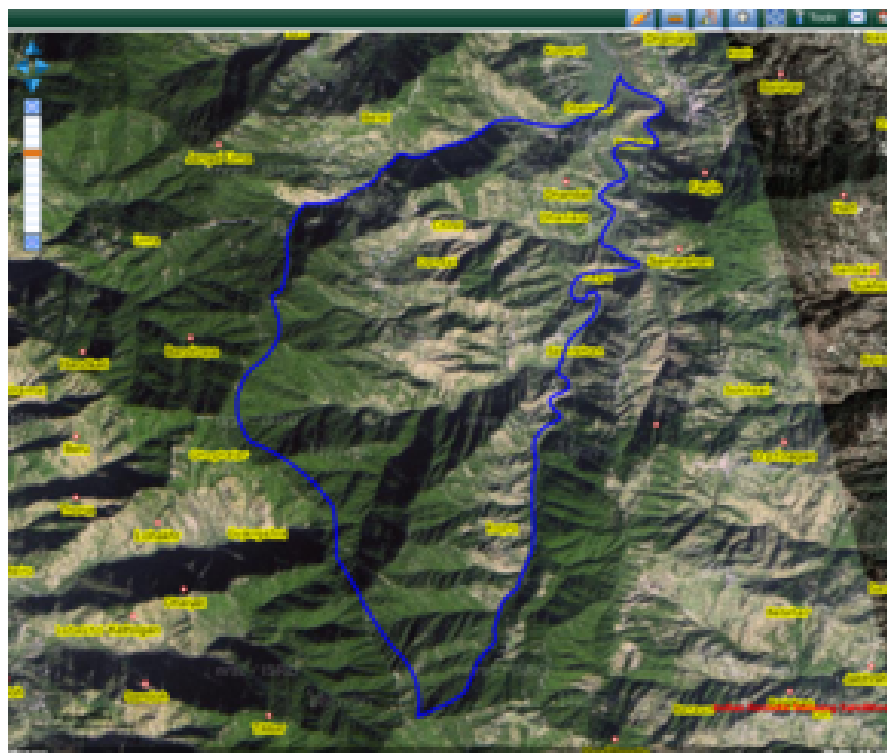


1. AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long		Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	..	..	..	0	0	0	No scope
2	Gap Filling/ Enrichment	..	..	..	0	70500	0	
3	Natural Regeneration/ Closures	Janetri	N 3147"28 6'	E076 49'5 30"	20	37100	742000	
4	NTFP/ Medicinal Plantation	..	..	..	0	137825	0	
5	Energy Plantation	..	..	..	6	56150	336900	
6	Pasture Development	..	..	..	6	21650	129900	
7	Eradication of noxious weeds				2	15050	30100	
8	Nurseries:							
i	Upgradation of Existing Nursery	Lagdhar (Beat Level)	N31 46'856 "	E07 6 49'7 05"	0	400000	400000	Water tank alongwith piped water to be made.
ii	New Nursery	..	..	..	0	0	0	

2. SMC Measures

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Janetri Nala	N31 46'632" E076 49'463"	Gabion Checkdam	1.5m x 1.5m	No	10000	20	200000
				2m x 2.5m		17230	10	172300
2	Lagdhar Nursery	N31 45'235" E076 52'605"	Water Harvesting Structures	..	No.	62150	1	62150
3	..		Gabion Deflecting Spurs	3 Mtr. Each spur	No	48540	0	0
4	Lagdhar Nursery	N31 46'856" E076 49'988"	Gabion Checkwalls/Toe Walls	..	..	10000	0	0
						17230	0	0
5	..	..	Trenching	1mx30cm x30cm	No	15.3	300	4590
6	Janetri	..	Brushwood Checkdams	..	No.	78	30	2340
	Suradi					78	20	1560
	Tundra					78	25	1950
7		..	Bio Engineering	..	Ha.	111700	1	0



1. AFFORESTATION:

Sl. No.	Component	Area Name	Lat Long	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
a	New Plantation	..	.	0	0	0	No scope
b	Gap Filling/ Enrichment	Jugli Nala	N31 45'623" E076 49'886"	2	70500	141000	
c	Natural Regeneration/ Closures	..	..	0	37100	0	
d	NTPF/ Medicinal Plantation	..	..	0	137825	0	
e	Energy Plantation	..	..	3	56150	168450	
f	Pasture Development	..	..	3	21650	64950	
g.	Nurseries:						
i.	Upgradation of Existing Nursery	Chalahar (Beat Level)	N31 45'965" E076 50'527"	0	400000	400000	Construction of Storage Tank and Piped Water Supply
h	Eradication of noxious weeds			2	15050	30100	

2. SMC Measures: -

Sr. No.	Name of Nala/Forest	Lat Long	Activity	Size: L*B*H	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
1	Bani Nala	N31 44'937" E31 076 50'463"	Gabion Checkdam	1.5m x 1.5m	No	10000	7	70000
				2m x 2.5m		17230	3	51690
2	Chalahar Nursery	N31 45'965" E076 50'527"	Gabion Checkdam	1.5m x 1.5m	No	10000	10	100000
				2m x 2.5m		17230	5	86150
3	Chalahar Nursery	N31 45'965" E076 50'527"	Water Harvesting Structures	..	No	62150	1	62150
4			Waterhole		No	856920	1	856920
5	..	..	Gabion Deflecting Spurs	3 Mtr. Each spur	No	48540	0	0
6	..	..	Gabion Checkwalls/Toe Walls	..	..	10000	0	0
	..	..		..	..	17230	0	0
7			Trenching	1mx30cmx30cm	No	15.3	200	3060
8	Bani Nala		Brushwood Checkdams	..	No	78	15	1170
9			Bio Engineering	..	Ha.	111700	1	111700
10			Gulli Plugging	..	No	4710	0	0

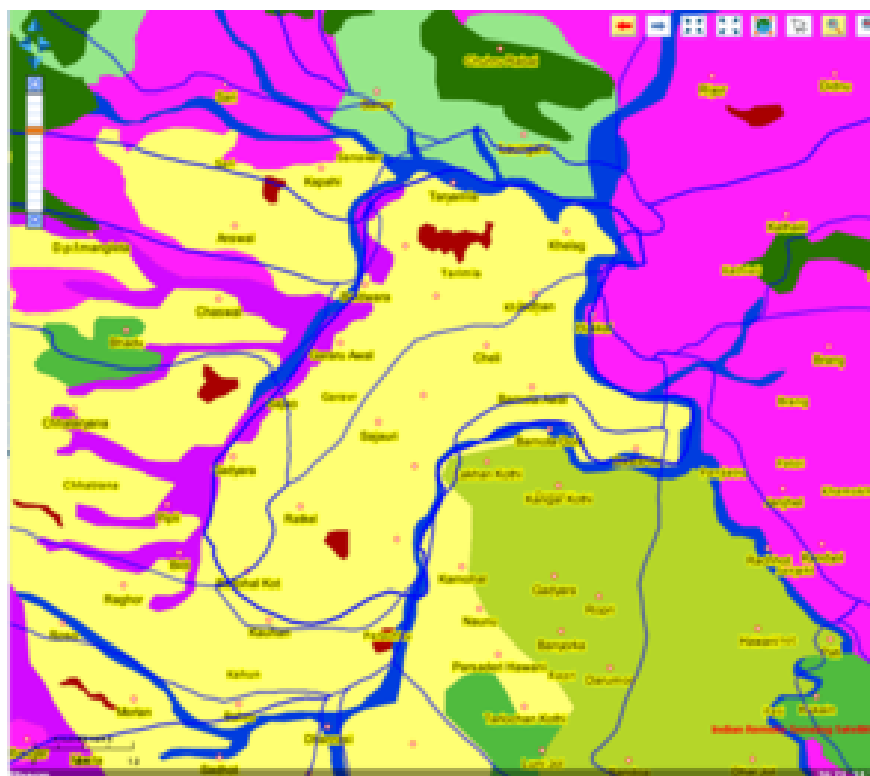
BEAT WISE TRATMENR AND COSTING FOR JOGINDERNAGAR FOREST DIVISION

Jogindernagar Forest Division: Jogindernagar forest division has four ranges with twenty eight beats.

DHARAMPUR RANGE:- DHARAMPUR BLOCK:-

BEAT-

BAHI:-



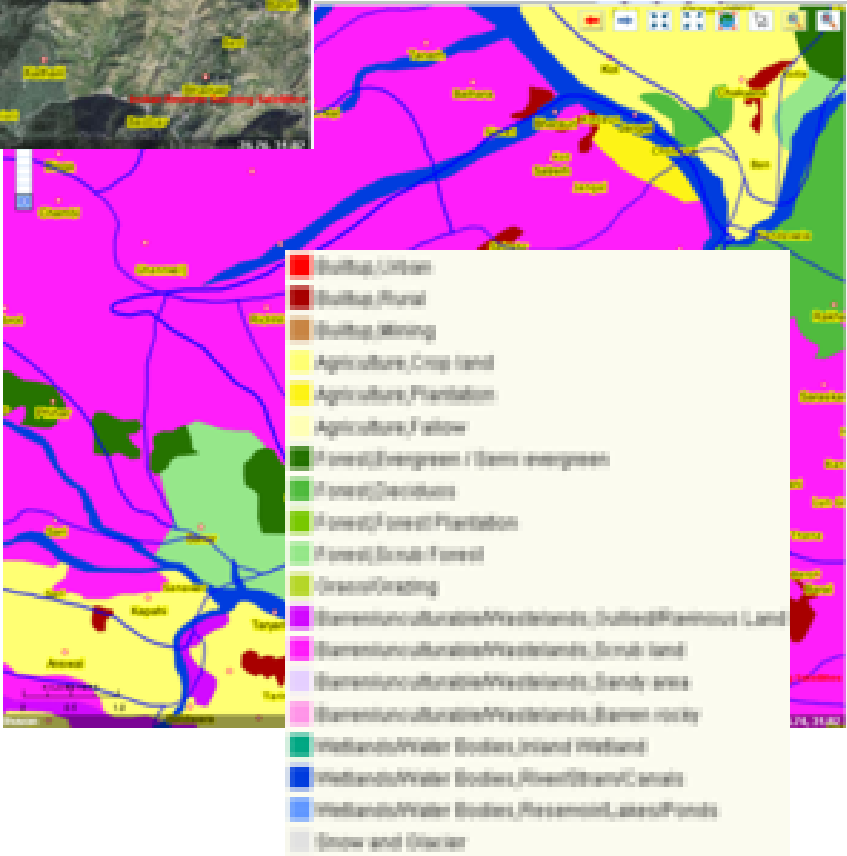
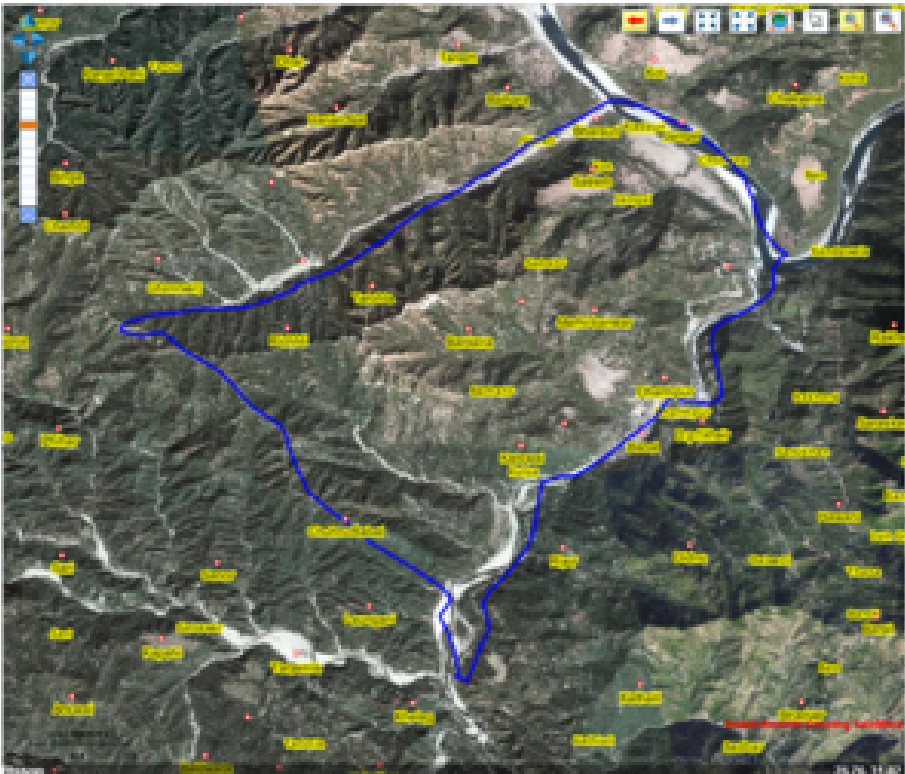
a. 1. Afforestation: -

REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN								
S.No.	Component/ Sub Component	Area Name	Latitude /Longitude	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
1	New Plantation	Bahi C 2	N31°45'30.10" E076°44'30.80"	Ha	76750	3	115125 0	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
2	Enrichment	Bahi C3	N31°45'22.70"E 076°43'42.30"	Ha	70500	10	705000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Bahi C 2	N31°45'36.9" E076°43'49.4"	Ha	70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Bahi C 1	N31°46'05.1" E076°44'09.0"	Ha	70500	3	211500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
3	Natural Regeneration/ Closures	Bahi C3	N31°45'10.8" E076°43'37.4"	Ha.	37100	5	742000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Bahi C-3	N31°45.43.8" E076°44'09.4"	Ha.	37100	5	742000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Parchu	N31° E076°	Ha	37100	5	742000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
4	NTFP/ Medicinal Plantations	Jambrol	E076°44'26.2" N31°46'45.7"	Ha	137825	10	137825 0	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
5	Energy Plantation				56150	21	117915 0	
6	Pasture Development				21650	21	454650	
7	Eradication of Noxious Weeds				15050	40	602000	
8	Nurseries:							
i.	Upgradation of Existing nursery	--	--	--	--	--	--	
	New Nursery	--	--	--	--	--	--	
			Total:			128		

2. SMC Measure: -

Sl. No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty	Cost (Rs.)
1	Tohri Nala	N31°45'38.3" E076°43'45.2"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
				2mx2.5m		17230	4	68920
	Kulti Nala	--	Gabion Checkdams	1.5mx1.5m	Nos.	10000	9	90000
					Nos.	17230	3	51690
	Parchhu Nala	--	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
				2mx2.5m	Nos.	17230	2	34460
	..		Gabion Retaining Walls/Toe Walls	1.5mx1.5m 2mx2.5m	Nos.	10000 17230	0	0
			Gabion Checkwalls		Nos.	0	0	0
	..		Deflecting Spurs	..	Nos.	48540	0	
	Tohri Nala	N31°45'38.3" E076°43'45.2"	Water Harvesting Structures	..	Nos.	62150	1	62150
			Gulli Plugging by brushwood Checkdam		Nos.	78	15	1170
			Bio Engineering		Ha.	111700		

BEAT- SIDHPUR



1. Afforestation: -

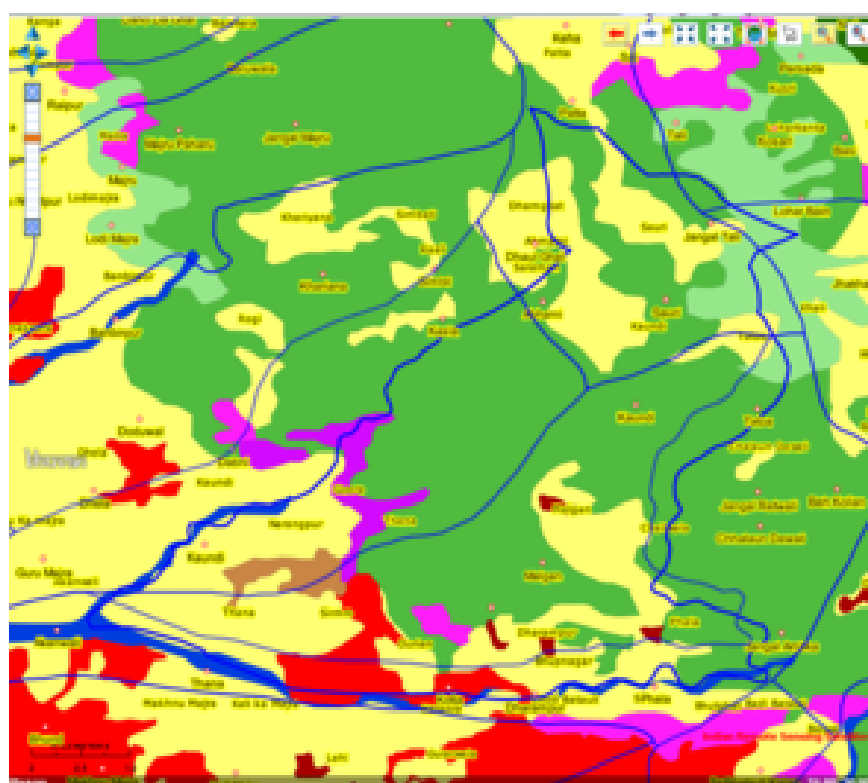
REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN.								
Sl. No.	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
1	New Plantation	Satreha d	N31°49'24.68" E076°45'50.55"	Ha	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
2	Enrichment	Chakaya na	N31°59'34.00" E076°47'46.50"	Ha	70500	2	141000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
3	Natural Regeneration/ Closures	Dharang aur	N31°47'55.09" E076°45'10.15"	Ha.	37100	5	185500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
4	NTPF/ Medicinal Plantations	Chhapn u DPF	N31°48'49.77"E0 76°45'53.94"	Ha.	137825	5	689125	
5	Energy Plantation				56150	8	449200	
6	Pasture Development				21650	8	173200	
7	Eradication of Noxious Weeds				15050	15	225750	
8	Nursery	--	--	--	--	--	--	--
i	Upgradation of existing nursery	--	--	--	--	--	--	--
ii	New Nursery	--	--	--	--	--	--	--

2. SMC Measure:

Sl. No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
	Bardana Nala	N31°47'36.81" E076°44'32.38"	Gabion Checkdams	1.5mx1.5m	Nos	10000	7	70000
			Gabion Checkdams	2mx2.5m	Nos	17230	3	51690
	Parang Nala	N31°48'48.90" E076°44'39.50"	Gabion Checkdams	1.5mx1.5m	Nos	10000	8	80000
			Gabion Checkdams	2mx2.5m	Nos	17230	2	34460
	Chapann	N31°48'38.4	Gabion Checkdams	1.5mx1.5m		10000	10	100000

	u Nalla	1" E076°45'55. 10"						
			Gabion Checkswalls	2mx2.5m	Nos	17230	0	0
	Ser Khobla	..	Gabion Retaining Walls/Toe Walls	--	Nos	10000	7	70000
				--		17230	3	51690
	Ser Khobla & Narhwal	..	Deflecting Spurs		Nos	48540	8	388320
	..	..	Waterhole	..	Nos	856920	1	856920
			Gulli Plugging by brush wood Checkdam		Nos	78	20	1560
			Bio Engineering			111700	1	111700

DHARAMPUR BEAT:-



- Village/Urban
- Village/Rural
- Village/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Scrub Forest
- Grass/Grazing
- Barren/cultivable/Wastelands, Cultured/Pasture Land
- Barren/cultivable/Wastelands, Scrub land
- Barren/cultivable/Wastelands, Sandy area
- Barren/cultivable/Wastelands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lake/Ponds
- Snow and Glacier

1. Afforestation: -

Sl. No.	Component	Area Name	Latitude/ Longitude	Area in ha.	Unit cost per ha. (Rs.)	Cost (Rs.)	Species to be planted
1	New Plantation	Drahal	N31°50'20.08" E076°44'09.01"	5	76750	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
2	Enrichment	Narwah al	N31°48'48.49" E076°46'29.95"	3	70500	211500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
3	Natural Regeneration/ Closures	Khairi	N31°48'11.58" E076°46'07.15"	10	37100	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Langha	N31°48'11.45" E076°46'07.15"	5	37100	185500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
4	NTPF/ Medicinal Plantation	Narhwal	N31°48'43.79" E076°46'50.11"	5	137825	689125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
		Chaus DPF	N31°49'33.85" E076°47'02.06"	4	137825	551300	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
5	Energy Plantation			18	56150	1010700	
6	Pasture Development			18	21650	389700	
7	Eradication of Noxious Weeds			25	15050	376250	
8	Nurseries:						
i	Existing Nursery						
ii	New Nursery		N31°50'20.08" E076°44'09.01"	0	1220000	1220000	

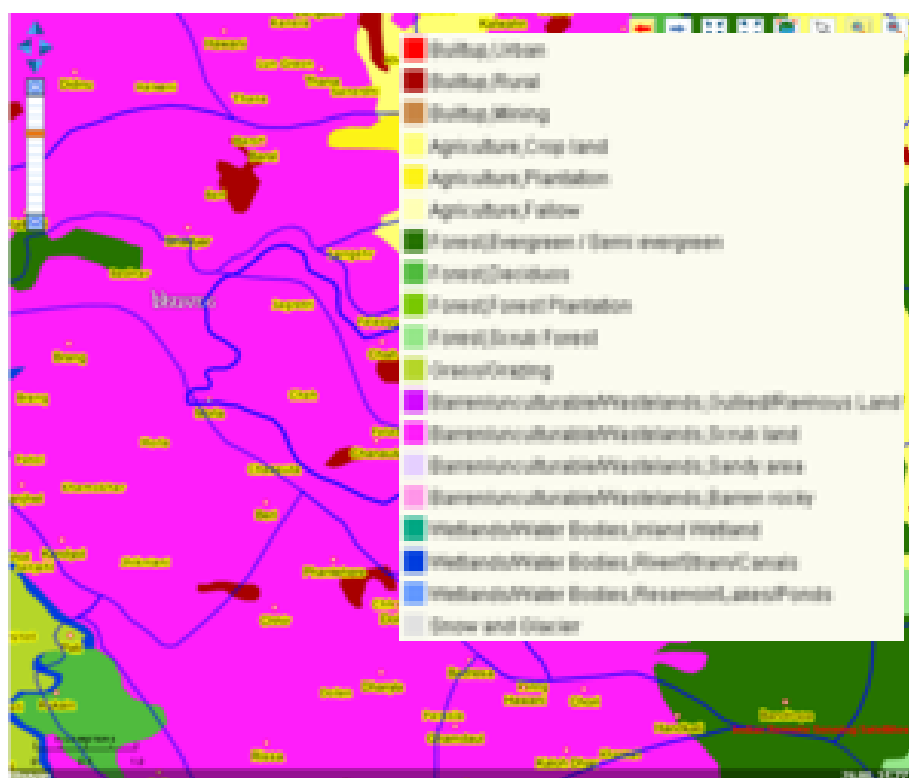
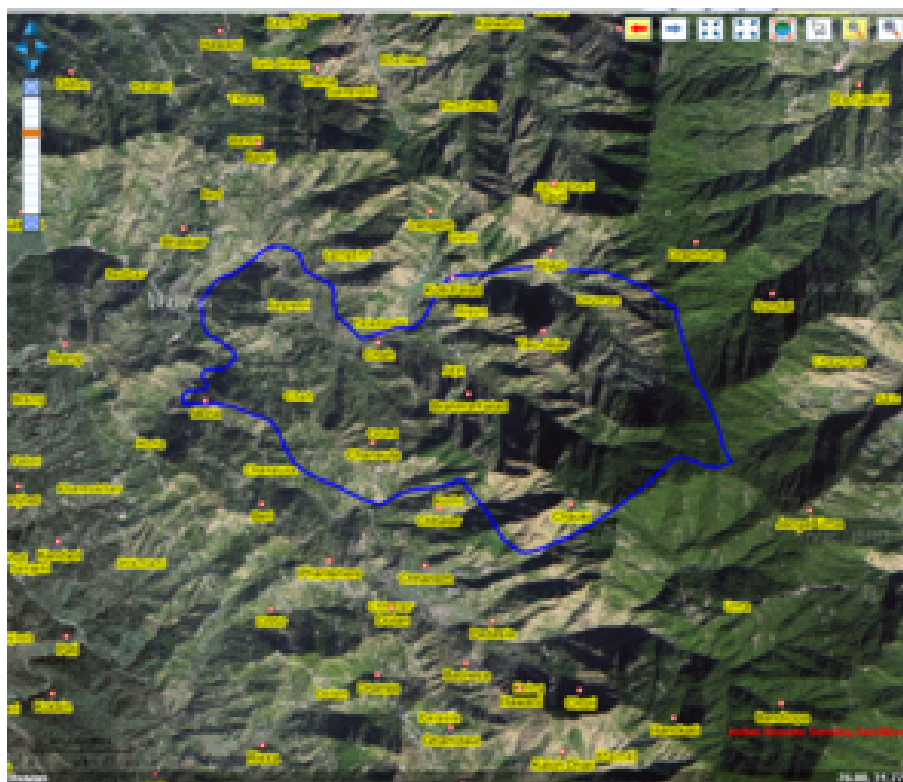
2. SMC Measure: -

Name of Nalla/ Forest	Latitude /Longitude	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
Chhej Khobla	N31°47'29.82' E076°45'06.58"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
Khairi Nala	N31°47'53.28' E076°45'41.39"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
Chaus Nalla	N31°49'13.10' E076°46'52.21"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
Narwahl		Gabion Checks walls	2mx2.5m	Nos.	17230	5	50000
Lhanga Nala Landslide	N31 48'30.45" E076 46'26.56"	Gabion Retaining Walls/Toe Walls	2mx2.5m	Nos.	17230	8	137840

Chhej Khobla Landslide	N 31 47'29.82" E076 45'06.58"	Gabion Retaining Walls/Toe Walls	2mx2.5m	Nos	17230	8	137840
Lhanga	-	Deflecting Spurs		Nos.	48540	4	194160
	..	Waterhole	..	Nos.	856920	1	856920
--	--	Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
--	--	Bio Engineering		Ha.	111700	1	111700

FOREST RANGE: DHARAMPUR FOREST BLOCK: MANDAP

II. Mandap Block:- Mandap block has five beats namely Brang, Mandap, Baroti, Ludhiana and Mhan
BEAT- MANDAP



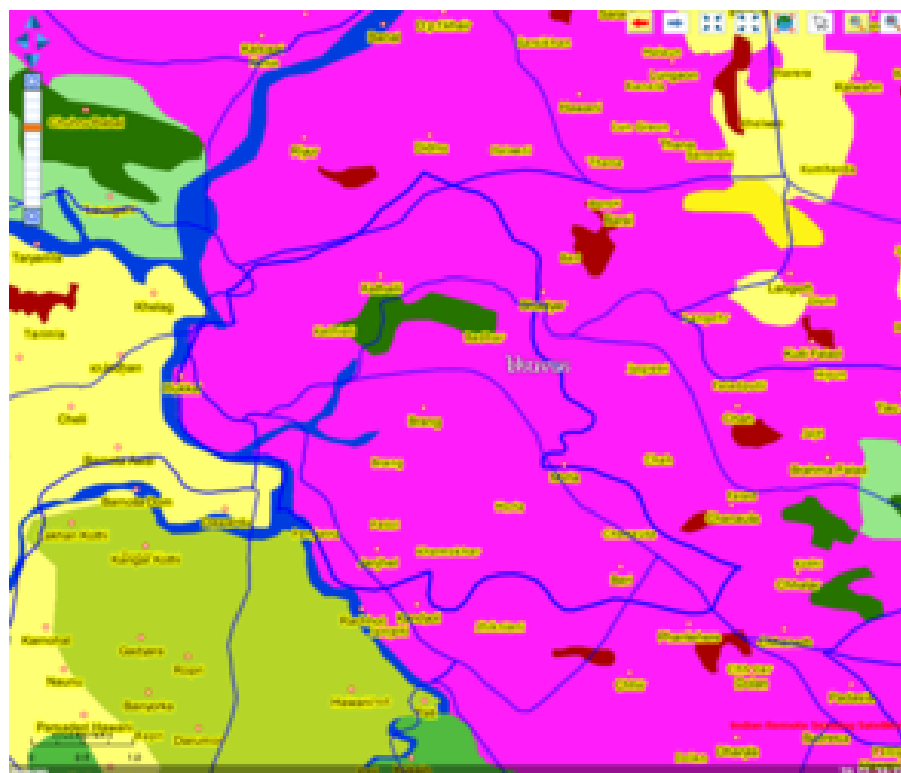
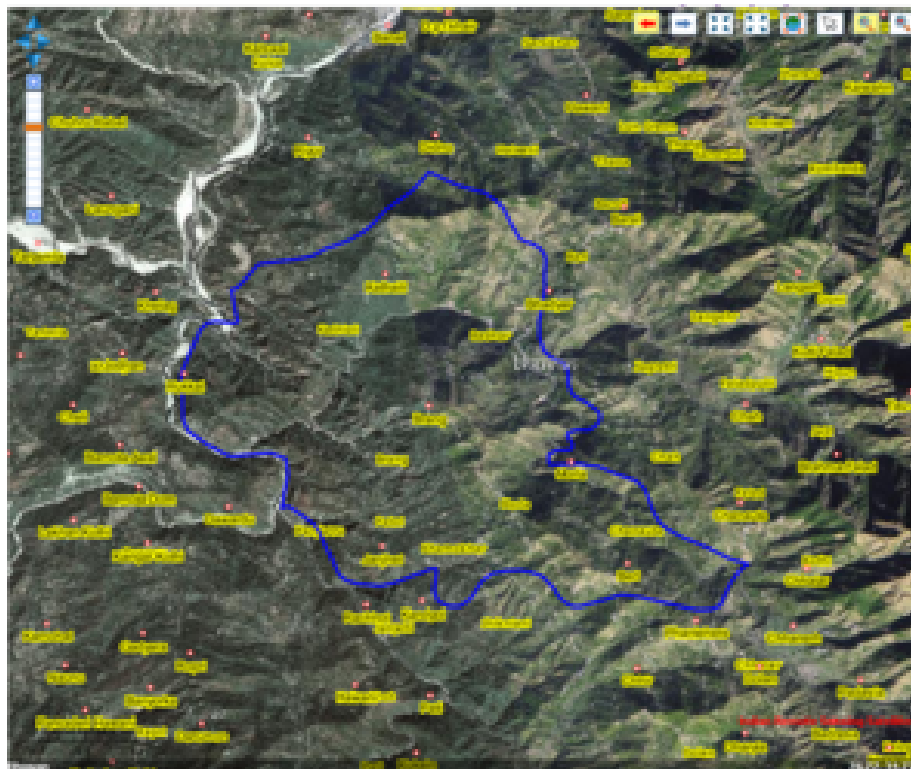
1. Afforestation: -

REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN									
Sl. No.	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted	
1	New Plantation	Muradhar	N31°45.069' E076°45.525'	Ha.	76750	50	3837500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
2	Enrichment	Sundal	N31°45'26.4" E076°47'81.9"	Ha.	70500	20	3410000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Kaloga	N31°44'37.9" E076°48'22.5"	Ha.	70500	10	705000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Oddi	N31°44'59.9" E076°48'65.2"	Ha.	70500	5	352500		
3	Natural Regeneration/ Closures	Muradhar		Ha.	37100	30	1113000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
4	NTPF/ Medicinal Plantations	Murhadhar		Ha.	137825	30	4134750	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha	
5	Energy Plantation			Ha	56150	8	449200		
6	Pasture Development			Ha	21650	8	173200		
7	Eradication of Noxious Weeds			Ha	15050	90	1354500		
8	Nurseries								
i	Upgradation of existing nursery	Odi	0.75	--	250000	1	250000	--	
ii	New Nursery	Muradhar Gypsy	0.5	--	550000	1	550000		

SMC Measure: -

Requirements of Dharampur Range of Joginder Nagar Forest Division under SMC Measures for Thana Plaun HEP CAT Plan								
Sl. No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
	Odi Ka Nal	N31°44.593' E076°48.631'	Gabion Check dams	1.5mx1.5m	Nos	10000	6	60000
				2mx2.5m		17230	4	68920
	Chowki Nala	N31°44.922' E076°48.181'	Gabion Check dams	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m		17230	5	86150
			Gabion Checks walls	2mx2.5m	Nos	17230	0	0
			Gabion Retaining wall	4mx6m	Nos	17230	0	0
	Odi Ka Nal		Deflecting Spurs	Deflecting Spurs	Nos	48540	6	291240
	Odi Perennial Khad	N31°44.593' E076°48.631'	Water Harvesting Structures		Nos	62150	2	124300
	--		Gulli Plugging by brush wood	Checkdam	Nos	78	20	1560
			Bioengineering		Ha.	111700	1	111700

BEAT- BRANG



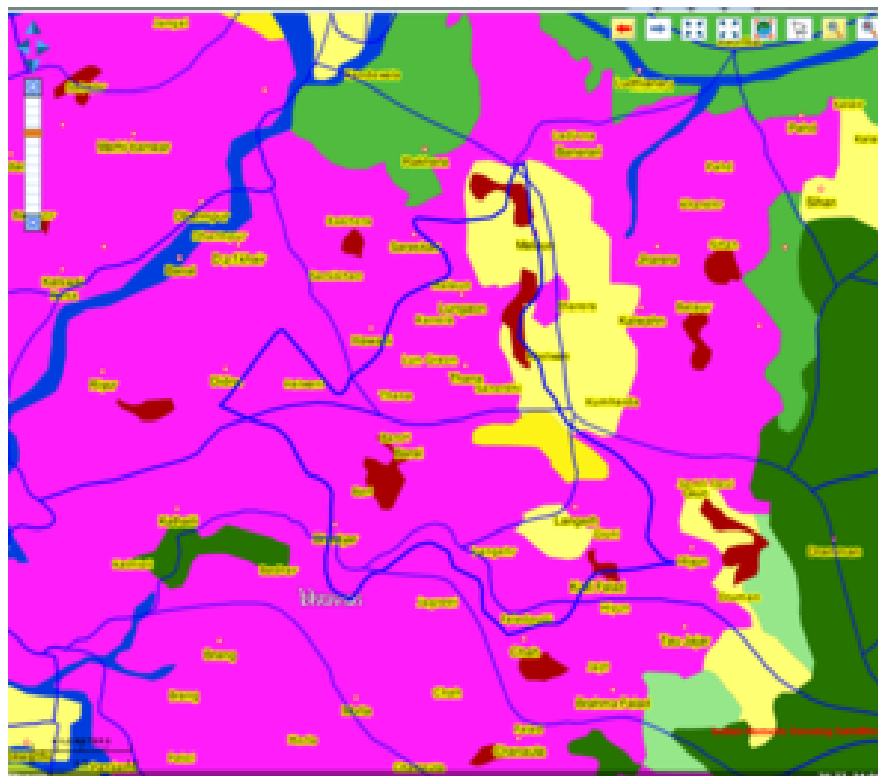
1. Afforestation: -

Sl.No.	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
1	New Plantation	Kathali	N31°46.433' E076°45.272'	Ha.	76750	2	153500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Shana ragalu	N31°46.047' E076°46.521'	Ha.	76750	8	614000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
2	Enrichment	Didnu	N31°46.619' E076°45.460'	Ha.	70500	10	705000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Lower Brang	N31°45.885' E076°45.401'	Ha.	70500	10	705000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Chaunt aGal	N31°45.827' E076°46.290'	Ha.	70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
3	Natural Regeneration/ Closures	Badhya r DPF	N31°46.027' E076°46.059'	Ha.	37100	15	556500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Didnu DPF	N31°46'77.5" E076°45'64.5"	Ha.	37100	15	556500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Darku Kathaili	N31°46'17.3" E076°45'04.1"	Ha.	37100	5	185500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
4	NTPF/ Medicinal Plantations	Kathaili	N31°46.196' E076°45.072'	Ha.	137825	5	689125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
5	Energy Plantation			Ha.	56150	8	449200	
6	Pasture Development			Ha	21650	8	173200	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
8	Nurseries							
	Upgradation of existing nursery	--	--	--	--	--	--	--
	New Nursery	Murad har	--	--	770000	0.7 5	770000	

SMC Measure: -

Sl.No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
	Brang Nala	N31°45.824' E076°46.033'	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
				2mx2.5m		17230	2	34460
	--		Gabion Checkswalls	2mx2.5m	Nos.	17230	0	0
	Badhyar	N31°46.273' E076°45.650'	Gabion Retaining Walls/Toe Walls	..	Nos.	10000	7	70000
	Didnu Khad	N31°46.497' E076°45.578'	Deflecting Spurs	..	Nos.	48540	4	194160
	--		Waterhole	..	Nos.	856920	1	856920
	--		Gulli Plugging by brush wood Checkdam		Nos.	78	20	1560
	--		Bio Engineering		Ha.	111700	1	111700

BAROTI



-  Soils/Lowland
-  Soils/Plural
-  Soils/Wing
-  Agriculture/Crop land
-  Agriculture/Plantation
-  Agriculture/Fallow
-  Forest/Evergreen / Semi evergreen
-  Forest/Deciduous
-  Forest/Forest Plantation
-  Forest/Semi Forest
-  Grass/Grazing
-  Barren/uncultivated/Marshlands, Cultivated Pasture Land
-  Barren/uncultivated/Marshlands, Sandy land
-  Barren/uncultivated/Marshlands, Sandy area
-  Barren/uncultivated/Marshlands, Barren rocky
-  Wetlands/Water Bodies, (Inland Wetland)
-  Wetlands/Water Bodies, River/Stream/Canal
-  Wetlands/Water Bodies, Reservoir/Lakes/Ponds
-  Snow and Glacier

Afforestation: -

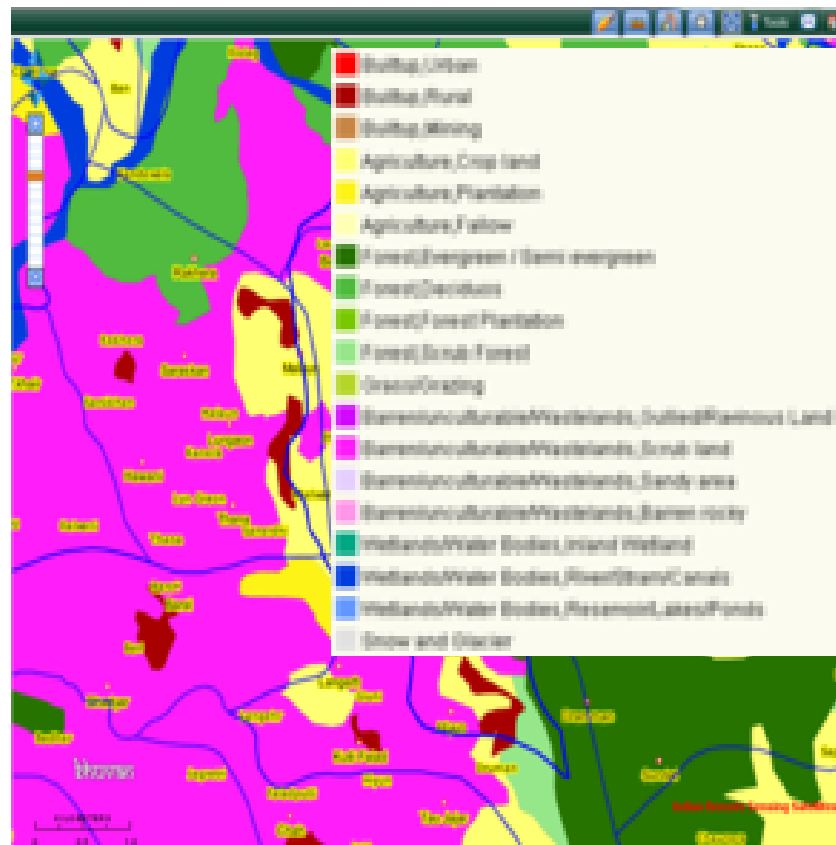
REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN									
Sl. No.	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted	
1	New Plantation	Banjai	N31°46'48.5" E076°47'18.2"	Ha	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Baral	N31°47'41.7" E076°47'09.2"		76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
2	Enrichment	--	--		--	--	--	--	
3	Natural Regeneration/ Closures	Janetri	--	Ha.	37100	5	185500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
4	NTPF/ Medicinal Plantations	Baroti/ Langehad	N31°46'46.1" E076°47'14.7"	Ha.	137825	5	689125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha	
5	Energy Plantation			Ha.	56150	10	561500		
6	Pasture Development			Ha	21650	10	216500		
7	Eradication of Noxious Weeds			Ha.	15050	20	301000		
	Nurseries								
i	Upgradation of existing nursery	--	--	--	--	--	--	--	
ii	New Nursery	--	--	--	--	--	--	--	

2. SMC Measure: -

Sl. No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
	Malaun	N31°46'25.6" E076°48'04.8"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Jejun		Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
				2mx2.5m		17230	3	51690
	Langherh Nala		Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Janetri DPF		Gabion Checkdams	1.5m x 1.5m	Nos.	10000	5	50000
			Gabion Checkwalls	2mx2.5m	Nos.	17230	0	0
			Gabion Retaining Walls/Toe Walls	..	Nos.	10000	0	0
	Giun Nala	N31°46'43.5" E076°47'26.7"	Water Harvesting Structures	..	Nos.	62150	1	62150
	Langehad Nalla	N31°46'55.2" E076°47'02.5"			Nos.	62150	1	62150
			Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170

			Bio Engineering		Ha.	111700	1	111700
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LUDHIANA BEAT:

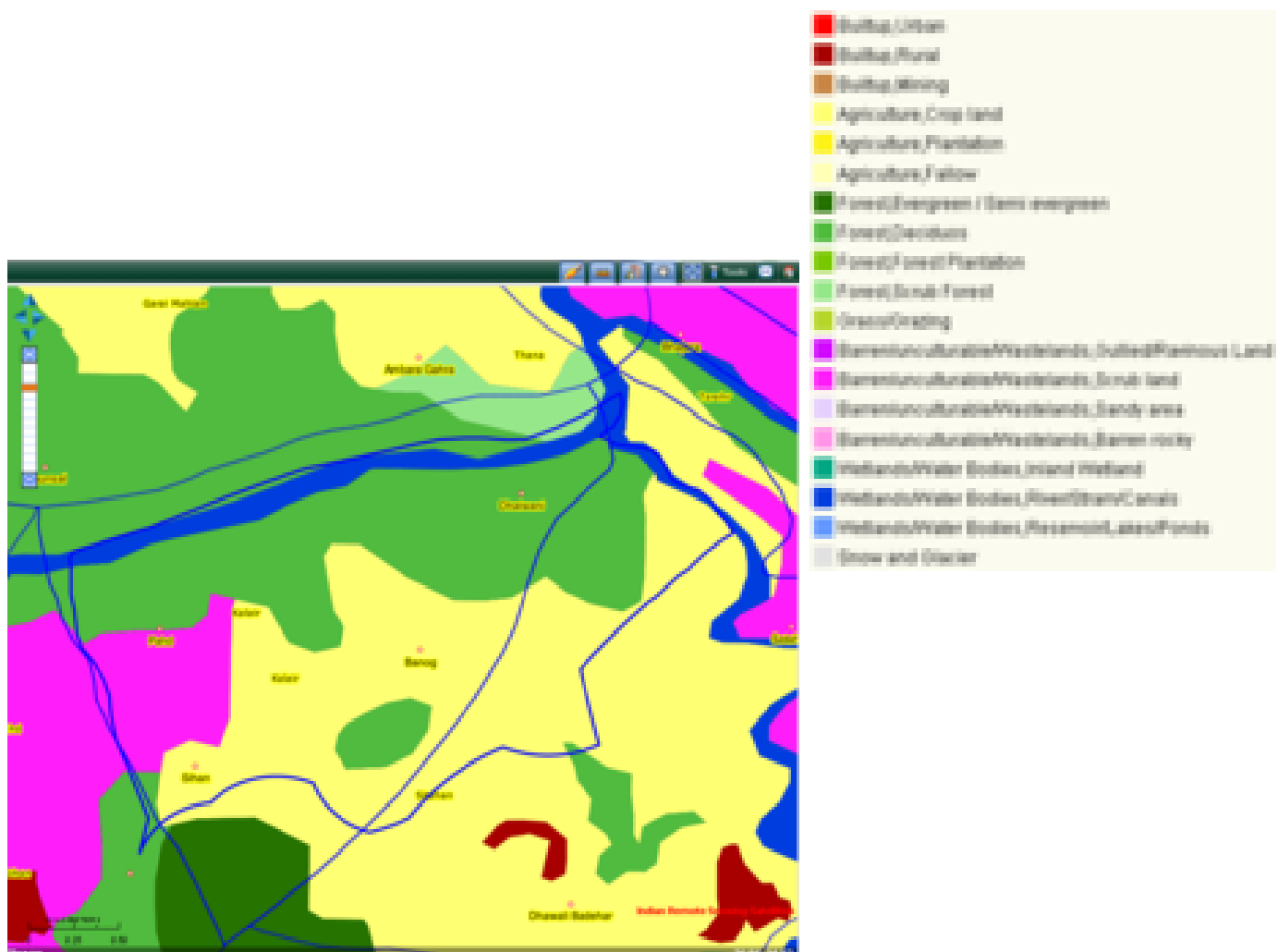


1. Afforestation: -

REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN								
Sl. No	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
1	New Plantation	Kaunsal DPF	N31°48'50.5" E076°47'34.9"	Ha.	76750	15	1151250	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Jathehari DPF	N31°48'29.3" E076°48'42.5"	Ha.	76750	15	1151250	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
2	Enrichment	Jathehari DPF	N31°48'29.5" E076°48'42.3"	Ha.	70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
3	Natural Regeneration/ Closures	Janetri C1	N31°46'57.6" E076°48'06.5"	Ha.	37100	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Janetri C2	N31°46'58.9" E076°48'02.5"	Ha.	37100	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Kaunsal DPF	N31°48'29.4" E076°48'42.4"	Ha.	37100	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Jathehri	N31°48'29.4" E076°48'42.3"	Ha.	37100	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
4	NTPF/ Medicinal Plantations	Janetri DPF	N31°46'58.2" E076°48'06.4"	Ha.	137825	10	1378250	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
		Kaunsal DPF	N31°48'29.2" E076°48'45.2"	Ha.	137825	10	1378250	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
5	Energy Plantation			Ha.	56150	8	449200	
6	Pasture Development			Ha.	21650	8	173200	
7	Eradication of Noxious Weeds			Ha.	15050	20	301000	
	Nursery					0	0	

2. SMC Measure: -

Requirements of Dharampur Range of Joginder Nagar Forest Division under SMC Measures for Thana Plaun HEP CAT Plan								
Sl. No.	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty.	Cost (Rs.)
	Banehardi Nala	N31°48'33.0" E076°47'14.3"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
				2mx2.5m		17230	2	34460
	Kothi Nala	N31°47'54.3" E076°47'46.7"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Kulhan Nala	N31°47'12.8" E076°47'53.1"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
				2mx2.5m		17230	4	68920
	Khada Kumaharda Nalla	N31°47'20.5" E076°48'34.6"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Duga Kumaharda Nalla	N31°47'16.7" E076°48'32.6"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
				2mx2.5m		17230	4	68920
	Sihan Nala	N31°47'53.2" E076°48'47.5"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Pahad Nala	N31°48'18.7" E076°48'31.6"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
				2mx2.5m		17230	3	51690
	Konsal Nala	N31°48'18.9" E076°48'37.7"	Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
			Gabion Checkwalls	2mx2.5m	Nos.	17230	0	0
			Gabion Retaining wall/toe walls			10000	0	0
			Deflecting Spurs	..	Nos.	48540	0	0
	Konsal Nala	N31°48'18.9" E076°48'37.7"	Water Harvesting Structures	..	Nos.	62150	2	124300
			Gulli Plugging by brush wood Checkdam	--	Nos.	78	15	1170
			Bio Engineering		Ha.	111700	1	111700



1. Afforestation:

REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN									
Sl. No.	Component/ Sub Component	Area Name	Lat Long	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted	
1	New Plantation	Kalehari	N31°48'36.4" E076°49'28.8"		76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Monal Gehara	N31°49'06.9" E076°50'05.4"		76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Mahan	N31°48'47.9" E076°50'37.0"		76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
2	Enrichment	Mahan	N31°48'45.0" E076°50'41.9"		70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		MonalGah era	N31°49'09.7" E076°50'08.4"		70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Kalehri	N31°48'41.1" E076°49'44.7"		70500	5	352500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
3	Natural Regeneration/ Closures	Mahan DPF	N31°49'06.3" E076°50'28.3"		37100	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
		Roparu	N31°48'56.5" E076°49'34.4"		137825	10	371000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo	
4	NTPF/ Medicinal Plantations	MahanDPF	N31°49'10.8" E076°50'13.6"		137825	10	1378250	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha	
5	Energy Plantation			Ha.	56150	4	224600		
6	Pasture Development			Ha.	21650	4	86600		
7	Eradication of			Ha.	15050	15	225750		

	Noxious Weeds							
8	Nursery							
i	Upgradation of existing nursery	--	--	--	--	--	--	
ii	New Nursery	Mhan	0.5	Ha.	770000	1	770000	

2. SMC Measure: -

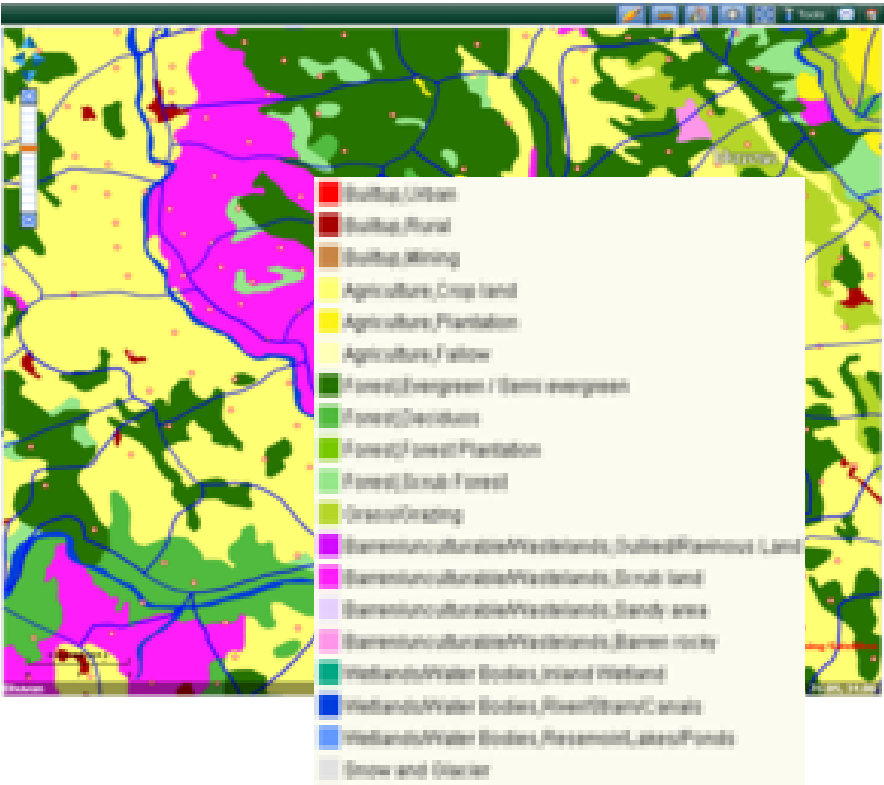
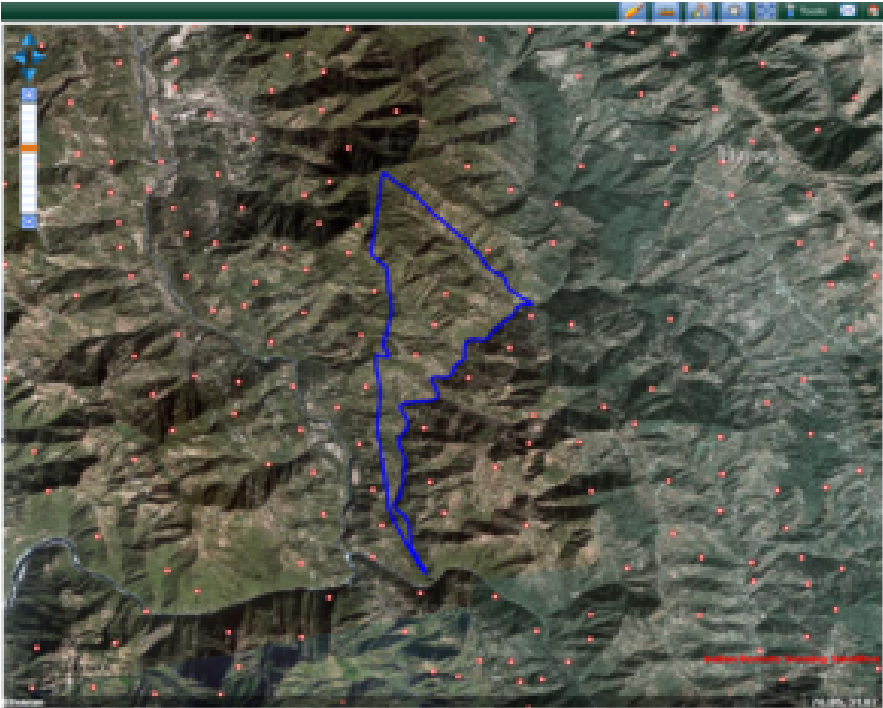
Requirements of Dharampur Range of Joginder Nagar Forest Division under SMC Measures for Thana Plaun HEP CAT Plan

Sl. No.	Beat	Name of Nalla/ Forest	Lat Long	Activity	Size	Unit	Unit Cost (Rs.)	Qty .	Cost (Rs.)
1	Mhan	Mhan Nala	N31°48'48.5" E076°49'31.7"	Gabion Checkdams	1.5mx1.5 m	Nos.	10000	7	70000
					2mx2.5m		17230	3	51690
2		Ropadu Nala	N31°48'49.6" E076°49'31.7"	Gabion Checkdams	1.5mx1.5 m	Nos.	10000	6	60000
					2mx2.5m		17230	4	68920
3		Kalheri Nala	N31°48'40.3" E076°49'28.3"	Gabion Checkdams	1.5mx1.5 m	Nos.	10000	8	80000
					2mx2.5m		17230	2	34460
4		Munal Gehra nala	N31°49'01.6" E076°49'53.3"	Gabion Checkdams	1.5mx1.5 m	Nos.	10000	13	130000
					2mx2.5m		17230	7	120610
6				Waterhole	..	Nos.	856920	1	856920
7				Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
8				Bio Engineering		Ha.	111700	1	111700

FOREST RANGE: URLA FOREST BLOCK: CHUKKU

Chukku Block: Chukku block have three beats namely Khajri, Chuku and Nagan

BEAT- KHAJRI



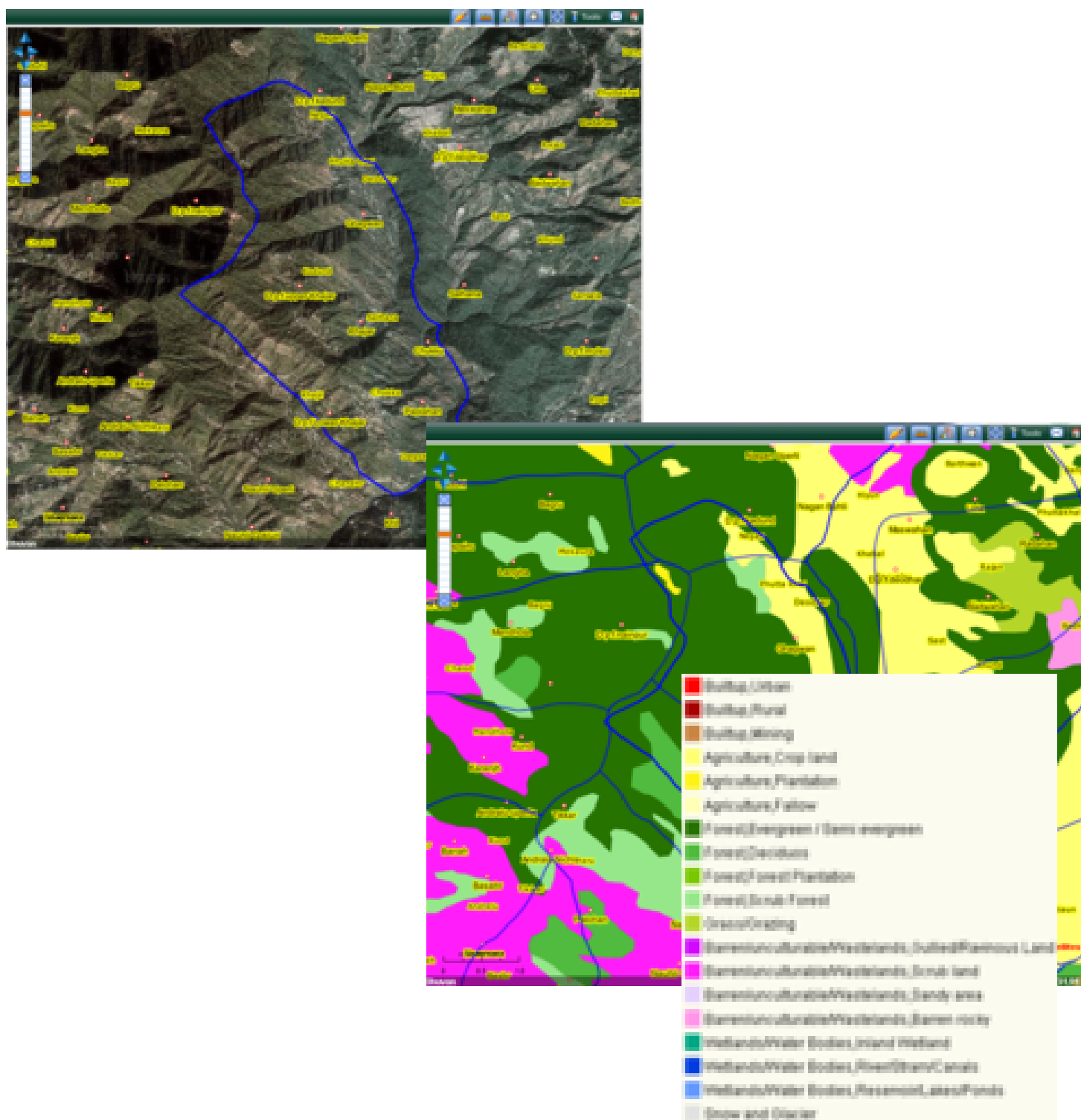
I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Khajri	N31 53 22 E76 51 01	Ha	76750	5	583750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo and other B/L species
2	Enrichment	Khajri	N 31 53 19 E76 50 24	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Chah Bhararu	N31 53 20 E76 50 34	Ha	37100	5	185500	
4	NTFP Plantation	Khajri		Ha	137825	0	0	
5	Energy Plantation	Chah Bhararu	N 31 52 42 E 76 50 35	Ha	56150	5	280750	
6	Pasture Development		..	Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	10	150500	
8	Nurseries							
i.	Existing Nurseries	Sajerh	0.20	Ha	0	1	..	
ii.	New Nurseries	Dehri	0.20	No	770000	1	770000	..

II. SMC MEASURES:

S.N O.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Chah Bhararu	N 31 52 52 E 76 50 46	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	5	86150
2	Sajerh Nala	N 31 52 12 E 76 51 13	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	7	120610
3	Khajri Nala	N 31 52 12 E76 51 27	Checkdams/ Checkwalls Gabion		1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	4	68920

4	Galmatha Nala	N 31 5216 E 7651 34	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	0	0
5	Batnagar Nala	N 31 51 37 E76 50 40	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	2	34460
6	Khajri Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	0	0
7	Khajri Beat		Trenching	Nos	1m x30cm x 30cm	15.3	500	7650
8	Khajri	Chah Bhararu	Water Harvesting Structures	Nos		62150	1	62150
		Sajerh Nala		Nos		62150	1	62150

BEAT- CHUKU



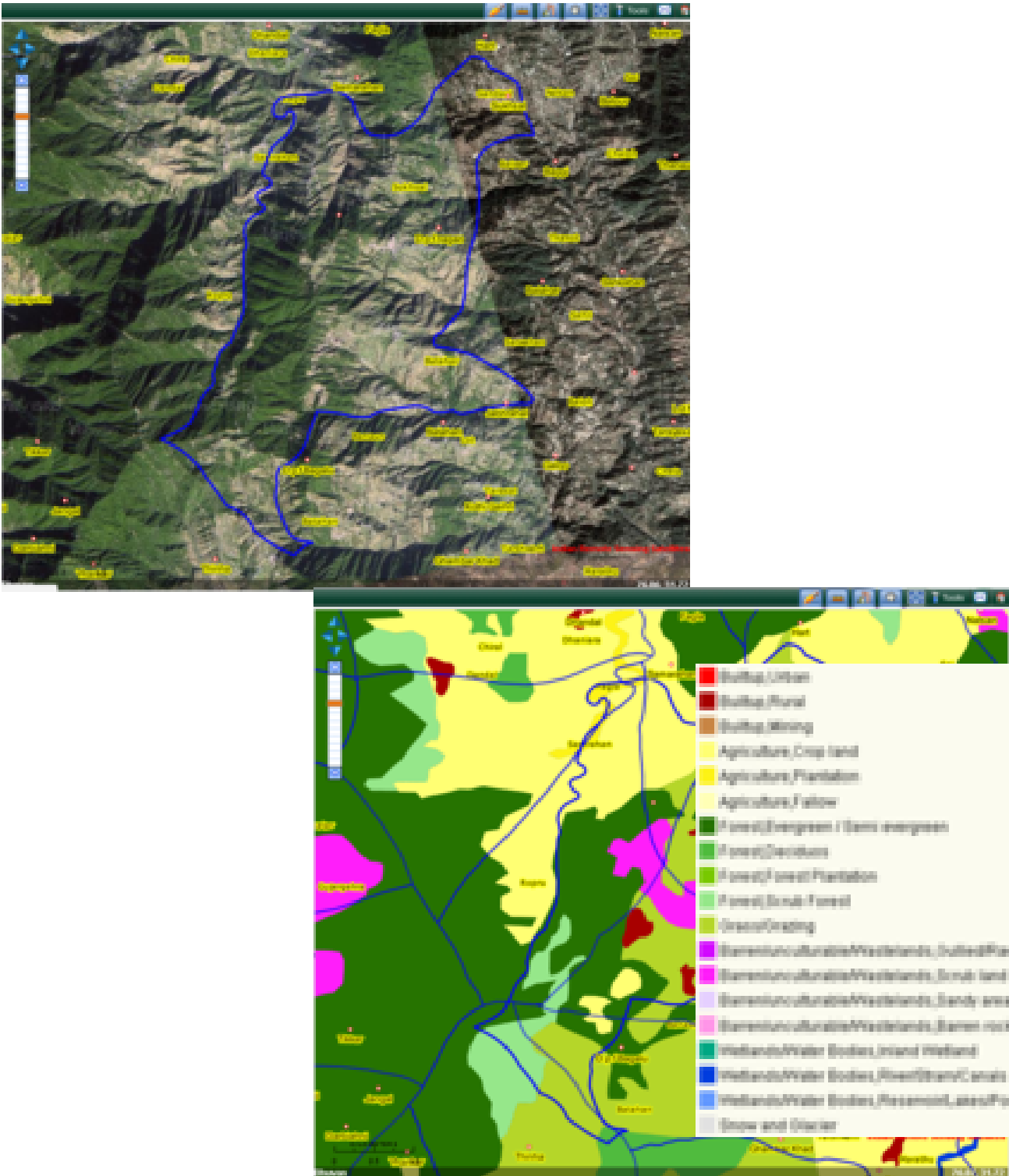
I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Chuku	N31 55 24 E76 52 01	Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment	Chuku	N 31 53 09 E 76 52 31	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Kadoond	N 31 54 20 E76 52 01	Ha	37100	20	742000	
4	NTFP Plantation	Chuku		Ha	137825	5	689125	
5	Energy Plantation	Kadoond	N 31 54 25 E 76 51 10	Ha	56150	5	280750	
6	Pasture Development	Kadoond		Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
7	Nurseries							
i.	Existing Nurseries	Nagan Beat Level	1	Ha (0.25)	250000		250000	Upgradation required.
ii.	New Nurseries			No	770000			..

II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Luni Khad 2KM	N 31 54 04 E76 52 18	Checkdams/ Checkwalls	Nos	1.5m x 1.5m	10000	6	60000
			Gabion		2m x 2.5m	17230	0	0
2	Jujhalu Nala 1KM	N31 53 55 E76 51 05	Checkdams/ Checkwalls	Nos	1.5m x 1.5m	10000	5	50000
			Gabion		2m x 2.5m	17230	0	0
1	Luni Khad 2KM	N 31 54 04 E76 52 18	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	5	86150
2	Nagan Nala	N 31 55 14 E76 51 51	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
3	Jujhalu Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	4	40000
1	Nagan Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	7	70000
2	Pabo Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	5	50000
3	Jujhalu Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	4	40000
1	Chukku		Trenching	Nos.	1m x30cm x	15.3	500	7650

	Beat				30cm			
1			Waterhole	Nos		856920	1	856920

BEAT- NAGAN



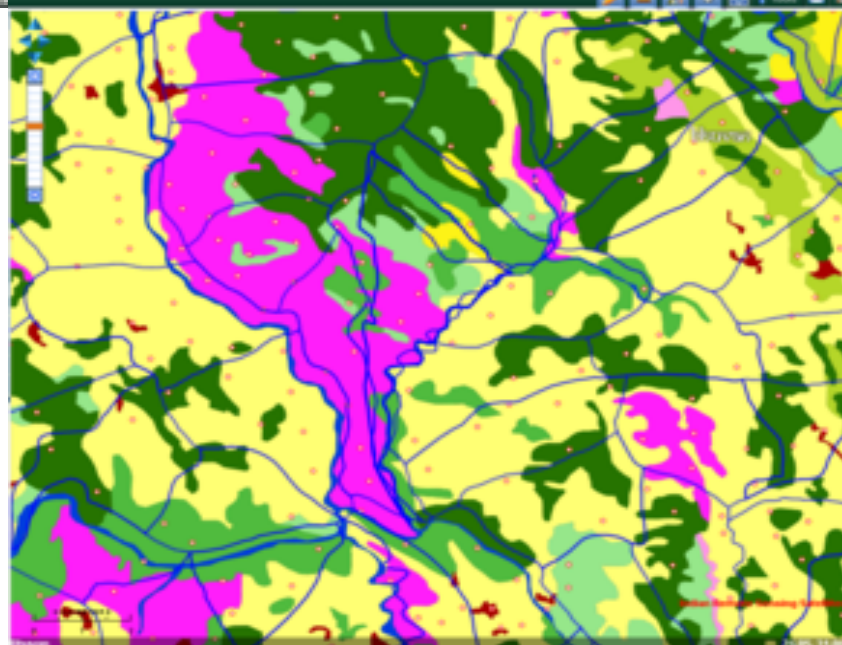
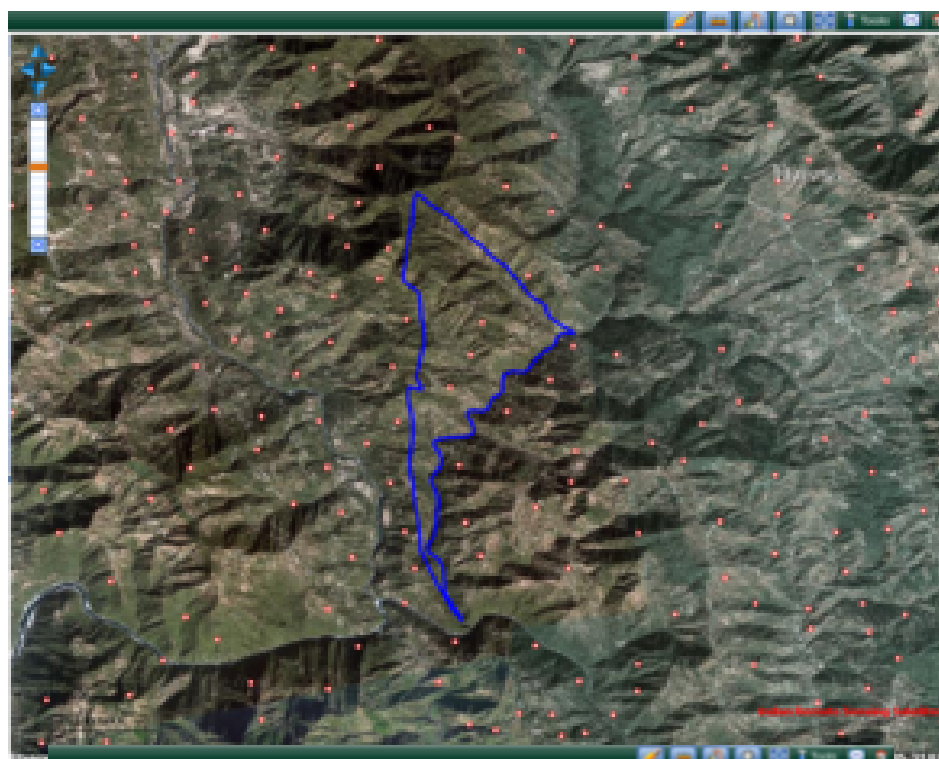
I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Nagan	N 31 55 01 E76 51 35	Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment	Nagan	N 31 55 33 E76 51 39	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Nagan		Ha	37100	10	371000	
4	NTFP Plantation	Nagan		Ha	137825	5	689125	
5	Energy Plantation	Balee	N 31 56 14 E76 52 03	Ha	56150	5	280750	
6	Pasture Development	Nagan		Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
8	Nurseries							
i.	Existing Nurseries	..	..	Ha	0	0	0	0
ii.	New Nurseries	..	..	No	0	0	0	0

SMC MEASURES

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Thorat Nala 2KM	N 31 56 42 E76 50 48	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	3	30000
					2m x 2.5m	17230	0	0
2	Nausa Nala 3KM	N 31 56 01 E76 51 53	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	3	30000
					2m x 2.5m	17230	0	0
1	Thorat Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
					2m x 2.5m	17230	0	0
2	Nausa Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
1	Thorat Nala		Gabion Checkwalls	7	1.5m x 1.5m	10000	7	70000
2	Nausa Nala		Gabion Checkwalls	7	1.5m x 1.5m	10000	7	70000

1			Spurs	Nos.	3 Mtr. Each	48540	0	0
1	Nagan		Trenching	Nos.	1m x30cm x 30cm	15.3	500	7650

FOREST RANGE: URLA CHUKKU BLOCK: Chukku block have three beats namely Khajri, Chuku and Nagan
BEAT- KHAJRI



- Builtup, Urban
- Builtup, Rural
- Builtup, Mining
- Agriculture, Crop land
- Agriculture, Plantation
- Agriculture, Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Scrub Forest
- Grass/Grazing
- Barren/cultivable/Wastelands, Cultivated/Barren Land
- Barren/cultivable/Wastelands, Scrub land
- Barren/cultivable/Wastelands, Sandy area
- Barren/cultivable/Wastelands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lake/Ponds
- Snow and Glacier

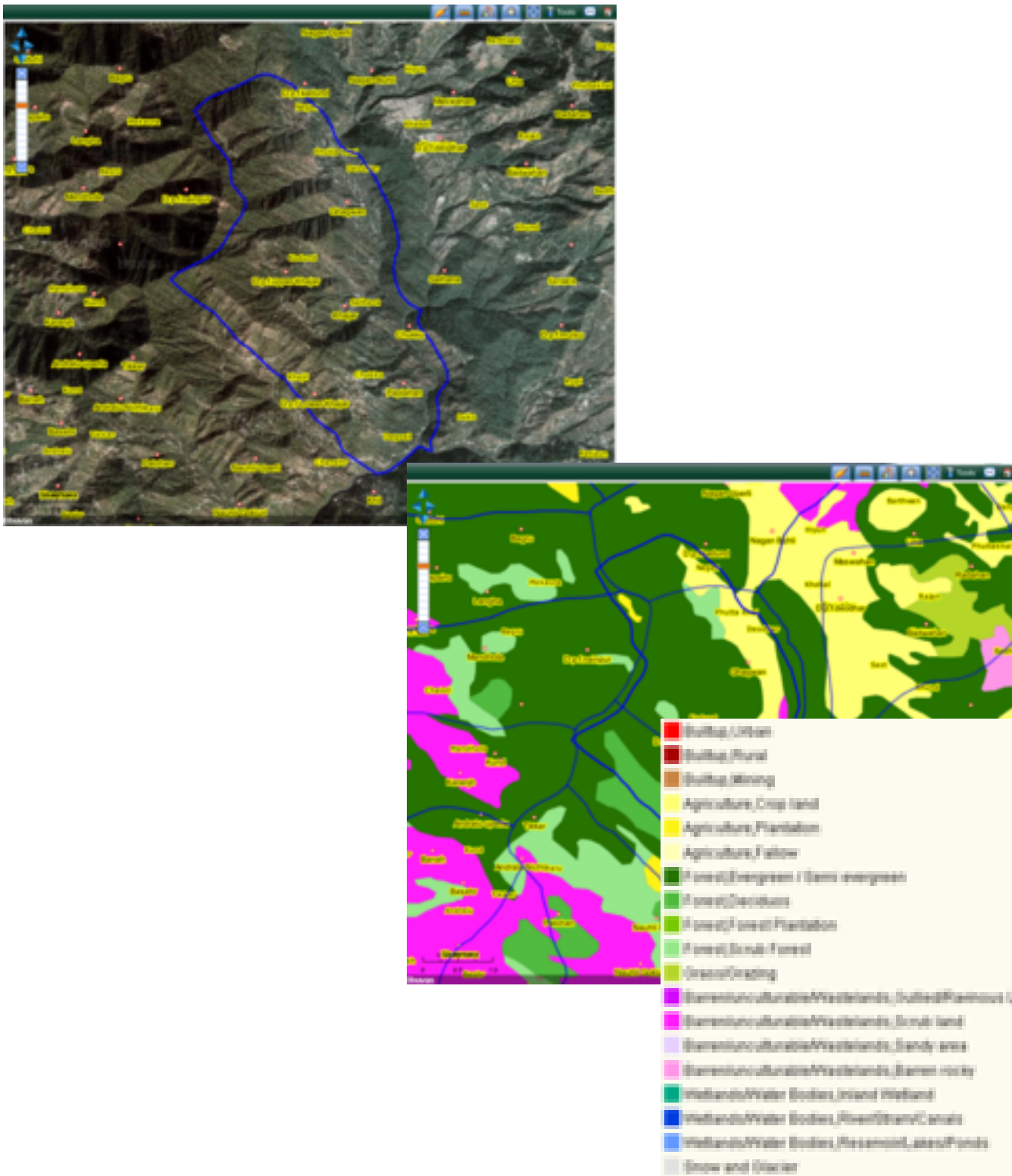
I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Khajri	N31 53 22 E76 51 01	Ha	76750	5	583750	Ban, Chir, Brass, Kafal, Sheesham,
2	Enrichment	Khajri	N 31 53 19 E76 50 24	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Chah Bhararu	N31 53 20 E76 50 34	Ha	37100	5	185500	
4	NTFP Plantation	Khajri		Ha	137825	0	0	
5	Energy Plantation	Chah Bhararu	N 31 52 42 E 76 50 35	Ha	56150	5	280750	
6	Pasture Development		..	Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	10	150500	
8	Nurseries							
i.	Existing Nurseries	Sajerh	0.20	Ha	0	1	..	
ii.	New Nurseries	Dehri	0.20	No	770000	1	770000	..

II. SMC MEASURES:

S.N O.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Chah Bhararu	N 31 52 52 E 76 50 46	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	5	86150
2	Sajerh Nala	N 31 52 12 E 76 51 13	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	7	120610
3	Khajri Nala	N 31 52 12 E76 51 27	Checkdams/ Gabion		1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	4	68920
4	Galmatha Nala	N 31 5216 E 7651 34	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	5	50000
5	Batnahr Nala	N 31 51 37 E76 50 40	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	2	34460
6	Khajri Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	0	0
7	Khajri Beat		Trenching	Nos	1m x30cm x 30cm	15.3	500	7650
8	Khajri	Chah Bhararu	Water Harvesting Structures	Nos		62150	1	62150
		Sajerh		Nos		62150	1	62150

		Nala						
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Beat- Chuku



I AFFORESTATION:

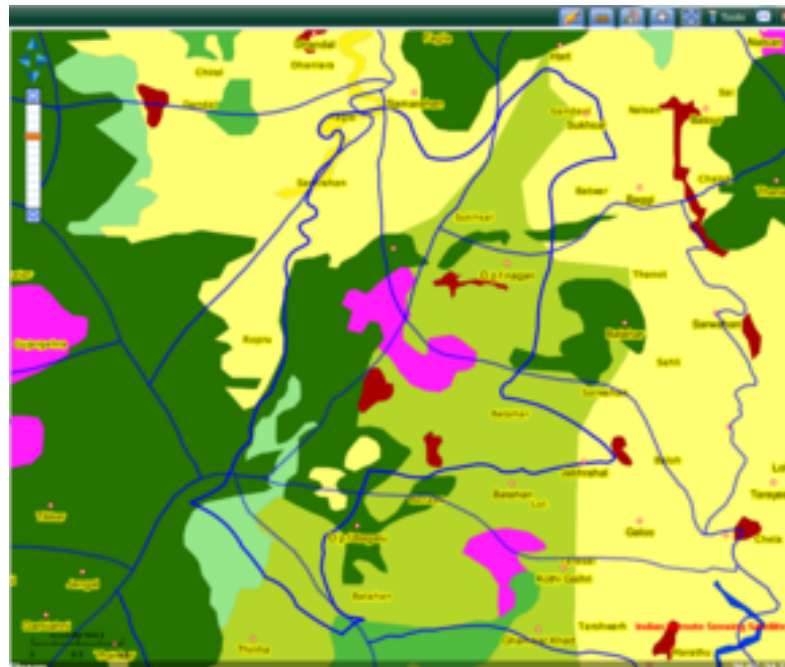
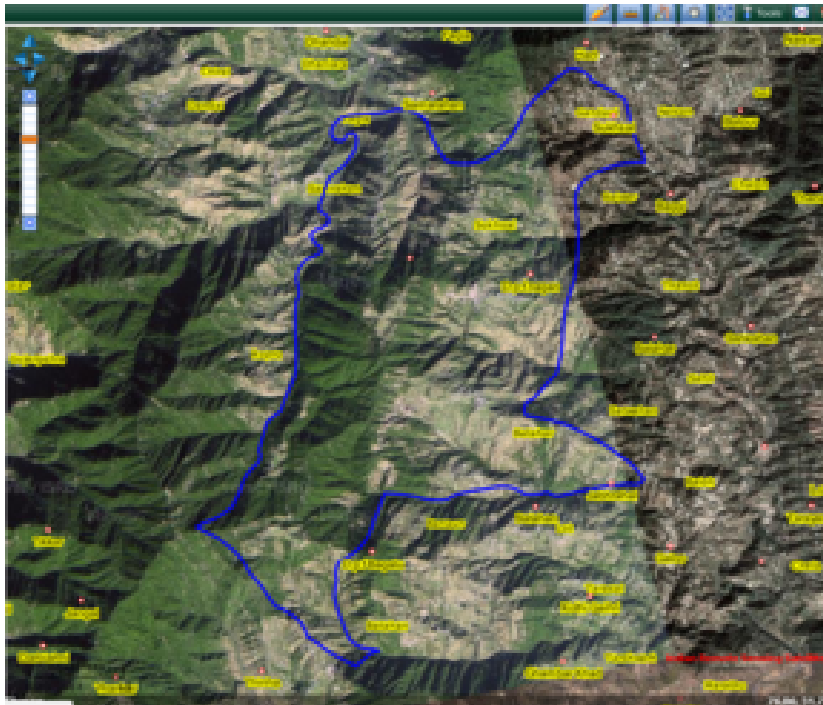
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Chuku	N31 55 24 E76 52 01	Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment	Chuku	N 31 53 09 E 76 52 31	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Kadoond	N 31 54 20 E76 52 01	Ha	37100	20	742000	
4	NTFP Plantation	Chuku		Ha	137825	5	689125	
5	Energy Plantation	Kadoond	N 31 54 25 E 76 51 10	Ha	56150	5	280750	
6	Pasture Development	Kadoond		Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
7	Nurseries							
i.	Existing Nurseries	Nagan Beat Level	1	Ha (0.25)	250000		250000	Upgradation required.
ii.	New Nurseries			No	770000			..

II. SMC MEASURES:

	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Luni Khad 2KM	N 31 54 04 E76 52 18	Checkdams/ Checkwalls	Nos	1.5m x 1.5m	10000	6	60000
			Gabion		2m x 2.5m	17230	0	0
2	Jujhalu Nala 1KM	N31 53 55 E76 51 05	Checkdams/ Checkwalls	Nos	1.5m x 1.5m	10000	5	50000
			Gabion		2m x 2.5m	17230	0	0
1	Luni Khad 2KM	N 31 54 04 E76 52 18	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	5	86150
2	Nagan Nala	N 31 55 14 E76 51 51	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
3	Jujhalu Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	4	40000
1	Nagan Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	7	70000
2	Pabo Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	5	50000
3	Jujhalu Nala		Gabion Checkwalls	No	1.5m x 1.5m	10000	4	40000
1	Chukku		Trenching	Nos.	1m x30cm x	15.3	500	7650

	Beat				30cm			
1			Waterhole	Nos		856920	1	856920

BEAT- NAGAN



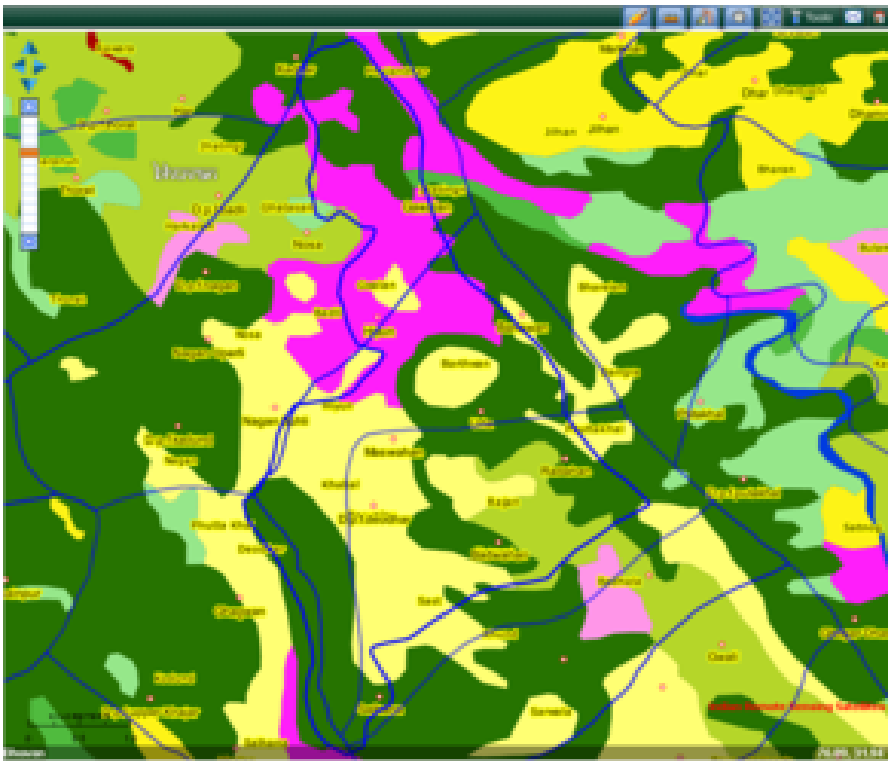
- Builtup, Urban
- Builtup, Rural
- Builtup, Mining
- Agriculture, Crop land
- Agriculture, Plantation
- Agriculture, Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Shrub Forest
- Grassland
- Barren/rocky/Barren/Wastelands, Cultivated/Barren
- Barren/rocky/Barren/Wastelands, Sandy land
- Barren/rocky/Barren/Wastelands, Sandy area
- Barren/rocky/Barren/Wastelands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canal
- Wetlands/Water Bodies, Reservoir/Lake/Pond
- Snow and Glacier

I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Nagan	N 31 55 01 E76 51 35	Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment	Nagan	N 31 55 33 E76 51 39	Ha	70500	5	352500	
3	Natural Regeneration/ Closure	Nagan		Ha	37100	10	371000	
4	NTPP Plantation	Nagan		Ha	137825	5	689125	
5	Energy Plantation	Balee	N 31 56 14 E76 52 03	Ha	56150	5	280750	
6	Pasture Development	Nagan		Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
8	Nurseries				0	0	0	

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Thorat Nala 2KM	N 31 56 42 E76 50 48	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	3	30000
2	Nausa Nala 3KM	N 31 56 01 E76 51 53	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	3	30000
1	Thorat Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
2	Nausa Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
1	Thorat Nala		Gabion Checkwalls	7	1.5m x 1.5m	10000	7	70000
2	Nausa Nala		Gabion Checkwalls	7	1.5m x 1.5m	10000	7	70000
1	Nagan		Trenching	Nos.	1m x30cm x 30cm	15.3	500	7650

URLA RANGE: URLA BLOCK: This Block has four beats namely Urla, Gwali, Thorat and Shilla Swarh

BEAT- URLA



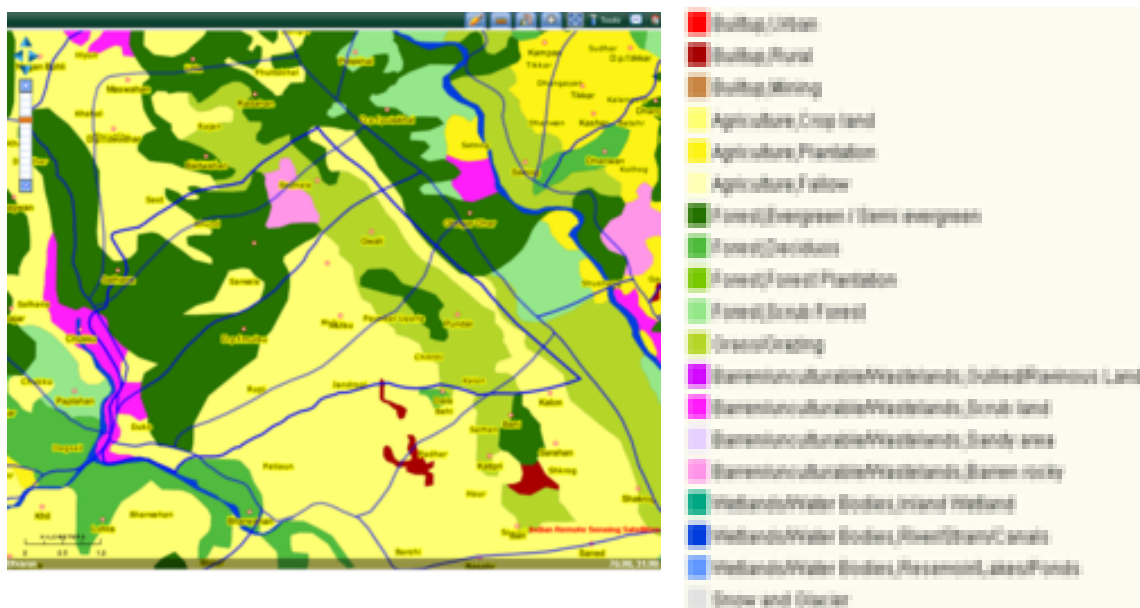
- Builtup/Urban
- Builtup/Rural
- Builtup/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Semi Forest
- Grass/Grazing
- Barren/cultivable/Barrenlands, (Bulldozed/Barren)
- Barren/cultivable/Barrenlands, Scrub land
- Barren/cultivable/Barrenlands, Sandy area
- Barren/cultivable/Barrenlands, Barren rocky
- Wetlands/Water Bodies, (Inland Wetland)
- Wetlands/Water Bodies, (River/Stream/Canals)
- Wetlands/Water Bodies, (Reservoir, Lake/Ponds)
- Snow and Glacier

1. Afforestation: -

Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total (Rs.)
1	New Plantation	Urla	N31 55 18 E76 53 25	Ha	76750	10	767500
2	Enrichment	Lakhwan	N 31 56 16 E76 51 39	Ha	70500	10	705000
3	Natural Regeneration/ Closure	Urla Kashyan	N 31 55 33E76 53 25	Ha	37100	10	371000
4	NTFP Plantation	Urla		Ha	137825	5	689125
5	Energy Plantation	Rashan	N31 55 04 E76 53 33	Ha	56150	5	280750
6	Pasture Development	Urla		Ha	21650	10	216500
7	Eradication of Noxious Weeds			Ha	15050	20	301000
8	Nurseries						
i.	Existing Nurseries	Urla		Ha	250000	1	250000

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Talgairh Nala 1.5 KM	N 31 55 54 E76 52 53	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
2	Bhalana Nala 1.5KM	N 31 56 29 E76 52 29	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
3	Urla Nala 3KM	N 31 55 38 E76 53 15	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	15	150000
4	Kasain Nala 8 KM	N 31 55 10 E76 53 10	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	30	300000
					2m x 2.5m	17230	10	172300
5	Rawa Nala 8 KM	N31 54 47 E76 53 43	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	45	450000
					2m x 2.5m	17230	15	258450
1	Talgairh Nala		Retaining/ Walls	Nos.	1.5m x 1.5m	10000	5	50000
2	Bhalana Nala		Retaining/ Walls	Nos.	1.5m x 1.5m	10000	5	50000
3	Urla Nala		Retaining/ Walls	Nos.	1.5m x 1.5m	10000	5	50000
4	Kasain Nala		Retaining/ Walls	Nos.	1.5m x 1.5m	10000	5	50000
5	Rawa Nala		Retaining/ Walls	Nos.	1.5m x 1.5m	10000	10	100000
1	Kasain Nala		Gabion Checkwalls	Nos	1.5m x 1.5m	10000	5	50000
2	Rawa Nala		Gabion Checkwalls	Nos	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
1			Trenching	Nos.	1m x30cm x 30cm	15.3	300	4590





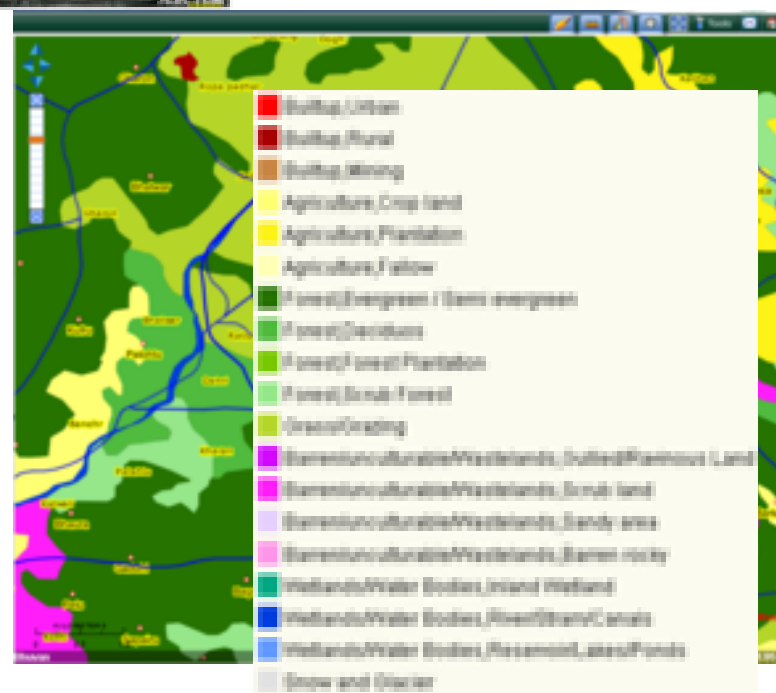
1. Afforestation: -

I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Gwali	N 31 54 25 E76 53 58	Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo & other B/L species.
2	Enrichment	Kalu Bagla	N 31 54 21 E76 54 34	Ha	70500	10	705000	
3	Natural Regeneration/ Closure	Diskan	N 31 53 59 E76 52 55	Ha	37100	20	742000	
4	NTPP Plantation			Ha	137825	5	689125	
5	Energy Plantation	Malhu	N 31 53 37 E76 53 42	Ha	56150	10	561500	
6	Pasture Development			Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
78	Nurseries							
i.	Existing Nurseries	Beat Level at		Ha (0.25)	250000	1	250000	To be modernised.

		Gwali						
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2. II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Sarwala Nala 10 KM	N 31 53 53 E76 53 34	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	45	450000
					2m x 2.5m	17230	15	258450
1	Sarwala Nala	N 31 53 53 E76 53 34	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	10	100000
1	Sarwala Nala		Gabion Checkwalls	Nos	1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	2	34460
1	Gwali		Spurs	Nos.	3 Mtr. Each	48540	0	0
1			Trenching	Nos.	1m x30cm x 30cm	15.3	500	7650
1	Sarwala Nala		Water Harvesting Structures	Nos		62150	2	124300



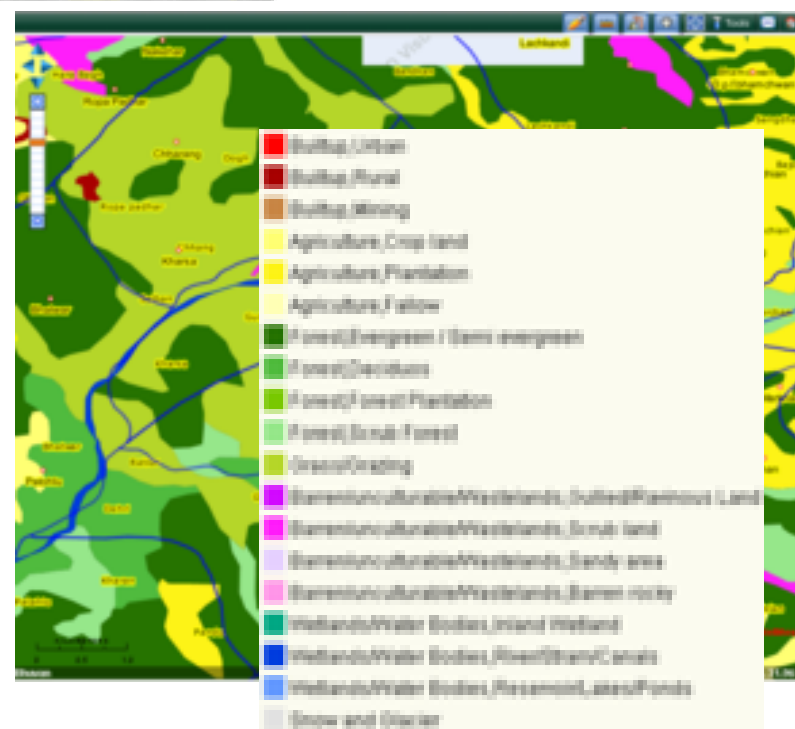
1. Afforestation: -

I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Thorat	N 31 56 33 E 76 50 58	Ha	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, .
2	Enrichment	Thorat		Ha	70500	10	705000	
3	Natural Regeneration/ Closure	Thorat		Ha	37100	20	742000	
4	NTFP Plantation	Thorat		Ha	137825	5	689125	
5	Energy Plantation	Kharna I	N 31 57 14 E 76 50 38	Ha	56150	5	280750	
6	Pasture Development	Thorat		Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
8	Nurseries							
i.	Existing Nurseries	Haar		Ha	Lump Sump	1	50000	To be modernised.
ii.	New Nurseries			No	770000	1	770000	..

2. II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Janwan Nala 2KM	N 31 56 56 E 76 51 39	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
2	Lundra Nala 1.5 KM	N 31 57 07 E 76 51 08	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	5	86150
3	Panchhyan Nala 1 KM	N 31 56 42 E 76 51 46	Checkdams/ Gabion	Nos	1.5m x 1.5m	10000	6	60000
1	Janwan Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	5	50000
2	Lundra Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	8	80000
3	Panchhyan Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	5	50000
4	Haar Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	3	30000
1	Thorat		Trenching	Nos.	1m x 30cm x 30cm	15.3	300	4590
1	Haar Nala		Water Harvesting Structures	Nos		62150	1	62150

BEAT- SHILLASWARH



AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	Shilla Swarh	N31 58 09 E76 51 40	Ha	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo & other B/L species.
2	Enrichment		N 31 57 55 E76 52 01	Ha	70500	10	705000	
3	Natural Regeneration/ Closure		N 31 57 27 E76 52 15	Ha	37100	20	742000	
4	NTFP Plantation			Ha	137825	5	689125	
5	Energy Plantation	Nagwan	N 31 57 36 E76 51 29	Ha	56150	5	280750	
6	Pasture Development			Ha	21650	10	216500	
7	Eradication of Noxious Weeds			Ha	15050	20	301000	
8	Nurseries							
i.	Existing Nurseries	Kadhaar	N 31 56 38 E76 51 42	Ha (0.10 ha)	0	0	0	To be started as new.
ii.	New Nurseries			No	770000	1	770000	..

3. II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Siharu Nala 10 KM		Checkdams/	Nos	1.5m x 1.5m	10000	10	10000
			Checkwalls Gabion		2m x 2.5m	17230	5	86150
1	Siharu Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	0	0
1	Siharu Nala		Gabion Checkwalls	Nos	1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	0	0
1			Spurs	Nos.	3 Mtr. Each	48540	0	0
1			Trenching	Nos.	1m x30cm x 30cm	15.3	500	7650
1			Water Harvesting Structures	Nos		62150	0	0

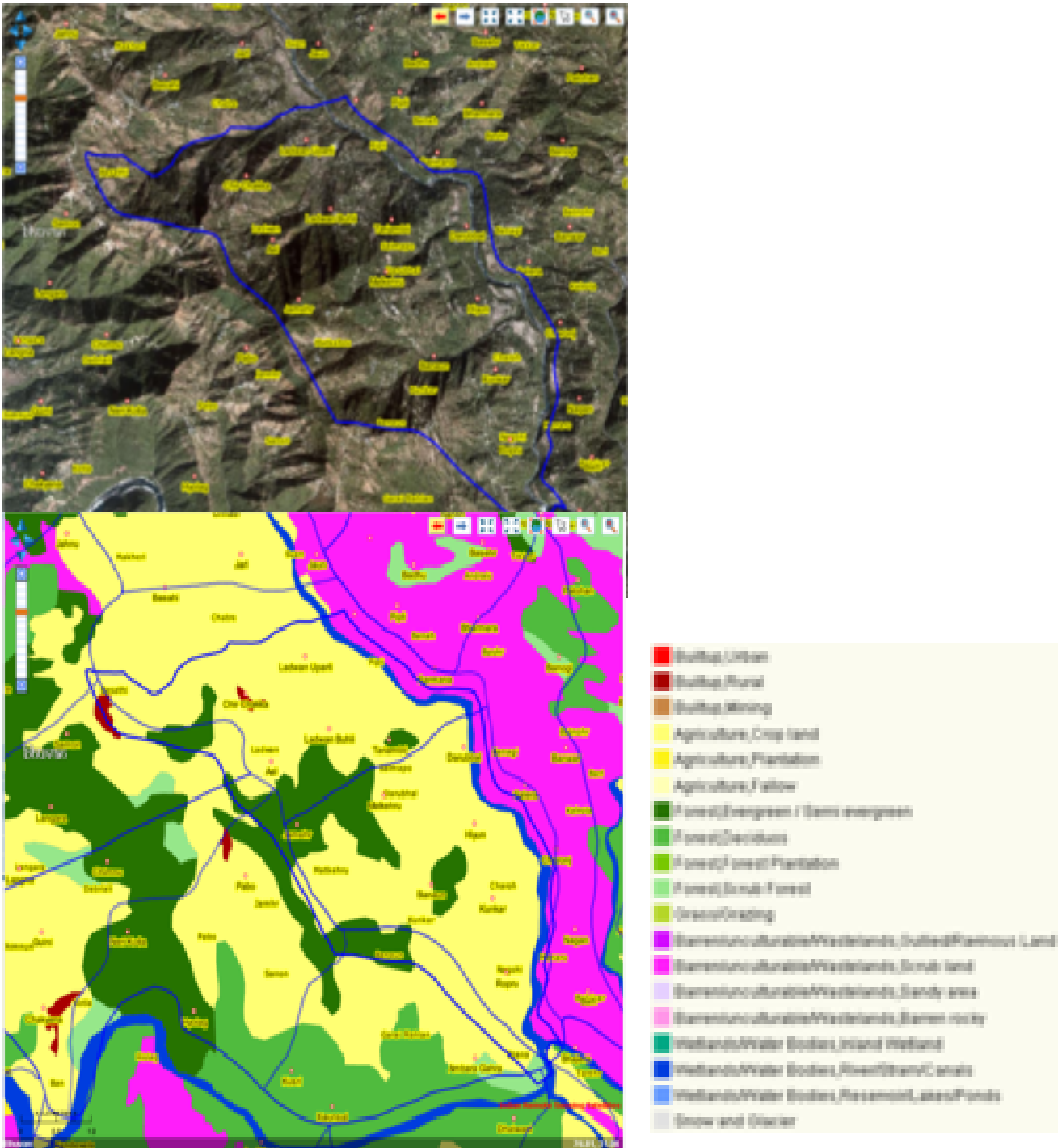
FOREST RANGE JOGINDERNAGAR FOREST BLOCK: BHARARU

Jogindernagar Range: Jogindernagar range comprises of three blocks namely Bhararu, Chauntra and Jogindernagar. All the 12 beats fall in the Catchment of Thana Plaun.

Bhararu Block: Bhararu Block has four beats namely Drubba, Drahl, Nainpur and Bhararu.

Division	Range	Block	Beats	Remarks
Jogindernagar	Jogindernagar	Bhararu	Drubbal, Drahl, Nainpur, Bhararu	All the 12 Beats fall in the Catchment of Thana Plaun.
		Chauntra	Lower Chauntra, Upper Chauntra, Ghatta, Banaun	
		Jogindernagar	Hara Bagh, Chhaprot, Jogindernagar, Bagra	
	Dharampur	Dharampur	Dharampur, Bahi, Sidhpur	All the 8 Beats fall under the Catchment of TP.
		Mandap	Brang, Mandap, Baroti, Ludhiana, Mhan	
Jogindernagar	Urla	Chukku	Khajri, Chuku and Nagan	Out of 10 Beats only 7 fall in the Catchment. 3 Beats namely Barot, Kahlog and Jatingri do not fall under Thana Plaun HEP Catchment.
		Urla	Urla, Gwali, Thorat and Shilla Swarh	
		Barot	Barot, Kahlog, Jatingri	
Jogindernagar	Ladhabadhol	Langhna	Only Aahl Beat falls under Thana Plaun Catchment. The rest 8 Beats- namely, Pandol, Golwan, Barnod, Utpur, Delehd, Panjalg, Thullh, Langna are out of TP Catchment.	Out of 9 Beats only 1 beat namely Aahl falls under the catchment of Thana Plaun HEP.

DRUBBAL BEAT:



1. AFFORESTATION:

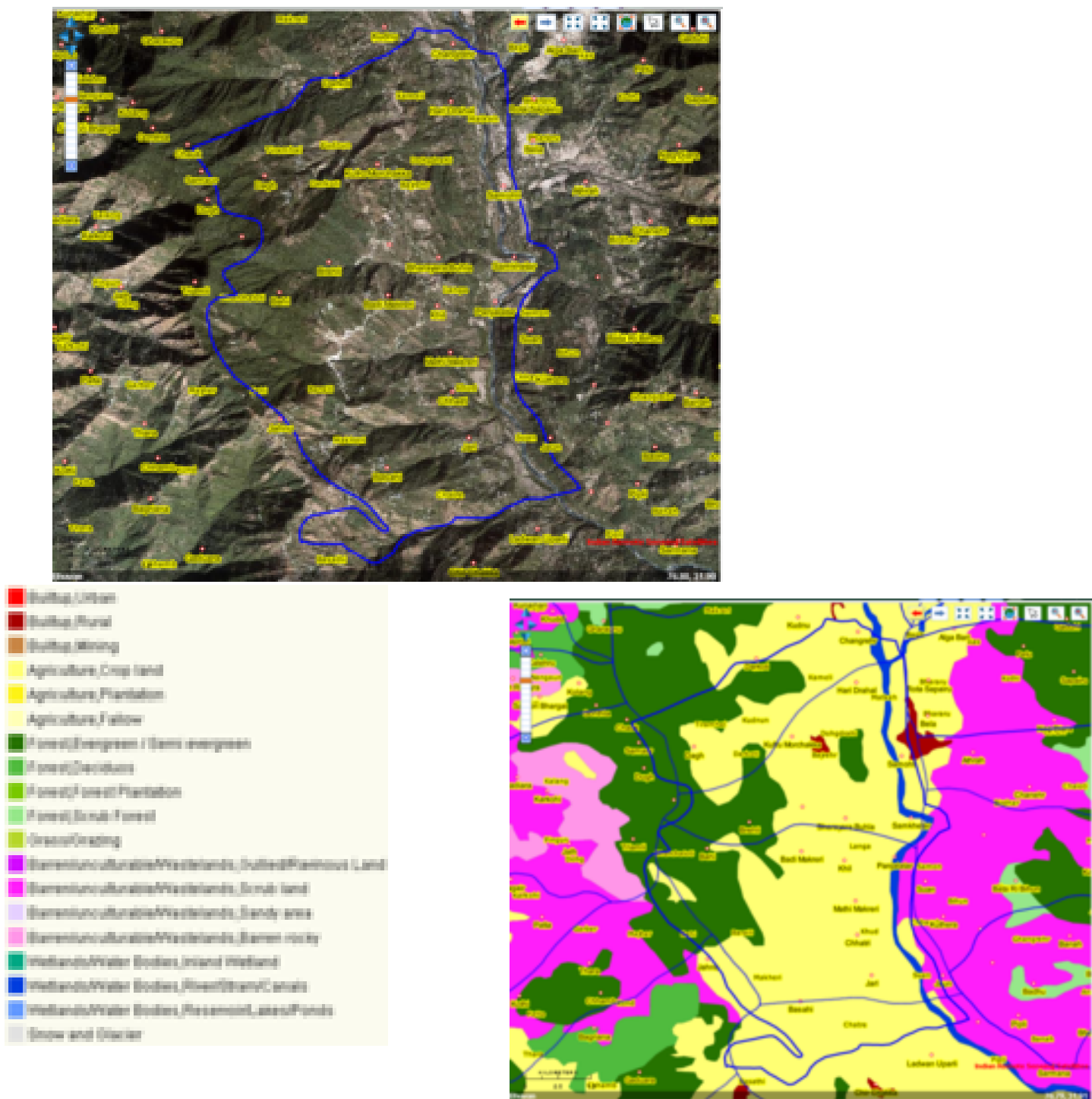
Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty.	Total Cost (Rs.)	Species to be planted
1	New Plantation	John		Ha	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
		Drubbal		Ha	76750	5	383750	
2	Enrichment			Ha	70500	5	352500	
3	Natural Regeneration/ Closure			Ha	37100	5	185500	
4	NTFP Plantation			Ha	137825	5	689125	
5	Energy Plantation	..	..	..	56150	10	561500	
6	Pasture Development	..	..	..	21650	10	216500	
7	Eradication of Noxious Weeds	DPF Silh			15050	10	150500	
		DPF Ramsi			15050	10	150500	
		DPF Drubbal			15050	10	150500	
		DPF Kunkar			15050	6	90300	
		Charaunj DPF			15050	5	75250	
		Pipli DPF			15050	5	75250	
		DPF Hiun Banaun			15050	10	150500	
8	Nurseries							
ii.	New Nurseries	Drubbal-Beat Level	1	Ha	550000	0.2	550000	

II. SMC MEASURES:

S. No.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Basai Nala-5 km		Checkdamss Gabion	Nos	1.5m x 1.5m	10000	17	170000
					2m x 2.5m	17230	8	137840
2	Dadwan Nala-4km		Checkdams Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
3	Ramsi Nala-5km		Checkdams/ Checkwalls Gabion		1.5m x 1.5m	10000	20	200000

					2m x 2.5m	17230	5	86150
4	Bagru Nala-4 km		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
5	Heun Nala- 2 km		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
1	Basai Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	4	68920
2	Ladwan Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	4	68920
3	Ramsi Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	6	103380
4	Magru Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	4	68920
5	Hiun Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	4	68920
i	Ramsi		Trenching	Nos.	1m x30cm x 30cm	15.3	150	2295
ii	Drubbal		Trenching	Nos.	1m x30cm x 30cm	15.3	100	1530
iii	Kunkar		Trenching	Nos.	1m x30cm x 30cm	15.3	80	1224
iv	Charonjh		Trenching	Nos.	1m x30cm x 30cm	15.3	50	765
v	Hiun Banaun		Trenching	Nos.	1m x30cm x 30cm	15.3	50	765
8			Waterhole			856920	1	856920

DRAHL BEAT:



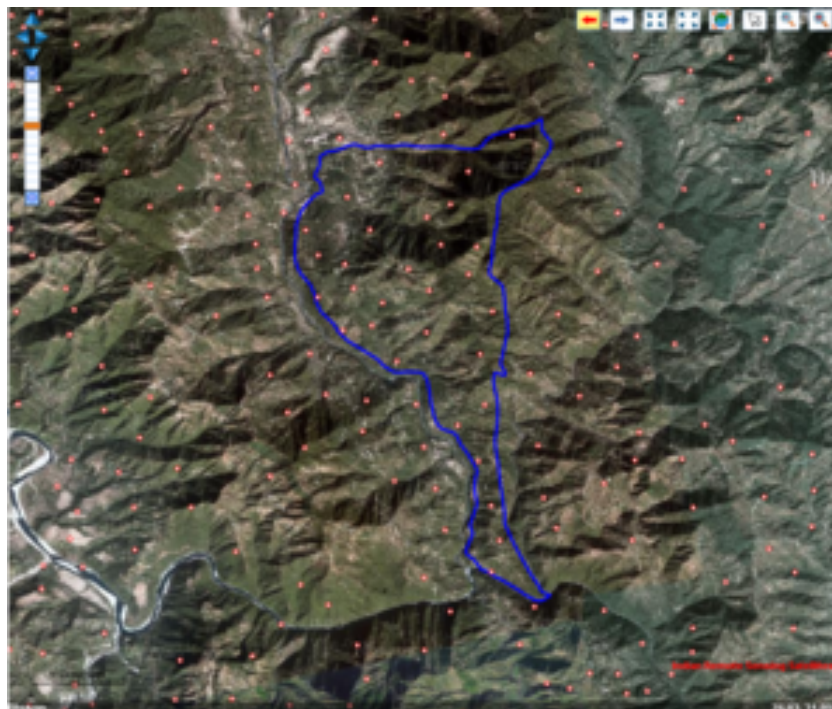
I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty.	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		..	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	5	352500	
3	Natural Regeneration/ Closure				37100	5	185500	
4	NTFP Plantation				137825	5	689125	
5	Energy Plantation				56150	10	561500	
6	Pasture Development				21650	10	216500	
7	Eradication of Noxious Weeds	Kamrerh			15050	10	150500	
		DPF Drahl I, II, III			15050	10	150500	
		Bahaila			15050	10	150500	
		Makredi			15050	15	225750	
		DPB Baghoridhar			15050	40	602000	
8	Nurseries							
i	Existing nurseries	..	..	..	0	0	0	
li	New Nurseries	..	1	..	550000	0.2	550000	

II. SMC MEASURES:

S. No	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Nagnala 4KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
2	Bhadyara Nala 5KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	5	86150
3	Chho Nala 4KM		Checkdams/ Checkwalls Gabion		1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
4	Kamerh Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
5	Drahl Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	10	100000

					2m x 2.5m	17230	5	86150
1	Nag Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	4	68920
2	Kamerh Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	6	103380
3	Kuthera Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	0	0
4	Bhadyara Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	6	103380
5	Kundu Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	6	103380
1	Rana Khad		Spurs	Nos.	3 Mtr. Each	48540	10	485400
1	DPF Bhabouri dhar		Gulli Plugging	Nos.	..	4710	0	0
2	DPF Kamerh		Gulli Plugging	Nos.		4710	0	0
3	DPF Drahl I,II,III		Gulli Plugging	Nos.		4710	0	0
4	DPF Baihla		Gulli Plugging	Nos.		4710	0	0
5	DPF Samkhetar		Gulli Plugging	Nos.		4710	0	0
6	DPF Makredhi		Gulli Plugging	Nos.		4710	0	0
1	DPF Bhabouridhar		Trenching	Nos.	1m x30cm x 30cm	15.3	250	3825
2	DPF Kamerh		Trenching	Nos.	1m x30cm x 30cm	15.3	80	1224
3	DPF Drahl I,II,III		Trenching	Nos.	1m x30cm x 30cm	15.3	50	765
4	DPF Baihla		Trenching	Nos.	1m x30cm x 30cm	15.3	50	765
5	DPF Samkhetar		Trenching	Nos.	1m x30cm x 30cm	15.3	40	612
6	DPF Makredhi		Trenching	Nos.	1m x30cm x 30cm	15.3	40	612
1	DPF Babouridhar		Water H Structures			62150	1	62150

NAINPUR BEAT:



I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		..	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	10	705000	
3	Natural Regeneration/ Closure				37100	10	371000	
4	NTFP Plantation				137825	5	689125	
5	Energy Plantation				56150	10	561500	
6	Pasture Development				21650	10	216500	
7	Eradication of Noxious Weeds	Sill DPF			15050	20	301000	
		DPF Ghaghasnal			15050	20	301000	
		Majhakhar DPF			15050	10	150500	
		BihunDPF			15050	10	150500	
		Haar DPf			15050	5	75250	
		ChaneharDPF			15050	4	60200	
		DPF Birdhar			15050	5		
		DPF Karjh			15050	10	150500	
		DPF Batnagar			15050	5	75250	
		DPF Manaru			15050	10	150500	
		DPF Kafal Kut			15050	10	150500	
		DPF Nagdehra			15050	10	150500	
		DPF Rihra			15050	10	150500	
		UPF Chhamb			15050	10	150500	
8	Nurseries							
i	Existing nurseries	..	..	..	0	0	0	
ii	New Nurseries	Nainpur (Beat Level)	1	0.2	550000	0.2	550000	

II. SMC MEASURES: (Check dam and Retaining Walls: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B.

S. NO	Name of Area	Lat-Long		Size	Unit Cost	Qty	Total Cost (Rs/)
1	Ghuri Nala 5KM			A	10000	220	200000
				B	17230	5	86150
2	Ghaghas Nal 4KM			A	10000	15	150000
				B	17230	5	86150
3	Charadu Nala 5 KM			A	10000	18	180000
				B	17230	7	120610

4	Balhi Nala 4KM			A	10000	15	150000
				B	17230	5	86150
5	Baserh Nal 3 KM			A	10000	10	100000
				B	17230	5	86150
6	Tikkar Nal 3KM			A	10000	10	100000
				B	17230	5	86150
7	Dramman Nal-4KM			A	10000	15	150000
				B	17230	5	86150
8	Bihun Nal			A	10000	20	200000
				B	17230	5	86150
9	Bhagwar Nal 3KM			A	10000	10	100000
				B	17230	5	86150
10	Sarwalldi Nal-2 KM			A	10000	7	70000
				B	17230	3	51690
11	Manharu Nal 3 KM			A	10000	12	120000
				B	17230	3	51690
12	Banogi Nal 2.5 KM			A	10000	8	80000
				B	17230	4	68920
					Total		2582110

Gabion Retaining Walls: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B.

1	Ghuri Nala			A	10000	0	0
				B	17230	8	137840
2	Ghaghas Nal			A	10000	0	0
				B	17230	8	137840
3	Chardu Nal			A	10000	0	0
				B	17230	8	137840
4	Balhi Nala			A	10000	0	0
				B	17230	6	103380
5	Basedh Nal			A	10000	0	0
				B	17230	6	103380
6	Tikkar Nal			A	10000	0	0
				B	17230	8	137840
7	Drahman Nal			A	10000	0	0
				B	17230	10	172300
8	Bhagwar Nala			A	10000	0	0
				B	17230	6	103380
9	Petu Nal			A	10000	0	0
				B	17230	8	137840

Trenching: Size 1mx30cmx x 30cms: Quantity given in nos..

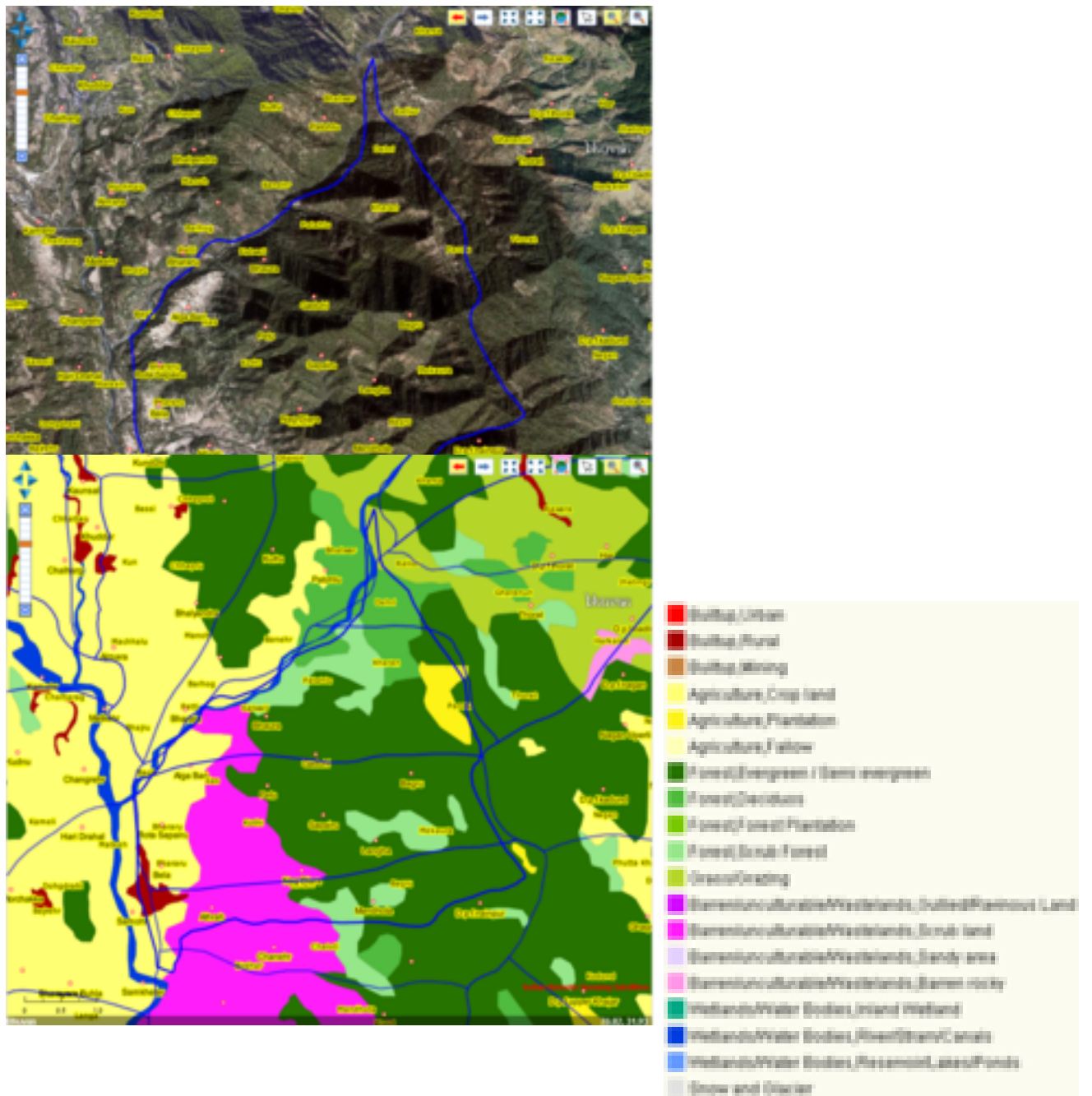
1	Nainpur DPF				15.3	150	2295
2	Sill DPF				15.3	80	1224
				Total:			

Water Harvesting Structures. Quantity given in Nos. (Refer Cost Model for size and details).

1	DPF Silh				62150	1	62150
2	Haar				62150	1	62150
3	Petu Nal				62150	1	62150
4	Garli Nala				62150	1	62150

5	Andrahlu				62150	1	62150
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BHARARU BEAT



I AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		..	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	5	352500	
3	Natural Regeneration/ Closure				37100	5	185500	
4	NTFP Plantation				137825	5	689125	
5	Energy Plantation				56150	10	561500	
6	Pasture Development				21650	10	216500	
7	Eradication of Noxious Weeds	DPF Makora			15050	25	376250	
		DPF Khron			15050	20	301000	
		DPF Bindh			15050	15	225750	
		DPF Bhraru			15050	0	0	
		DPF Gaduhi			15050	20	301000	
		DPF Kumahrha			15050	0	0	
8	Nurseries				0	0	0	

II. SMC MEASURES

Gabion Check dam: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B.

S.NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Makora Nal 5KM					10000	15	150000
						17230	10	172300
2	Gadui Nal 4KM					10000	15	150000
						17230	5	86150
3	Katwai Nal-5KM					10000	20	200000
						17230	5	86150
4	Kothi Nal 3KM					10000	10	100000
						17230	5	86150
5	Haar Nal 2KM					10000	8	80000
						17230	4	68920
						Total:		1179670

Gabion Retaining Walls: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B.

1	Makora Nal 5KM					10000	0	0
						17230	10	172300
2	Gadui Nal 4KM					10000	0	0
						17230	8	137840
3	Kothi Nal 3KM					10000	0	0

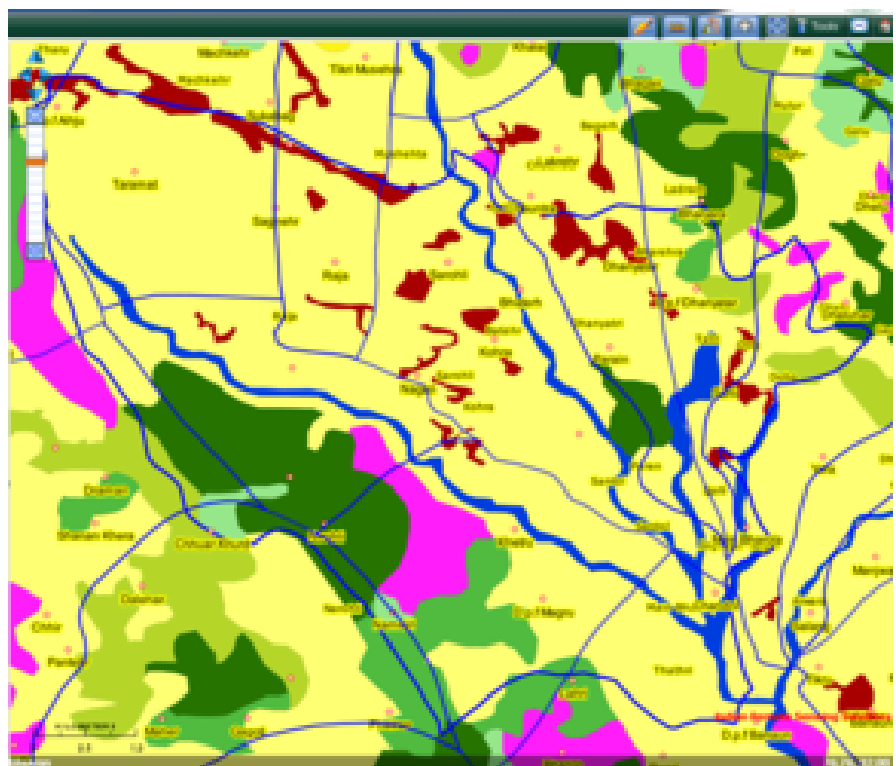
						17230	8	137840
4	Haar Nal 2KM					10000	0	0
						17230	4	68920
						Total:		
Gabion Spurs: Average Length: 3 Mtr each. Quantity is given in Nos.								
1	Rana Khad					48540	10	485400
Trenching: Size 1mx30cmx x 30cms: Quantity given in nos..								
1	DPF Makora					15.3	50	765
2	DPF Khron					15.3	50	765
3	DPF Bindh					15.3	50	765
4	DPF Gadui					15.3	50	765
5	DPF Kamharda					15.3	50	765
6	DPF Bhraru					15.3	50	765
						Total:		4590
WaterHole. Quantity given in Nos. (Refer Cost Model for size and details).								
1			Waterhole			856920	1	856920

JOGINDERNAGAR DIVISION -JOGINDERNAGAR RANGE – CHAUNTRA BLOCK-

LOWER

CHAUNTRA

BEAT-



- Builtup, Urban
- Builtup, Rural
- Builtup, Mining
- Agriculture, Crop land
- Agriculture, Plantation
- Agriculture, Fallow
- Forest(Evergreen / Semi evergreen)
- Forest(Deciduous)
- Forest/Forest Plantation
- Forest(Scrub Forest)
- Grass/Grazing
- Barren/culturable/Wastelands, Cultivated/Pasture Land
- Barren/culturable/Wastelands, Scrub land
- Barren/culturable/Wastelands, Sandy area
- Barren/culturable/Wastelands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lakes/Ponds
- Snow and Glacier

AFFORESTATION:								
Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		..	76750	0	0	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	5	352500	
3	Natural Regeneration/ Closure				37100	10	371000	
4	NTFP Plantation				137825	0	0	
5	Energy Plantation				56150	10	561500	
6	Pasture Development				21650	10	216500	
7	Eradication of Noxious Weeds				15050	0	0	
8	Nurseries							
i	Existing nurseries	..	..	..	0	0	0	
li	New Nurseries	..	..	..	0	0	0	

II. SMC MEASURES:

Gabion Check dam: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B

S.N 0.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Kholi Nala					10000	10	100000
						17230	0	0
2	Sukkabag Nala					10000	5	50000
						17230	0	0
3	Sukhed Khad					10000	5	50000
						17230	0	0
						Total:		200000

Gabion Retaining Walls: (Type A : 1.5m x 1.5m, Type B: 2mx2.5M). Units for all planned structures is expressed in Nos. of type A or Type B.

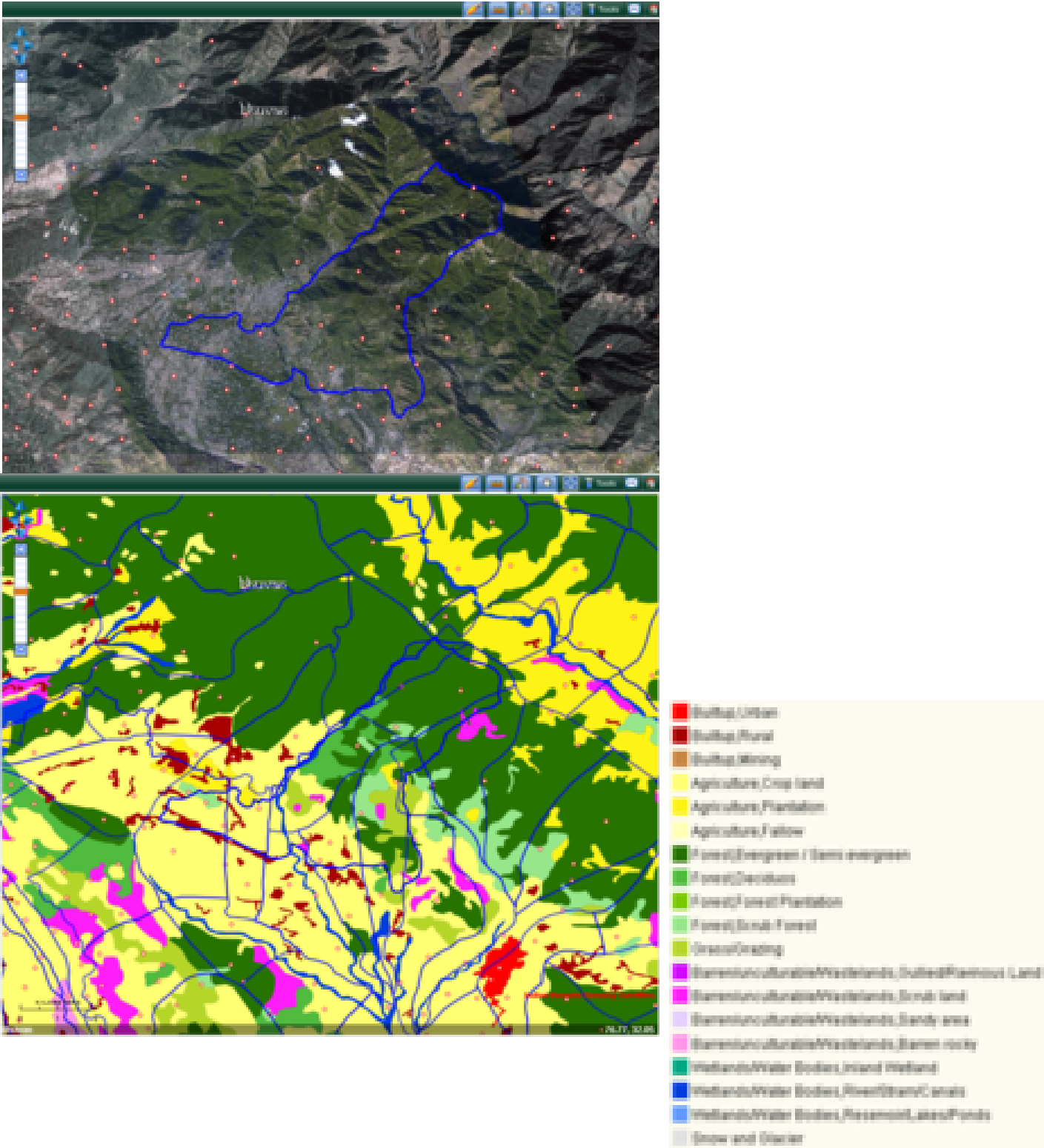
1	Kholi Nala					10000	0	0
						17230	8	137840
2	Sukhar Khad					10000	0	0
						17230	8	137840
3	Sukhar Bag Nala					10000	0	0
						17230	8	137840
4	Sukhed Khad					10000	0	0
						17230	8	137840
5	Bajgarh Khad					10000	0	0
						17230	8	137840
						Total:		689200

Gabion Spurs: Average Length: 3 Mtr each. Quantity is given in Nos

1	Kholi Nala						0	0
2	Sukhar Khad					48540	0	0

3	Sukka Bag Nala					48540	0	0
4	Sukhed Khad					48540	0	0
5	Bajgarh Khad					48540	0	0
						Total:		
Gulli Plugging with Dry Stone (not recommended most places due to its limited life span).Qty. expressed in nos								
1	Sukhed DPF I					4710	0	0
2	Sukkar Khad					4710	0	0
						Total:		
Trenching: Size 1mx30cmx x 30cms: Quantity given in nos..								
1	Sukkar DPF1					15.3	50	765
2	Sukhed DPF 1					15.3	50	765
						Total:		
Water Hole. Quantity given in Nos. (Refer Cost Model for size and details).								
1	Waterhole					856920	1	856920

UPPER CHAUNTRA BEAT-



I. AFFORESTATION:

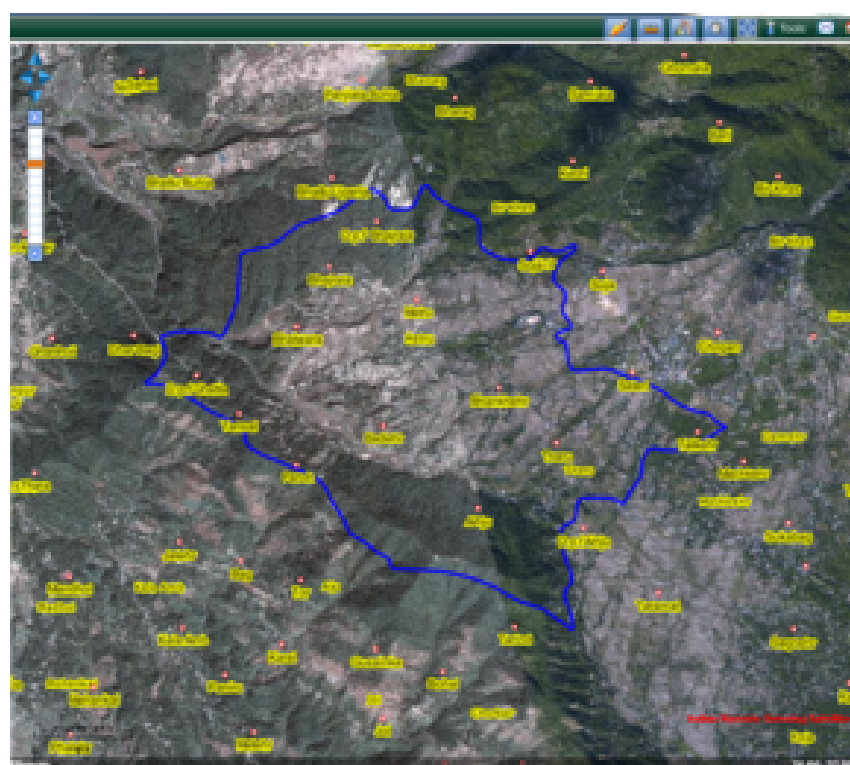
Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		..	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	5	352500	
3	Natural Regeneration/ Closure				37100	10	371000	
4	NTFP Plantation				137825	5	689125	
5	Energy Plantation				56150	10	561500	
6	Pasture Development				21650	10	216500	
7	Eradication of Noxious Weeds	DPF Khaprotu			15050	15	225750	
		DPF Khalai Nal			15050	25	376250	
		DPF Marhola			15050	20	301000	
		DPF Chauntra			15050	0	0	
8	Nurseries							
i	Existing nurseries	Chauntra-Range level	..	1	1220000	0	1220000	Modernization as per guideline 1
		Chauntra-Paprain Beat Level		1	250000	0	250000	Modernization
ii	New Nurseries	..	..	..	0	0	0	

II. SMC MEASURES:

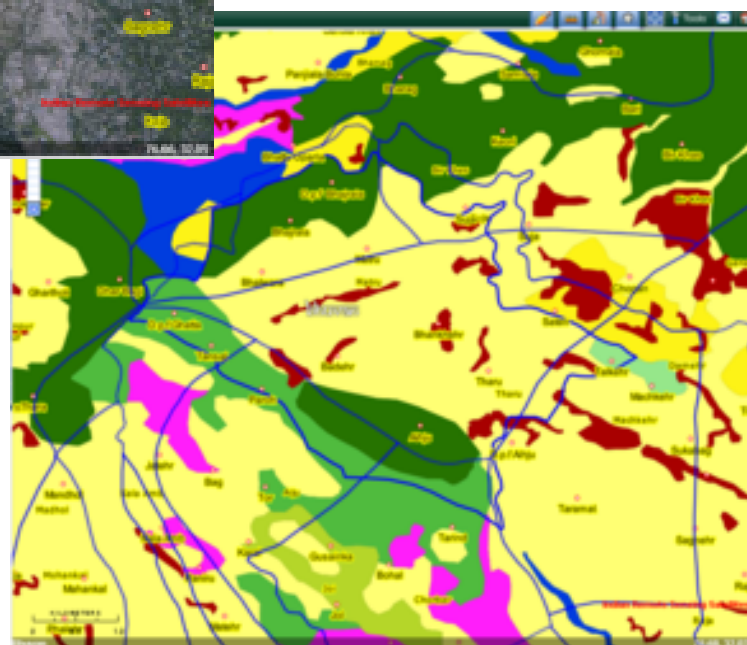
S. NO	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Khalai Nala-2KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
2	Hardbedu Nala 1.5 KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	6	60000
					2m x 2.5m	17230	2	34460
3	Baidhni Nala-2KM		Checkdams/ Checkwalls Gabion		1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
4	Marola Nala 4KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
5	Marola DPF		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	12	120000
					2m x 2.5m	17230	8	137840
1	Khalai Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	10	100000

					2m x 2.5m	17230	0	0
2	Hardbedu Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	0	0
3	Marola Nala I, II, III		Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	30	300000
					2m x 2.5m	17230	15	258450
4	DPF Old Marola		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
1	Khalai Nala		Spurs	Nos.	3 Mtr. Each	48540	0	0
2	Hadbeharu Nala		Spurs	Nos.	3 Mtr. Each	48540	0	0
3	Baidni Nala		Spurs	Nos.	3 Mtr. Each	48540	0	0
4	Sukka Bag Nala 1.5KM		Spurs	Nos	3 Mtr. Each	48540	0	0
5	Marola Nala I, II, III		Spurs	Nos	3 Mtrs. Each	48540	0	0
1	DPF Khalakinala		Gulli Plugging	Nos.	..	4710	0	0
2	DPF Khalaidhar		Gulli Plugging	Nos.		4710	0	0
3	DPF Marhola I,II,III		Gulli Plugging	Nos.		4710	0	0
1	DPF Chauntra		Trenching	Nos.	1m x30cm x 30cm	15.3	60	918
2	DPF Khalai Dhar		Trenching	Nos.	1m x30cm x 30cm	15.3	60	918
3	DPF Khalaiknala		Trenching	Nos.	1m x30cm x 30cm	15.3	100	1530
4	DPF Khaprotu I,II		Trenching	Nos.	1m x30cm x 30cm	15.3	150	2295
5	DPF Marola I,II,III		Trenching	Nos.	1m x30cm x 30cm	15.3	175	2678
1			Waterhole	Nos		856920	1	856920

GHATTA BEAT-



[Red]	Settlement/Urban
[Dark Red]	Settlement/Rural
[Brown]	Settlement/Mining
[Yellow]	Agriculture/Crop land
[Light Yellow]	Agriculture/Plantation
[Light Green]	Agriculture/Fallow
[Dark Green]	Forest/Evergreen / Semi evergreen
[Medium Green]	Forest/Deciduous
[Light Green]	Forest/Forest Plantation
[Light Green]	Forest/Scrub Forest
[Light Green]	Grass/Grazing
[Pink]	Barren/uncultivated/Barrenlands, Cultivated/Barren Land
[Pink]	Barren/uncultivated/Barrenlands, Sandy land
[Light Purple]	Barren/uncultivated/Barrenlands, Sandy area
[Pink]	Barren/uncultivated/Barrenlands, Barren rocky
[Teal]	Wetlands/Water Bodies, Inland Wetland
[Blue]	Wetlands/Water Bodies, River/Stream/Canal
[Blue]	Wetlands/Water Bodies, Reservoir/Lake/Ponds
[Grey]	Snow and Glacier



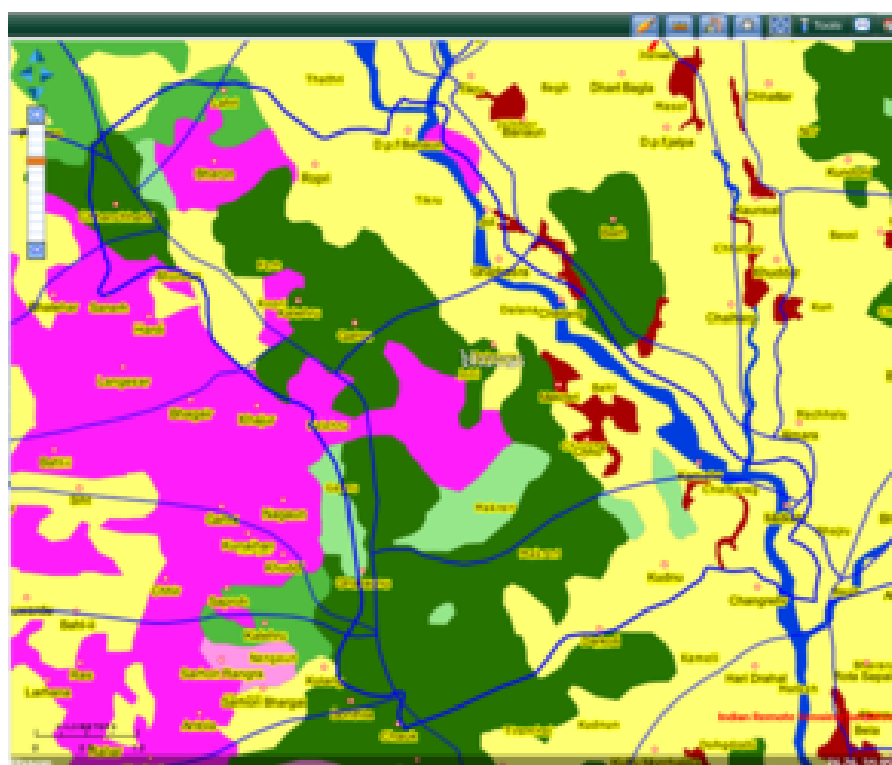
I. AFFORESTATION:

Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation	..		Ha.	76750	0	0	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment	..		Ha.	70500	10	705000	
3	Natural Regeneration/ Closure	..		Ha	37100	10	371000	
4	NTFP Plantation	..		Ha	137825	0	0	
5	Energy Plantation			Ha	56150	10	561500	
6	Pasture Development			Ha	21650	10	216500	
7	Eradication of Noxious Weeds	DPF Aijoo			15050	10	150500	
8	Nurseries	..	..	..	0	0	0	
i	Existing nurseries	..	..	Ha	0	0	0	
ii	New Nurseries		..	..	0	0	0	

II. SMC MEASURES:

S. No.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1			Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	0	0
1			Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	0	0
1			Spurs	Nos.	3 Mtr. Each	48540	0	0
1	DPF Aijoo		Gulli Plugging	Nos.	..	4710	0	0

BANAUN BEAT-



- Builtup, Urban
- Builtup, Rural
- Builtup, Mining
- Agriculture, Crop land
- Agriculture, Plantation
- Agriculture, Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Scrub Forest
- Grass/Grazing
- Barren/culturable/Waterlands, Cultured/Pasture Land
- Barren/culturable/Waterlands, Scrub land
- Barren/culturable/Waterlands, Sandy area
- Barren/culturable/Waterlands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canals
- Wetlands/Water Bodies, Reservoir/Lakes/Ponds
- Snow and Glacier

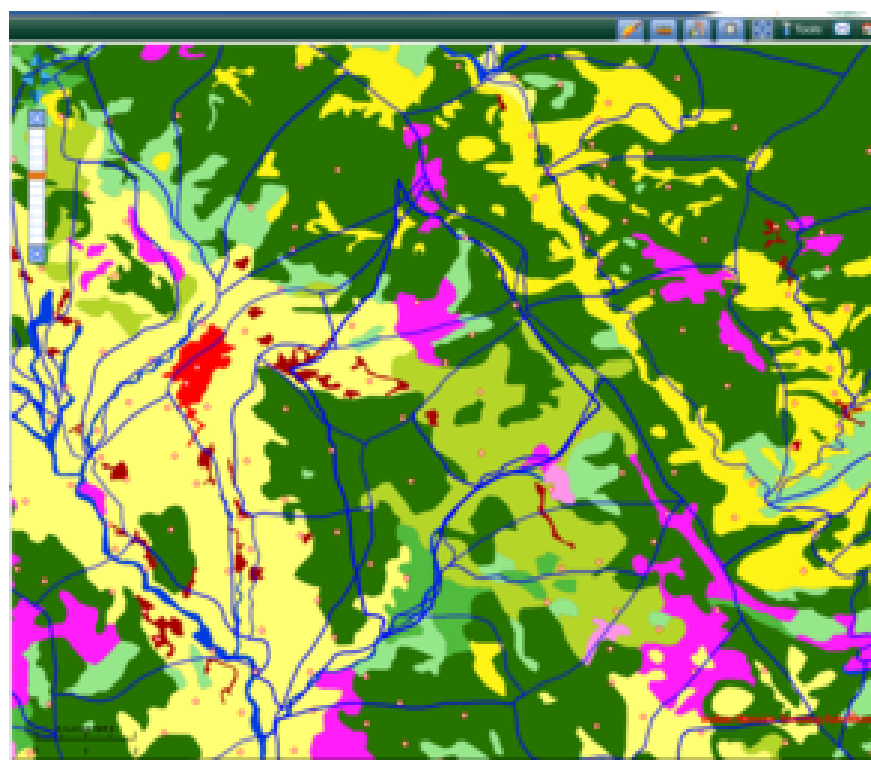
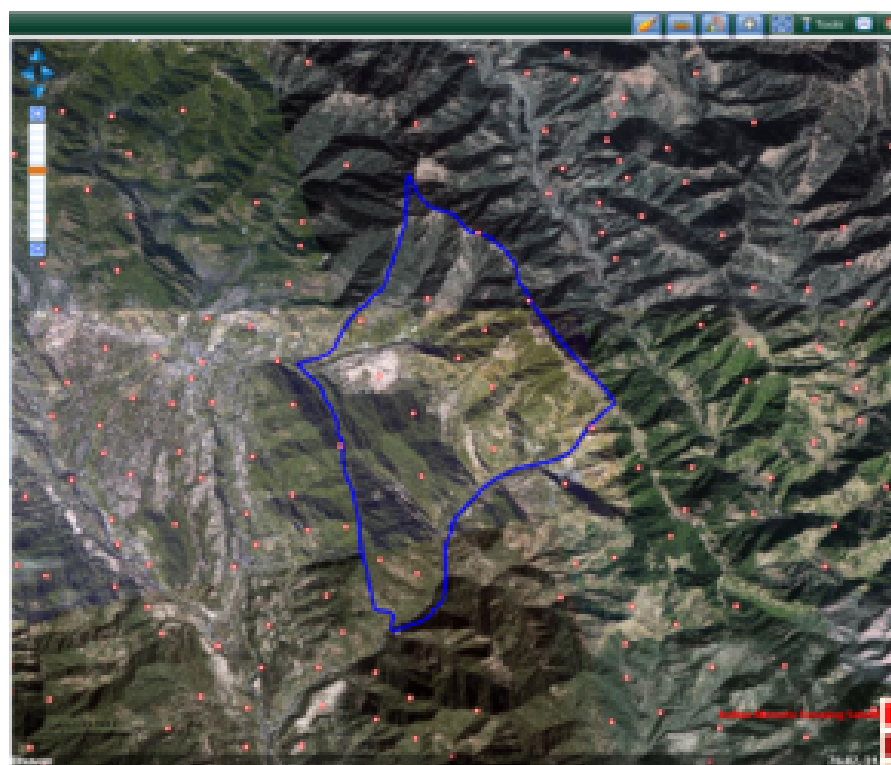
I. AFFORESTATION:

Sr. No.	Type of Plantation	Name of area	Lat/L ong	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation			..	76750	10	767500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment				70500	0	0	
3	Natural Regeneration/ Closure				37100	0	0	
4	NTFP Plantation	..		..	137825	0	0	
5	Energy Plantation	..			56150	10	561500	
6	Pasture Development	..			21650	10	216500	
7	Eradication of Noxious Weeds	DPF Banaun		Ha	15050	25	376250	
		DPF Jamoti		Ha	15050	0	0	
		DPF Nalarihrara		Ha	15050	20	301000	
		DPF Magru		Ha	15050	0	0	
		DPF Magrudhar		Ha	15050	40	602000	
8	Nurseries							
i	Existing nurseries	..	..		0	0	0	
ii	New Nurseries	..	..	..	0	0	0	

II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs./)
1	..		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	0	0
1	Rana Khad		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	30	516900
2	Mordug Nala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	12	206760
3	Balh Nala		Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
					2m x 2.5m	17230	10	172300
1	Rana Khad		Spurs	Nos.	3 Mtr. Each	48540	14	679560
2	Balh Nala		Spurs	Nos.	3 Mtr. Each	48540	0	0
3	Jamoti Nala		Spurs	Nos.	3 Mtr. Each	48540	0	0
4	Dugh Nal		Spurs	Nos	3 Mtr. Each	48540	0	0
5	Kutia Nal		Spurs	Nos	3 Mtrs. Each	48540	0	0
6	Dudan Nal		Spurs	Nos	3 Mtrs. Each	48540	0	0
1	DPF Jamoti		Gulli Plugging	Nos.	..	4710	0	0
2	DPF Banaun		Gulli Plugging	Nos.		4710	0	0
3	DPF Bharghoridhar		Gulli Plugging	Nos.		4710	0	0
1	Banaun DPF		Trenching	Nos.	1m x30cm x	15.3	300	4590

					30cm			
2	Jamoti DPF		Trenching	Nos.	1m x30cm x 30cm	15.3	200	3060
1			Waterhole	Nos		856920	1	856920

JOGINDERNAGAR DIVISION- JOGINDERNAGAR RANGE- JOGINDERNAGAR BLOCK-**BEAT- HARA BAGH**

- Builtup/Urban
- Builtup/Rural
- Builtup/Wiring
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Scrub Forest
- Grass/Grazing
- Barren/unculturable/Wastelands/Cultured/Parmous Land
- Barren/unculturable/Wastelands/Scrub land
- Barren/unculturable/Wastelands/Sandy area
- Barren/unculturable/Wastelands/Barren rocky
- Wetlands/Water Bodies/Inland Wetland
- Wetlands/Water Bodies/River/Stream/Canal
- Wetlands/Water Bodies/Reservoir/Lake/Ponds
- Snow and Glacier

I. AFFORESTATION:

Sr. No.	Type of Plantation	Name of area	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation		..	76750	5	383750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo, and other B/L species
2	Enrichment			70500	10	705000	
3	Natural Regeneration/ Closure			37100	0	0	
4	NTFP Plantation	..	..	137825	5	689125	
6	Energy Plantation	..		56150	10	561500	
5	Pasture Development	..		21650	10	216500	
8	Eradication of Noxious Weeds	DPF Digli II		15050	20	301000	
		DPF Harabagh II		15050	20	301000	
7	Nurseries						
i	Existing nurseries	Harabagh Range Level	Ha	770000	0.5	770000	Provision of Water Tank, Piped Water Supply, Hand Pump, Mali Hut etc. to be made.
li	New Nurseries	..	..	0	0	0	

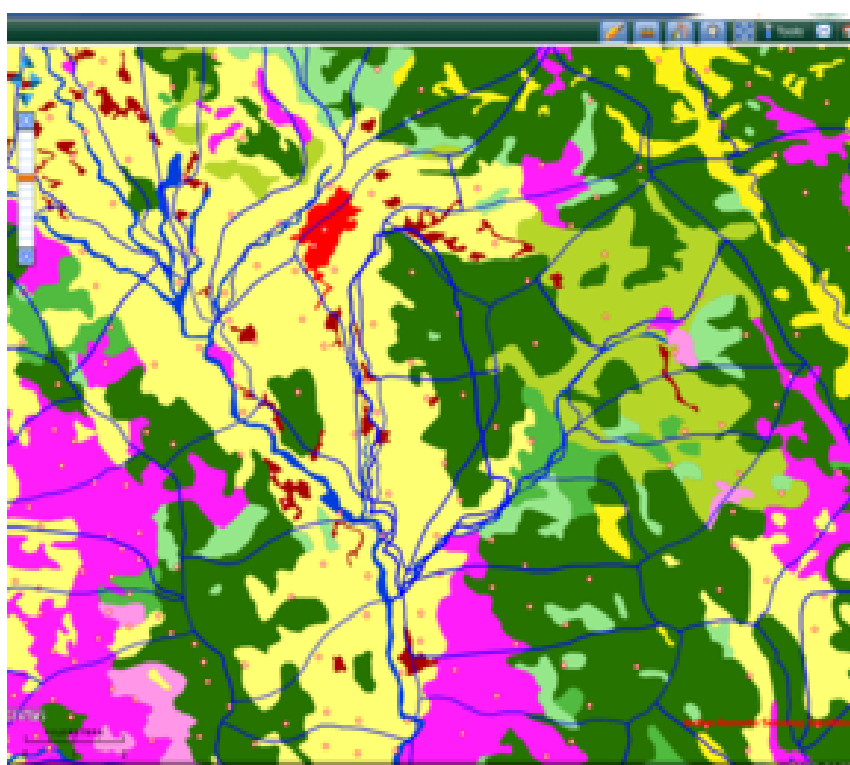
II. SMC MEASURES:

S. NO	Name of Area	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Digli Nala 4KM	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
				2m x 2.5m	17230	5	86150
2	DPF Hara Bagh II	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	6	60000
				2m x 2.5m	17230	4	68920
3	DPF Siuri CIII	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	10	100000
				2m x 2.5m	17230	5	86150
4	DPF Digli	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	5	50000
				2m x 2.5m	17230	5	86150
5	DPF Digli II	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	8	80000
				2m x 2.5m	17230	4	68920
6	DPF Badan	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	6	60000
				2m x 2.5m	17230	4	68920
7	DPF Chanagdhara	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	9	90000

				2m x 2.5m	17230	3	51690
8	Brahman Nala	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	6	60000
				2m x 2.5m	17230	2	34460
9	DPF Siuri CIV	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	25	250000
				2m x 2.5m	17230	10	172300
10	Khani Nala 9 9 KM	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	30	300000
				2m x 2.5m	17230	15	258450
11	Sukhar Nala 4KM	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
				2m x 2.5m	17230	5	86150
12	Lhala Nala 5KM	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	18	180000
				2m x 2.5m	17230	7	120610
13	Shehlan Nala 2KM	Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	12	120000
				2m x 2.5m	17230	6	103380
1	Digli Nala 4KM	Retaining/ Toe Walls		1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	8	137840
2	DPF Hara Bagh II	Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	6	103380
3	DPF Siuri III	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	6	103380
4	DPF Digli I	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	6	103380
5	DPF Digli II	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	8	137840
6	DPF Badan	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	6	103380
7	DPF Chanagdhara	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	8	137840
7	Brahman Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	8	137840
8	DPF Siuri CIV	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	12	206760
9	Khani Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	20	344600
10	Sukhar Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	8	137840
11	Lhala Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	
				2m x 2.5m	17230	10	172300
12	Shehlan Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	
				2m x 2.5m	17230	6	103380
13	Bahmanu Nala	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	6	103380
14	Khani Nala Landslide	Retaining /Toe Walls	Nos.	1.5m x 1.5m	10000	0	0
				2m x 2.5m	17230	16	275680
7	DPF Chanagdhara	Gulli Plugging	Nos		4710	50	235500

8	Brahman Nala	Gulli Plugging	Nos		4710	25	117750
9	DPF Siuri C IV	Gulli Plugging	Nos		4710	100	471000

CHHAPROT BEAT-



AFFORESTATION:

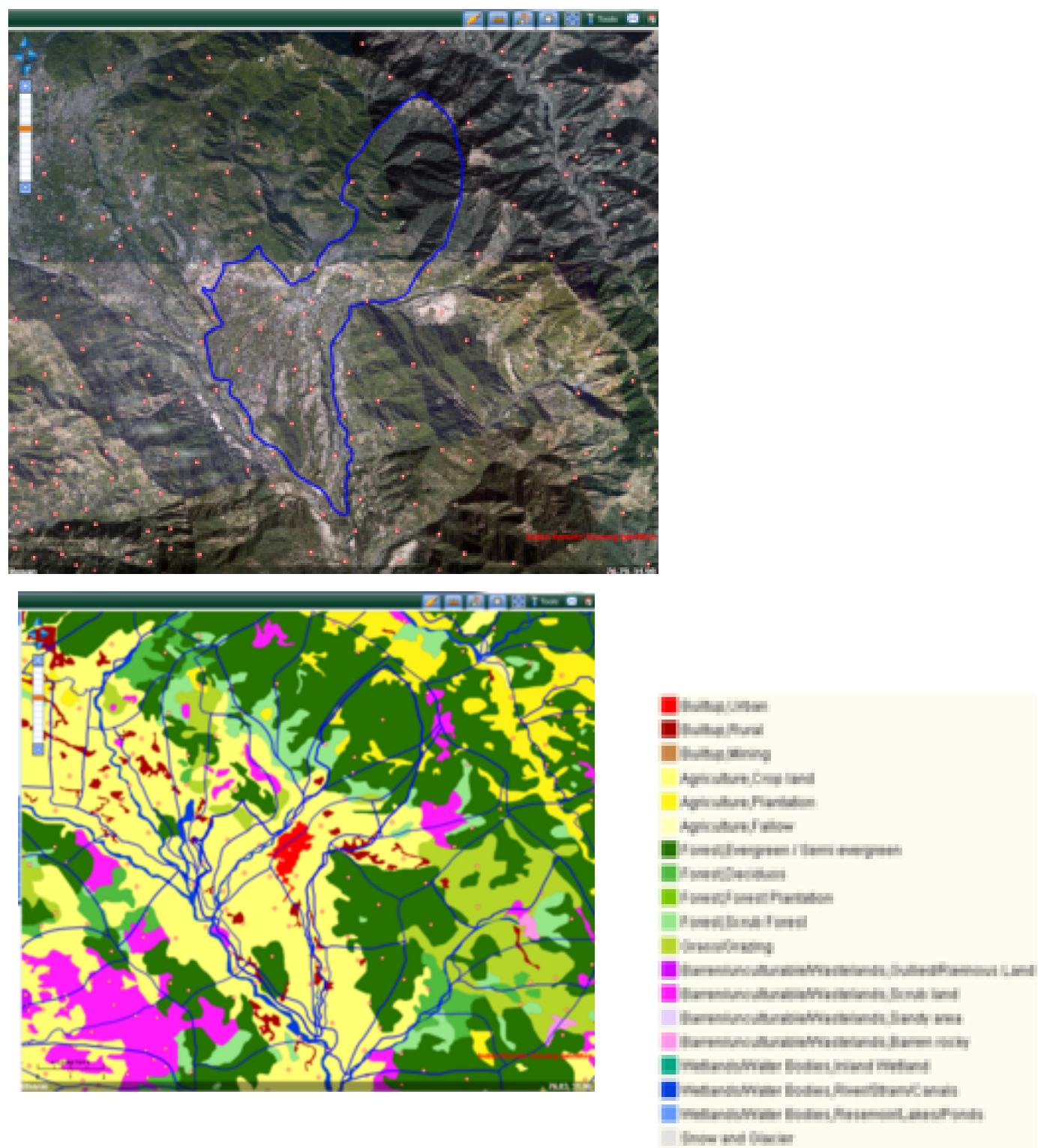
Sr. No.	Type of Plantation	Name of area	Lat/Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	Natural Regeneration/Closure	..		..	37100	20	742000	
2	Energy Plantation	..			56150	10	561500	
3	Pasture Development	..			21650	10	216500	
4	Eradication of Noxious Weeds	DPF Siuri I and II			15050	80	1204000	

II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Ner Khad 12 KM		Checkdams Gabion	Nos	1.5m x 1.5m	10000	12	120000
					2m x 2.5m	17230	6	103380
2	Chhaprot Baba Nal- 6KM		Checkdams Gabio	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	2	34460
3	Majharnu Nal- 5KM		Checkdams Gabion	Nos	1.5m x 1.5m	10000	22	220000
					2m x 2.5m	17230	8	137840
4	Magru Nal- 4KM		Checkdams Gabion	Nos	1.5m x 1.5m	10000	14	140000
					2m x 2.5m	17230	4	68920
5	DPF Siuri CII		Checkdams Gabion	Nos	1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	4	68920
6	DPF Siuri CI		Checkdams Gabion	Nos	1.5m x 1.5m	10000	12	120000
					2m x 2.5m	17230	6	103380
1	DPF Siuri CII		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	8	80000
					2m x 2.5m	17230	4	68920
2	DPF Siuri CI		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
3	Majharnu DPF		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	4	40000
			Retaining/ Toe Walls		2m x 2.5m	17230	1	17230
4	DPF Chhaprot		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	7	70000
			Retaining/ Toe Walls		2m x 2.5m	17230	3	51690
5	DPF Manoh		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	3	51690
			Retaining/ Toe Walls		2m x 2.5m	17230	2	34460
6	Ner Khad		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	11	110000
			Retaining/ Toe Walls		2m x 2.5m	17230	4	68920
7	Chhaprot Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	10	100000
			Retaining/ Toe Walls		2m x 2.5m	17230	5	86150
8	Majharnu Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	7	70000

			Retaining/ Toe Walls		2m x 2.5m	17230	3	51690
9	Magru Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	6	60000
			Retaining/ Toe Walls		2m x 2.5m	17230	4	68920

JOGINDERNAGAR BEAT-



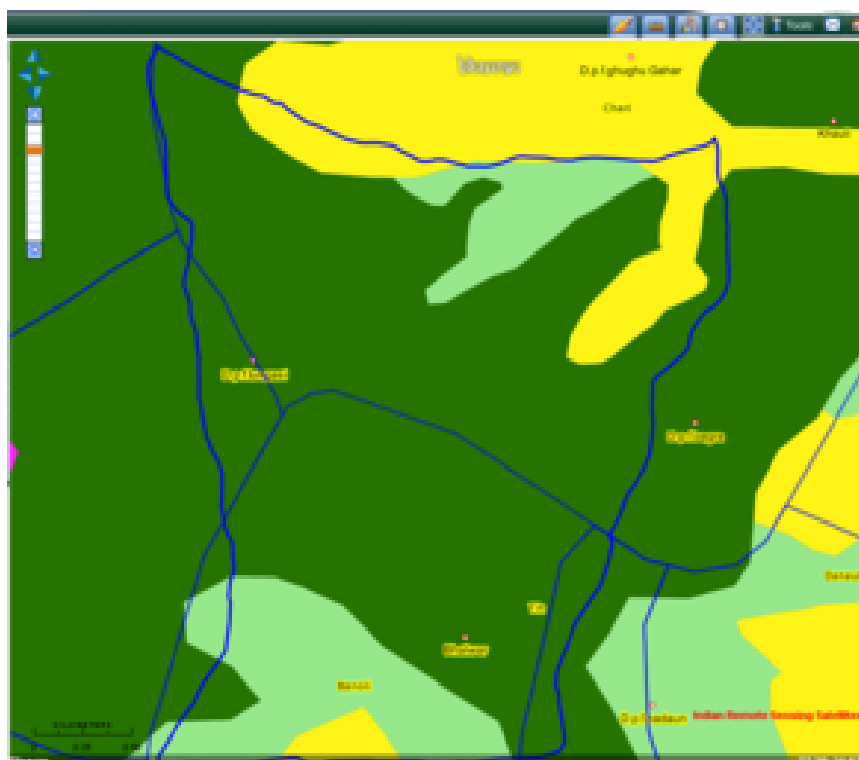
I. AFFORESTATION:

Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	Enrichment	..		..	70500	10	705000	
2	Natural Regeneration/ Closure	..		..	37100	10	37100	
3	NTFP Plantation	..		..	137825	5	689125	
4	Energy Plantation	..	..		56150	10	561500	
5	Pasture Development				21650	10	216500	
6	Eradication of Noxious Weeds	Jimjima DPF			15050	5	75250	
		Trimunda DPF			15050	20	301000	
		DPF Dhelu I and II			15050	6	90300	
		DPF Jari Tikkar			15050	20	301000	
		DPF Suhi			15050	15	225750	
		DPF Baghla Rana Khad			15050	5	57250	
7	Nurseries							
i	Existing nurseries	1 Gypsy Nursery	..	0.5	550000	1	550000	
ii	New Nurseries	..	..	..	0	0	0	

II. SMC MEASURES:

S. NO.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs./)
1	Dhelu DPF		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	12	120000
					2m x 2.5m	17230	8	137840
2	Jari Tikkar DPF		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	10	172300
3	Tarmunda DPF		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	10	172300
4	Gugli Khad		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	0	0
5	Garh Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	4	40000
					2m x 2.5m	17230	1	17230
6	Phegru Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	4	40000
					2m x 2.5m	17230	2	34460
7	Mandokhar Nala		Checkdams/ Checkwalls Gabion	Nos.	1.5m x 1.5m	10000	5	50000
					2m x 2.5m	17230	1	17230
1	Ner Khad		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	8	137840
2	Rana Khad		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	30	300000
					2m x 2.5m	17230	10	172300
3	Gugli Khad		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	14	140000

					2m x 2.5m	17230	6	103380
4	Garh Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	10	100000
					2m x 2.5m	17230	4	68920
5	Phegru Nala		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	14	140000
					2m x 2.5m	17230	6	103380
6	Mandokhar Nal		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	25	250000
					2m x 2.5m	17230	10	172300
7	Major Landslides in DPF Suhi		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	40	400000
					2m x 2.5m	17230	10	172300
1	Rana Khad		Spurs	Nos.	3 Mtr. Each	48540	10	485400
1	DPF Jimjima		Trenching	Nos.	1mx30xm x 30 cm	15.3	50	765
2	DPF Dhelu		Trenching	Nos	1m x 30cm x 30cm	15.3	50	765
3	DPF Trimunda		Trenching	Nos	1m x 30cm x 30cm	15.3	70	1071
4	DPF Dugha Gehar		Trenching	Nos	1m x 30cm x 30cm	15.3	100	1530
1	Jalpa		Water Harvesting Structures	Nos.		62150	1	62150



- Builtup/Urban
- Builtup/Rural
- Builtup/Mining
- Agriculture/Crop land
- Agriculture/Plantation
- Agriculture/Fallow
- Forest/Evergreen / Semi evergreen
- Forest/Deciduous
- Forest/Forest Plantation
- Forest/Shrub Forest
- Grassland
- Bareness/cultivatedWetlands, IrrigatedFamous Land
- Bareness/cultivatedWetlands, Scrub land
- Bareness/cultivatedWetlands, Sandy area
- Bareness/cultivatedWetlands, Barren rocky
- Wetlands/Water Bodies, Inland Wetland
- Wetlands/Water Bodies, River/Stream/Canal
- Wetlands/Water Bodies, Reservoir, pond/Fonds
- Snow and Glacier

I. AFFORESTATION:

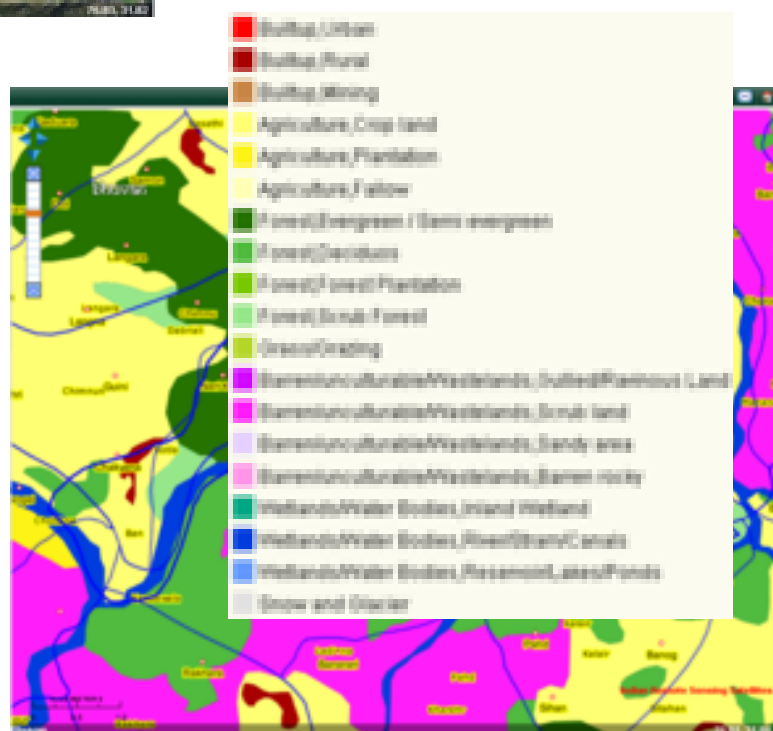
Sr. No.	Type of Plantation	Name of area	Lat/ Long	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)
1	Enrichment	..		Ha	70500	10	705000
2	Natural Regeneration/ Closure	..		Ha	37100	10	371000
3	NTPP Plantation	..		Ha	137825	5	689125
4	Energy Plantation	..	..	Ha	56150	10	561500
5	Pasture Development	..			21650	10	216500
6	Eradication of Noxious Weeds	DPF Kanpur I & II		Ha	15050	20	301000
		Bagra III DPF		Ha	15050	20	301000
		DPF Garu		Ha	15050	8	120400
7	Nurseries				0	0	0

II. SMC MEASURES:

S.N O.	Name of Area	Lat-Long	Activity	Unit	Size	Unit Cost	Qty	Total Cost (Rs/)
1	Patt Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	18	180000
					2m x 2.5m	17230	5	86150
2	Miara Nal		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	22	220000
					2m x 2.5m	17230	8	137840
3	Bagra Nal		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	40	400000
					2m x 2.5m	17230	10	172300
4	Garh Nal 2 KM		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
5	Drahman Nala		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	15	150000
					2m x 2.5m	17230	5	86150
6	DPF Kapurdhar		Checkdams/ Checkwalls Gabion	Nos	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	5	86150
7	DPF Kanpur II		Checkdams/ Checkwalls Gabion	Nos.	1.5m x 1.5m	10000	7	70000
					2m x 2.5m	17230	3	51690
1	Bagarnala		Retaining/ Toe Walls	Nos.	1.5m x 1.5m	10000	20	200000
					2m x 2.5m	17230	10	172300
2	DPF Banala Landslide		Retaining/ Toe Walls	Nos	1.5m x 1.5m	10000	30	300000
					2m x 2.5m	17230	10	172300
1	Kanpur DPF		Trenching	Nos.	1mx30cmx30 cm	15.3	200	3060
1			Waterhole	Nos		856920	1	856920

LADHBADHOL RANGE
BEAT- AAL:-

FOREST BLOCK: LANGNA



1. Afforestation:

Sl. No	Sub-Component	Beat	Area Name	Lat-Long	Unit	Unit Cost	Qty.	Cost	Species to be planted
1	New Plantation	Aal	Anlog	N 31°49' 50.07" E76° 48' 36.60"	Ha	76750	20	1535000	Amla, Shisham, Hard, Behra
			Dramman2	-	Ha	76750	20	1535000	
2	Enrichment	Aal	Kotla	N31° 50' 07.92" E76° 46' 58.20"	Ha	70600	5	353000	Amla, Shisham
3	Natural Regeneration/ Closures	Aal	Ballu	N31° 49' 58.89" E76° 48' 04.89"	Ha	37100	5	185500	
4	NTFP	Aal	Pabo	N31° 50' 27.17" E76° 47' 18.38"	Ha	137825	5	689125	Amla, Hard, Behra
5	Energy Plantation	Aal	Aal, Chaar Chikka		Ha	56150	12	673800	
6	Pasture Development	Aal	Karlon, Pabo	N31° 50' 33.92" E76° 48' 23.12"	Ha	21650	12	259800	Kachnar, Ban, Behul
7	Eradication of Noxious Weeds	Aal	DPF Dramman II	N 31° 49' 20.24" E76° 48' 20.22"	Ha	15050	20	301000	
8	Nursery (New)	Beat	Khara Nursery	N31° 50' 46" E76° 47' 12"	Ha.	770000	1.5	770000	New Nursery required as old stands abandoned

2. SMC Measures: -

S. No.	Sub-Component	Area Name	Lat/Long	Unit	Size	Unit Cost	Qty.	Cost
1	Gabion Checkdams	Dramman 1	N31° 51' 09.13" E76° 46' 49.11"	No	1.5 x 1.5m	10000	15	150000
					2x2.5m	17230	5	86150
		Dramman 2	N31° 49' 45.52" E76° 48' 29.97"	No.	1.5 x 1.5m	10000	15	150000
					2x2.5m	17230	5	86150
		Pabo	N31° 50' 00.06" E76° 47' 53.01"	No	1.5 x 1.5m	10000	15	150000
					2x2.5m	17230	5	86150
		DPF Amloj		No	1.5 x 1.5m	10000	15	150000
		Kotla Nala	N31° 50' 09.18" E76° 47' 03.63"		2x2.5m	17230	5	86150
2	Gabion Checkwalls	Dramman I	N31° 50' 53.86" E76° 47' 01.18"	No	1.5 x 1.5m	10000	20	200000
					2x2.5m	17230	5	86150
		Dramman 2	N31° 49' 33.73"	No	1.5 x 1.5m	10000	20	200000

			E76°48' 26.95 "		2x2.5m	17230	5	86150
		Kotla DPF	N31° 49' 53.16" E76° 46' 53.24"	No	1.5 x 1.5m	10000	15	150000
					2x2.5m	17230	5	86150
3	Brushwood Checkdams	Dramman and 2	1 N31°50' 47.69" E76° 47' 16.92 "	No.	..	4710	10	47100
4	Gabion Retaining Walls	Dramman and 2	1 N31° 49' 70.34" E76° 48 '22.56"	Nos.	2x2.5m	17230	5	86150
5	Water Harvesting Structures	Dramman and 2	1 N31° 51' 32.93" E76° 45' 41.22 "	Nos.	..	62150	2	124300

CIRCLE AND DIVISION WISE SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN.

Sr. No.	Name of Activity	Unit	Joginder nagar Division		Mandi Division		Total Mandi Circle		Remarks
			Phy	Fin.	Phy	Fin.	Phy	Fin.	
1	Afforestation & Habitat Management								

Sr. No.	Name of Activity	Unit	Joginder nagar Division		Mandi Division		Total Mandi Circle		Remarks
			Phy	Fin.	Phy	Fin.	Phy	Fin.	
1	Afforestation & Habitat Management								
a	New Plantation								
	New	Ha.	200	12290000	133	8172850	333	20462850	
	1 st Year Maintenance	Ha.		1130000		751450	0	1881450	
	2nd Year Maintenance	Ha.		760000		505400	0	1265400	
	3rd Year Maintenance	Ha.		390000		259350	0	649350	
	4th Year Maintenance	Ha.		390000		259350	0	649350	
	5th Year Maintenance	Ha.		390000		259350	0	649350	
	Total New Plantation		200	15350000	133	10207750	333	25557750	
b	Enrichment Plantation								
	New	Ha.	208	11481600	218	10093400	426	21575000	
	1 st Year Maintenance	Ha.		1175200		1619740	0	2794940	
	2nd Year Maintenance	Ha.		790400		1216440	0	2006840	
	3rd Year Maintenance	Ha.		405600		813140	0	1218740	
	4th Year Maintenance	Ha.		405600		813140	0	1218740	
	5th Year Maintenance	Ha.		405600		813140	0	1218740	
	Total Enrichment Plantation		208	14664000		15369000	426	30033000	
c	Natural Regeneration	Ha.							
	New	Ha.	270	8950500	308	10210200	578	19160700	
	1 st Year Maintenance	Ha.		364500		415800	0	780300	
	2nd Year Maintenance	Ha.		256500		292600	0	549100	
	3rd Year Maintenance	Ha.		148500		169400	0	317900	
	4th Year Maintenance	Ha.		148500		169400	0	317900	
	5th Year Maintenance	Ha.		148500		169400	0	317900	
	Total Natural Regeneration		270	10017000	308	11426800	578	21443800	
d	NTFP								
	New	Ha.	104	13369200	10	1285500	114	14654700	
	1 st Year Maintenance	Ha.		402480		38700	0	441180	
	2nd Year Maintenance	Ha.		321152		30880	0	352032	
	3rd Year Maintenance	Ha.		240968		23170	0	264138	
	Total NTFP		104	14333800	10	1378250	114	15712050	
e	Energy Planation								
	New	Ha.	219	12296850	128	7187200	347	19484050	
	Total Energy Planation		219	12296850	128	7187200	347	19484050	
f	Pasture Development								
	New	Ha.	249	4133400	126	2160900	375	6294300	
	1 st Year Maintenance	Ha.		522900		252000	0	774900	
	2nd Year Maintenance	Ha.		440730		189000	0	629730	

Sr. No.	Name of Activity	Unit	Joginder nagar Division		Mandi Division		Total Mandi Circle		Remarks
1	Afforestation & Habitat Management		Phy	Fin.	Phy	Fin.	Phy	Fin.	
	3rd Year Maintenance	Ha.		293820		126000	0	419820	
	Total Pasture Development		249	5390850	126	2727900	375	8118750	
g	Eradication of Noxious weeds	Ha.							
	New	Ha.	1064	16013200	585	8804250	1649	24817450	
	Total Eradication of Noxious weeds		1064	16013200	585	8804250	1649	24817450	
	Total Plantation		2314	88065700	1290	57101150	3822	145166850	
2	Soil & Moisture Conservation								
a	Gabion Checkdams		1932	23014530	1794	21829740	3726	44844270	
	Small		1421	14210000	1256	12560000	2677	26770000	
	Big		511	8804530	538	9269740	1049	18074270	
b	Gabion Retainingwalls		1043	13618430	197	2468870	1240	16087300	
	Small		602	6020000	128	1280000	730	7300000	
	Big		441	7598430	69	1188870	510	8787300	
c	Gabion Checkwalls		133	1474600	0	0	133	1474600	
	Small		113	1130000	0	0	113	1130000	
	Big		20	344600	0	0	20	344600	
d	Gabion Spurs		156	7572240	122	5921880	278	13494120	
	Small		156	7572240	122	5921880	278	13494120	
	Big		0	0	0	0	0	0	
e	Water Harvesting Structures		21	1305150	42	2610300	63	3915450	
	Small		21	1305150	42	2610300	63	3915450	
f	Water Holes for wild life		26	22279920	27	23136840	53	45416760	
g	Observation Post		1	1100000	1	1100000	2	2200000	
g	Gulli Plugging/Dry stone checkdams		135	47100	0	0	135	47100	
	Small		135	47100	0	0	135	47100	
h	Brushwood Checkdams		135	10530	285	22230	420	32760	
	Small		135	10530	285	22230	420	32760	
	Big		0	0	0	0	0	0	
i	Trenching		6185	94632	3650	55846	9835	150478	
	Small		6185	94632	3650	55846	9835	150478	
j	Bio Engineering		14	1563800	7	781900	21	2345700	
	Total Soil & Moisture Conservation		9781	72080932	6125	57927606	15906	130008538	
3	Payment For Environment Services								
a	Power saving implements/Solar			1740000		2640000	0	4380000	

Sr. No.	Name of Activity	Unit	Joginder nagar Division		Mandi Division		Total Mandi Circle		Remarks
			Phy	Fin.	Phy	Fin.	Phy	Fin.	
1	Afforestation & Habitat Management								
	Lights								
b	Community Storage Tanks			9300000		3900000	0	13200000	
c	Village Pond			4410000		1190000	0	5600000	
d	Crematorium			1500000		4500000	0	6000000	
e	Reward Money			10071831		7004202	0	17076033	
f	Community Power tiller			2200000		2200000	0	4400000	
	Total PES		0	29221831	0	21434202	0	50656033	
4	Reserch Training & Capacity Building								
a	Laying of Demonstration Plots for Fruits/ Bamboo Plantations		0	2072250	16	1228000	16	3300250	
b	Exposure visits for Forest Staff			2790000		3510000	0	6300000	
c	Capacity building for Nursery			10980000		8070000	0	19050000	
d	Equipment for Rewalsar WL Rescue & Research center			0		0	0	0	
e	Training in handling Wild Life			775000		975000	0	1750000	
f	Training in Modern Nursery			220000		1000000	0	1220000	
g	Manpower Support			4800000	0	0	0	4800000	
	Total TR & C		0	21637250	16	14783000	16	36420250	
5 & 6	Infrastructure & Forest Protection								
a	Construction of New Infrastructure lje Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.			13000000		25280000	0	38280000	
b	Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.			13200000		2480000	0	15680000	
c	Patrolling Kits			360000		430000	0	790000	
d	Laptop at range HQ.			0		0	0	0	
e	Demarcation of forests & Cos. Of Boundry pillers			2760000		7804967	0	10564967	
f	Buliding infrastructure for RWLR&RC			0		15570400	0	15570400	
g	Vehicles & POL			4789934		7184901	0	11974835	
	Total Infrastructure & Forest			34109934		58750268	0	92860202	

Sr. No.	Name of Activity	Unit	Joginder nagar Division		Mandi Division		Total Mandi Circle		Remarks
			Phy	Fin.	Phy	Fin.	Phy	Fin.	
1	Afforestation & Habitat Management								
	Protection								
7	Wild life Habitat Management								
a	Reqalsar WL R & RC			0		27841976	0	27841976	
b	Binoculars			570000		240000	0	810000	
c	Veterinary Kit at Range & Beat Level			180000		515000	0	695000	
d	Trapping Cameras & Camera			523600		460400	0	984000	
e	GPS			90000		369600	0	459600	
f	Trangulizer Gun			0		250000		250000	
8	Monitoring & Evaluation			12870623		12393636	0	25264259	
9	Contingencies			24647898.8		23967320	0	48615218.8	
	Grand Total			283997768.8		276034158		560031927	

YEAR WISE SUMMARY OF PROJECTIONS FOR MANDI DIVISION UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	35	40	50	8	0	0	0	0	0	133
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	2150750	2458000	3072500	491600	0	0	0	0	0	8172850
1st Year Maintenance											
Physical (Ha.)	0	0	35	40	50	8	0	0	0	0	133
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	197750	226000	282500	45200	0	0	0	0	751450
2nd Year Maintenance											
Physical (Ha.)	0	0	0	35	40	50	8	0	0	0	133
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	133000	152000	190000	30400	0	0	0	505400
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	35	40	50	8	0	0	133
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	68250	78000	97500	15600	0	0	259350
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	35	40	50	8	0	133
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	68250	78000	97500	15600	0	259350
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	35	40	50	8	133
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	68250	78000	97500	15600	259350
Total New Plantation	0	2150750	2655750	3431500	994350	381450	274150	191100	113100	15600	10207750
Enrichment Plantation											
Physical (Ha.)	0	60	65	58	35	0	0	0	0	0	218
Norm/Ha. (Rs.)	46300	46300	46300	46300	46300	46300	46300	46300	46300	46300	
Financial (Rs.)	0	2778000	3009500	2685400	1620500	0	0	0	0	0	10093400
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	0	60	65	58	35	0	0	0	0	218
Norm/Ha. (Rs.)	7430	7430	7430	7430	7430	7430	7430	7430	7430	7430	
Financial (Rs.)	0	0	445800	482950	430940	260050	0	0	0	0	1619740
2nd Year Maintenance											
Physical (Ha.)	0	0	0	60	65	58	35	0	0	0	218
Norm/Ha. (Rs.)	5580	5580	5580	5580	5580	5580	5580	5580	5580	5580	
Financial (Rs.)	0	0	0	334800	362700	323640	195300	0	0	0	1216440
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	60	65	58	35	0	0	218
Norm/Ha. (Rs.)	3730	3730	3730	3730	3730	3730	3730	3730	3730	3730	
Financial (Rs.)	0	0	0	0	223800	242450	216340	130550	0	0	813140
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	60	65	58	35	0	218
Norm/Ha. (Rs.)	3730	3730	3730	3730	3730	3730	3730	3730	3730	3730	
Financial (Rs.)	0	0	0	0	0	223800	242450	216340	130550	0	813140
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	60	65	58	35	218
Norm/Ha. (Rs.)	3730	3730	3730	3730	3730	3730	3730	3730	3730	3730	
Financial (Rs.)	0	0	0	0	0	0	223800	242450	216340	130550	813140
Total Enrichement Plantation	0	2778000	3455300	3503150	2637940	1049940	877890	589340	346890	130550	15369000
Natural Regeneration											
Physical (Ha.)	0	83	70	60	95	0	0	0	0	0	308
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	2751450	2320500	1989000	3149250	0	0	0	0	0	10210200
1st Year Maintenance											
Physical (Ha.)	0	0	83	70	60	95	0	0	0	0	308
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	112050	94500	81000	128250	0	0	0	0	415800
2nd Year Maintenance											
Physical (Ha.)	0	0	0	83	70	60	95	0	0	0	308
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	78850	66500	57000	90250	0	0	0	292600

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	83	70	60	95	0	0	308
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	45650	38500	33000	52250	0	0	169400
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	83	70	60	95	0	308
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	45650	38500	33000	52250	0	169400
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	83	70	60	95	308
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	45650	38500	33000	52250	169400
Total Natural Regenration	0	2751450	2432550	2162350	3342400	269400	207400	123750	85250	52250	11426800
NTPF											
Physical (Ha.)	0	5	5	0	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	642750	642750	0	0	0	0	0	0	0	1285500
1st Year Maintenance											
Physical (Ha.)	0	0	5	5	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	19350	19350	0	0	0	0	0	0	38700
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	5	0	0	0	0	0	10
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	15440	15440	0	0	0	0	0	30880
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	5	0	0	0	0	10
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	11585	11585	0	0	0	0	23170
Total NTPF	0	642750	662100	34790	27025	11585	0	0	0	0	1378250
Energy Planation											
Physical (Ha.)	0	30	50	38	10	0	0	0	0	0	128

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	1684500	2807500	2133700	561500	0	0	0	0	0	7187200
Total Energy Planatation	0	1684500	2807500	2133700	561500	0	0	0	0	0	7187200
Pasture Development											
Physical (Ha.)	0	35	30	39	22	0	0	0	0	0	126
Norm/Ha. (Rs.)	17150	17150	17150	17150	17150	17150	17150	17150	17150	17150	
Financial (Rs.)	0	600250	514500	668850	377300	0	0	0	0	0	2160900
1st Year Maintenance											
Physical (Ha.)	0	0	35	30	39	22	0	0	0	0	126
Norm/Ha. (Rs.)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	
Financial (Rs.)	0	0	70000	60000	78000	44000	0	0	0	0	252000
2nd Year Maintenance											
Physical (Ha.)	0	0	0	35	30	39	22	0	0	0	126
Norm/Ha. (Rs.)	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	
Financial (Rs.)	0	0	0	52500	45000	58500	33000	0	0	0	189000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	35	30	39	22	0	0	126
Norm/Ha. (Rs.)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
Financial (Rs.)	0	0	0	0	35000	30000	39000	22000	0	0	126000
Total Pasture Development	0	600250	584500	781350	535300	132500	72000	22000	0	0	2727900
Eradication of Noxious weeds											
Physical (Ha.)	140	120	120	205	0	0	0	0	0	0	585
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	2107000	1806000	1806000	3085250	0	0	0	0	0	0	8804250
Total Eradication of Noxious weeds	2107000	1806000	1806000	3085250	0	0	0	0	0	0	8804250
Total Plantation	2107000	12413700	14403700	15132090	8098515	1844875	1431440	926190	545240	198400	57101150
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											0
Physical (Nos.)	313	314	315	314	0	0	0	0	0	0	1256
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	3130000	3140000	3150000	3140000	0	0	0	0	0	0	12560000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Big Size (2mx2.5m)											
Physical (Nos.)	133	135	135	135	0	0	0	0	0	0	538
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	2291590	2326050	2326050	2326050	0	0	0	0	0	0	9269740
Total Gabion Checkdams	5421590	5466050	5476050	5466050	0	0	0	0	0	0	21829740
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	32	34	32	30	0	0	0	0	0	0	128
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	320000	340000	320000	300000	0	0	0	0	0	0	1280000
Big Size											
Physical (Nos.)	16	18	19	16	0	0	0	0	0	0	69
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	275680	310140	327370	275680	0	0	0	0	0	0	1188870
Total Gabion Retaining walls	595680	650140	647370	575680	0	0	0	0	0	0	2468870
Gabion Spurs											
Small Size											
Physical (Nos.)	26	31	31	34	0	0	0	0	0	0	122
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	1262040	1504740	1504740	1650360	0	0	0	0	0	0	5921880
Total Gabion Spurs	1262040	1504740	1504740	1650360	0	0	0	0	0	0	5921880
Water Harvesting Structures											
Physical (Nos.)	11	12	10	9	0	0	0	0	0	0	42
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	683650	745800	621500	559350	0	0	0	0	0	0	2610300
Total Water Harvesting Structures	683650	745800	621500	559350	0	0	0	0	0	0	2610300
Water Holes for wild life											
Physical (Nos.)	7	6	7	7	0	0	0	0	0	0	27
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	5998440	5141520	5998440	5998440	0	0	0	0	0	0	23136840
Total Water Holes for wild life	5998440	5141520	5998440	5998440	0	0	0	0	0	0	23136840
Observation Post											
Physical (Nos.)	1	0	0	0	0	0	0	0	0	0	1

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	
Financial (Rs.)	1100000	0	0	0	0	0	0	0	0	0	1100000
Total Observation Post	1100000	0	0	0	0	0	0	0	0	0	1100000
Brushwood Checkdams											
Small Size											
Physical (Nos.)	71	72	72	70	0	0	0	0	0	0	285
Norm/Ha. (Rs.)	78	78	78	78	78	78	78	78	78	78	
Financial (Rs.)	5538	5616	5616	5460	0	0	0	0	0	0	22230
Total Brushwood Checkdams	5538	5616	5616	5460	0	0	0	0	0	0	22230
Trenching											
Small Size											
Physical (Nos.)	912	913	913	912	0	0	0	0	0	0	3650
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	13954	13969	13969	13954	0	0	0	0	0	0	55846
Total Trenching	13954	13969	13969	13954	0	0	0	0	0	0	55846
Bio Engineering											
Physical (Nos.)	3	4	0	0	0	0	0	0	0	0	7
Norm/Ha. (Rs.)	111700	111700	111700	111700	111700	111700	111700	111700	111700	111700	
Financial (Rs.)	335100	446800	0	0	0	0	0	0	0	0	781900
Total Bio Engineering	335100	446800	0	0	0	0	0	0	0	0	781900
Total Soil & Moisture Conservation	15415992	13974635	14267685	14269294	0	0	0	0	0	0	57927606
Payment For Environment Services											
Power saving implements/Solar Lights	750000	750000	840000	150000	150000	0	0	0	0	0	2640000
Physical (Nos.)	25	25	28	5	5	0	0	0	0	0	
Norm/Ha. (Rs.)	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	
Financial (Rs.)	750000	750000	840000	150000	150000	0	0	0	0	0	2640000
Community Storage Tanks	1500000	1800000	600000	0	0	0	0	0	0	0	3900000
Physical (Nos.)	5	6	2	0	0	0	0	0	0	0	
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	1500000	1800000	600000	0	0	0	0	0	0	0	3900000
Village Pond	315000	315000	490000	70000	0	0	0	0	0	0	1190000
Physical (Nos.)	9	9	14	2	0	0	0	0	0	0	
Norm/Ha. (Rs.)	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Financial (Rs.)	315000	315000	490000	70000	0	0	0	0	0	0	1190000
Crematorium	900000	1200000	1500000	900000	0	0	0	0	0	0	4500000
Physical (Nos.)	3	4	5	3	0	0	0	0	0	0	
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	900000	1200000	1500000	900000	0	0	0	0	0	0	4500000
Reward Money	1350840	1450842	1500840	1350840	1350840	0	0	0	0	0	7004202
Physical (Nos.)	0	0	0	0	0	0	0	0	0	0	
Norm/Ha. (Rs.)	0	0	0	0	0	0	0	0	0	0	
Financial (Rs.)	1350840	1450842	1500840	1350840	1350840	0	0	0	0	0	7004202
Community Power tiller	0	0	1100000	1100000	0	0	0	0	0	0	2200000
Physical (Nos.)	0	0	1	1	0	0	0	0	0	0	
Norm/Ha. (Rs.)	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	
Financial (Rs.)	0	0	1100000	1100000	0	0	0	0	0	0	2200000
Total PES	4815840	5515842	6030840	3570840	1500840	0	0	0	0	0	21434202
Research Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	590975	330025	153500	153500	0	0	0	0	0	0	1228000
Physical (Nos.)	7.7	4.3	2	2	0	0	0	0	0	0	16
Norm/Ha. (Rs.)	76750	76750	76750	76750	76750	76750	76750	76750	76750	76750	
Financial (Rs.)	590975	330025	153500	153500	0	0	0	0	0	0	1228000
Exposure visits for Forest Staff	0	300000	800000	400000	800000	410000	590000	210000	0	0	3510000
Physical (Nos.)	0	0	4	0	4	2	2	0	0	0	12
Norm/Ha. (Rs.)	0	0	0	0	0	0	0	0	0	0	
Financial (Rs.)	0	300000	800000	400000	800000	410000	590000	210000	0	0	3510000
Capacity building for Nursery	2760000	2310000	2510000	490000	0	0	0	0	0	0	8070000
Physical (Nos.)	1	0	0	0	0	0	0	0	0	0	
Norm/Ha. (Rs.)	0	0	0	0	0	0	0	0	0	0	
Financial (Rs.)	2760000	2310000	2510000	490000	0	0	0	0	0	0	8070000
Training in handling Wild Life	0	100000	350000	0	525000	0	0	0	0	0	975000
Financial (Rs.)	0	100000	350000	0	525000	0	0	0	0	0	975000
Training in Modern Nursery	200000	500000	300000	0	0	0	0	0	0	0	1000000
Financial (Rs.)	200000	500000	300000	0	0	0	0	0	0	0	1000000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total TR & C	3550975	3540025	4113500	1043500	1325000	410000	590000	210000	0	0	14783000
Infrastructure & Forest Protection											
Construction of New Infrastructure like Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	3181250	3281250	3581250	3681250	3711250	2681250	2681250	2481250	0	0	25280000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	750000	970000	760000	0	0	0	0	0	0	0	2480000
Patrolling Kits	150000	220000	60000	0	0	0	0	0	0	0	430000
Demarcation of forests & Cos. Of Boundry pillars	1951242	1951242	1951242	1951241	0	0	0	0	0	0	7804967
Buliding infrastructure for RWLR&RC	1946300	1946300	1946300	1946300	1946300	1946300	1946300	1946300	0	0	15570400
Vehicles & POL	1220292	1220292	1220292	1220292	1220294	741300	342139	0	0	0	7184901
Total Infrastructure & Forest Protection	9199084	9589084	9519084	8799083	6877844	5368850	4969689	4427550	0	0	58750268
Wild life Habitat Management											
Rewalsar WL R & RC	3093553	3093552	3093553	3093553	3093553	3093553	3093553	3093553	3093553	0	27841976
Binoculars	0	120000	120000	0	0	0	0	0	0	0	240000
Veterinary Kit at Range & Beat Level	97000	122000	152000	72000	72000	0	0	0	0	0	515000
Trapping Cameras & Camera	60000	400400	0	0	0	0	0	0	0	0	460400
GPS	184800	184800	0	0	0	0	0	0	0	0	369600
Trangulizer Gun	250000	0	0	0	0	0	0	0	0	0	250000
Total Wild life Habitat Management	3685353	3920752	3365553	3165553	3165553	3093553	3093553	3093553	3093553	0	29676976
Monitoring & Evaluation	0	860257	860257	860257	860257	3424558	2770622	860257	1036914	860257	12393636
Contingencies	2027821	2607389	2607389	2607389	2607389	2677391	2607391	2027821	2169519	2027821	23967320
Grand Total	40802065	52421684	55168008	49448006	24435398	16819227	15462695	11545371	6845226	3086478	276034158

YEAR WISE SUMMARY OF PROJECTIONS FOR MANDI RNAGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	20	20	30	0	0	0	0	0	0	70
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	1229000	1229000	1843500	0	0	0	0	0	0	4301500
1st Year Maintenance											
Physical (Ha.)	0	0	20	20	30	0	0	0	0	0	70
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	113000	113000	169500	0	0	0	0	0	395500
2nd Year Maintenance											
Physical (Ha.)	0	0	0	20	20	30	0	0	0	0	70
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	76000	76000	114000	0	0	0	0	266000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	20	20	30	0	0	0	70
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	39000	39000	58500	0	0	0	136500
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	20	20	30	0	0	70
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	39000	39000	58500	0	0	136500
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	20	20	30	0	70
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	39000	39000	58500	0	136500
Total New Plantation	0	1229000	1342000	2032500	284500	192000	136500	97500	58500	0	5372500
Enrichment Plantation											
Physical (Ha.)	0	45	55	40	35	0	0	0	0	0	175
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	2484000	3036000	2208000	1932000	0	0	0	0	0	9660000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
1st Year Maintenance											
Physical (Ha.)	0	0	45	55	40	35	0	0	0	0	175
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	254250	310750	226000	197750	0	0	0	0	988750
2nd Year Maintenance											
Physical (Ha.)	0	0	0	45	55	40	35	0	0	0	175
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	171000	209000	152000	133000	0	0	0	665000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	45	55	40	35	0	0	175
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	87750	107250	78000	68250	0	0	341250
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	45	55	40	35	0	175
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	87750	107250	78000	68250	0	341250
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	45	55	40	35	175
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	87750	107250	78000	68250	341250
Total Enrichement Plantation	0	2484000	3290250	2689750	2454750	544750	406000	253500	146250	68250	12337500
Natural Regeneration											
Physical (Ha.)	0	40	30	30	65						165
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	1326000	994500	994500	2154750	0	0	0	0	0	5469750
1st Year Maintenance											
Physical (Ha.)		0	40	30	30	65					165
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	54000	40500	40500	87750	0	0	0	0	222750
2nd Year Maintenance											
Physical (Ha.)			0	40	30	30	65				165

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	38000	28500	28500	61750	0	0	0	156750
3rd Year Maintenance											
Physical (Ha.)				0	40	30	30	65			165
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	22000	16500	16500	35750	0	0	90750
4th Year Maintenance											
Physical (Ha.)					0	40	30	30	65		165
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	22000	16500	16500	35750	0	90750
5th Year Maintenance											
Physical (Ha.)						0	40	30	30	65	165
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	22000	16500	16500	35750	90750
Total Natural Regenration	0	1326000	1048500	1073000	2245750	154750	116750	68750	52250	35750	6121500
Energy Planation											
Physical (Ha.)	0	20	30	27	0	0	0	0	0	0	77
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	1123000	1684500	1516050	0	0	0	0	0	0	4323550
Total Energy Planatation	0	1123000	1684500	1516050	0	0	0	0	0	0	4323550
Pasture Development											
Physical (Ha.)	0	25	10	20	22	0	0	0	0	0	77
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	415000	166000	332000	365200	0	0	0	0	0	1278200
1st Year Maintenance											
Physical (Ha.)	0	0	25	10	20	22	0				77
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	52500	21000	42000	46200	0	0	0	0	161700
2nd Year Maintenance											
Physical (Ha.)	0	0	0	25	10	20	22	0	0	0	77
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	44250	17700	35400	38940	0	0	0	136290

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	25	10	20	22	0	0	77
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	29500	11800	23600	25960	0	0	90860
Total Pasture Development	0	415000	218500	397250	454400	93400	62540	25960	0	0	1667050
Eradication of Noxious weeds											
Physical (Ha.)	100	100	100	175	0	0	0	0	0	0	475
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	1505000	1505000	1505000	2633750	0	0	0	0	0	0	7148750
Total Eradication of Noxious weeds	1505000	1505000	1505000	2633750	0	0	0	0	0	0	7148750
Total Plantation	1505000	8082000	9088750	10342300	5439400	984900	721790	445710	257000	104000	36970850
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	234	234	234	234	0	0	0	0	0	0	936
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	2340000	2340000	2340000	2340000	0	0	0	0	0	0	9360000
Big Size (2mx2.5m)											
Physical (Nos.)	101	102	102	102	0	0	0	0	0	0	407
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	1740230	1757460	1757460	1757460	0	0	0	0	0	0	7012610
Total Gabion Checkdams	4080230	4097460	4097460	4097460	0	0	0	0	0	0	16372610
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	17	18	18	18	0	0	0	0	0	0	71
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	170000	180000	180000	180000	0	0	0	0	0	0	710000
Big Size											
Physical (Nos.)	7	7	8	7	0	0	0	0	0	0	29
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	120610	120610	137840	120610	0	0	0	0	0	0	499670

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total Gabion Retainingwalls	290610	300610	317840	300610	0	0	0	0	0	0	1209670
Gabion Spurs											
Small Size											
Physical (Nos.)	20	25	25	28	0	0	0	0	0	0	98
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	970800	1213500	1213500	1359120	0	0	0	0	0	0	4756920
Total Gabion Spurs	970800	1213500	1213500	1359120	0	0	0	0	0	0	4756920
Water Harvesting Structures											
Physical (Nos.)	6	6	6	6	0	0	0	0	0	0	24
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	372900	372900	372900	372900	0	0	0	0	0	0	1491600
Total Water Harvesting Structures	372900	372900	372900	372900	0	0	0	0	0	0	1491600
Water Holes for wild life											
Physical (Nos.)	4	3	4	6	0	0	0	0	0	0	17
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	3427680	2570760	3427680	5141520	0	0	0	0	0	0	14567640
Total Water Holes for wild life	3427680	2570760	3427680	5141520	0	0	0	0	0	0	14567640
Observation Post											
Physical (Nos.)	1	0	0	0	0	0	0	0	0	0	1
Norm/Ha. (Rs.)	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000		
Financial (Rs.)	1100000	0	0	0	0	0	0	0	0	0	1100000
Total Observation Post	1100000	0	0	0	0	0	0	0	0	0	1100000
Trenching											
Small Size											
Physical (Nos.)	475	475	475	475	0	0	0	0	0	0	1900
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	7268	7268	7268	7268	0	0	0	0	0	0	29072
Total Trenching	7268	7268	7268	7268	0	0	0	0	0	0	29072
Total Soil & Moisture Conservation	10249488	8562498	9436648	11278878	0	0	0	0	0	0	39527512
Payment For Environment Services											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Power saving implements/Solar Lights	300000	300000	420000	0	0	0	0	0	0	0	1020000
Physical (Nos.)	10	10	14	0							34
Norm/Ha. (Rs.)	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	
Financial (Rs.)	300000	300000	420000	0	0	0	0	0	0	0	1020000
Community Storage Tanks	0	0	300000	0	0	0	0	0	0	0	300000
Physical (Nos.)	0	0	1	0							1
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	0	0	300000	0	0	0	0	0	0	0	300000
Village Pond	70000	70000	70000	70000	0	0	0	0	0	0	280000
Physical (Nos.)	2	2	2	2	0	0	0	0	0	0	8
Norm/Ha. (Rs.)	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	
Financial (Rs.)	70000	70000	70000	70000	0	0	0	0	0	0	280000
Crematorium	300000	600000	600000	900000	0	0	0	0	0	0	2400000
Physical (Nos.)	1	2	2	3	0	0	0	0	0	0	8
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	300000	600000	600000	900000	0	0	0	0	0	0	2400000
Reward Money	0	1300867	1300867	1300867	1300869	1300867	0	0	0	0	6504337
Financial (Rs.)	1350840	1350842	1350840	1350840	1350840	0	0	0	0	0	6754202
Total PES	670000	2270867	2690867	2270867	1300869	1300867	0	0	0	0	10504337
Research Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	153500	153500	153500	153500	0	0	0	0	0	0	614000
Exposure visits for Forest Staff	0	0	400000	0	400000	200000	440000	0	0	0	1440000
Capacity building for Nursery	1510000	1510000	1510000	0	0	0	0	0	0	0	4530000
Training in handling Wild Life	0	0	200000	0	200000	0	0	0	0	0	400000
Financial (Rs.)	0	0	200000	0	200000	0	0	0	0	0	400000
Total TR & C	1663500	1663500	2263500	153500	600000	200000	440000	0	0	0	6984000
Infrastructure & Forest Protection											
Construction of New Infrastructure Ije Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	1681250	1681250	1681250	1681250	1681250	1681250	1681250	1681250	0	0	13450000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	300000	500000	650000	0	0	0	0	0	0	0	1450000
Patrolling Kits	50000	100000	60000	0	0	0	0	0	0	0	210000
Laptop at range HQ.	0	0	0	0	0	0	0	0	0	0	0
Demarcation of forests & Cos. Of Boundry pillars	0	0	0	0	0	0	0	0	0	0	0
Buliding infrastructure for RWLR&RC	1946300	1946300	1946300	1946300	1946300	1946300	1946300	1946300	0	0	15570400
Vehicles & POL	478993	478993	478993	478993	478995	0	0	0	0	0	2394967
Total Infrastructure & Forest Protection	4456543	4706543	4816543	4106543	4106545	3627550	3627550	3627550	0	0	33075367
Wild life Habitat Management											
Rewalsar WL R & RC	3093553	3093552	3093553	3093553	3093553	3093553	3093553	3093553	3093553	0	27841976
Binoculars	0	0	120000	0	0	0	0	0	0	0	120000
Veterinary Kit at Range & Beat Level	25000	50000	20000	0	0	0	0	0	0	0	95000
Trapping Cameras & Camera	0	277200	0	0	0	0	0	0	0	0	277200
Trangulizer Gun	250000	0	0	0	0	0	0	0	0	0	250000
Total Wild life Habitat Management	3368553	3420752	3233553	3093553	3093553	3093553	3093553	3093553	3093553	0	28584176
Monitoring & Evaluation	0	860257	860257	860257	860257	860257	860257	860257	1036914	860257	7918970
Contingencies	1548462	1548462	1548462	1548462	1548462	1548462	1548464	1548462	1628464	1548462	15564624
Grand Total	23461546	31114879	33938580	33654360	16949086	11615589	10291614	9575532	6015931	2512719	179129836

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN- MANDI RANGE					
Sr. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
	1. AFFORESTATION				
1	New Plantation	Ha.	76750	70	53,72,500
2	Enrichment	Ha.	70500	175	1,23,37,500
3	Natural Regeneration	Ha.	37100	165	61,21,500
4	NTFP	Ha.	137825	-	-
5	Energy Plantation	Ha.	56150	77	43,23,550
6	Pasture Development	Ha.	21650	77	16,67,050
7	Eradication of Noxious weeds	Ha.	15050	475	71,48,750
	Total			1,039	3,69,70,850
	AFORESTATION	Total:			3,69,70,850
	2. SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	1,343	1,63,72,610
2	Gabion Retainingwalls	Nos.	10000/17230	100	12,09,670
3	Gabion Checkwalls	Nos.	10000/17230		
4	Gabion Spurs	Nos.	48540	98	47,56,920
5	Water Harvesting Structures	Nos.	62150	24	14,91,600
6	Water Holes for wild life	Nos.	856920	17	1,45,67,640
7	Observation Post	Nos.	1100000	1	11,00,000
8	Gulli Plugging/ Dry stoneCheckdams	Nos.	4710		
9	Brushwood Checkdams	Nos.	78		
10	Trenching	Nos.	15.3	1,900	29,070
11	Bio Engineering	Ha.	111700	-	-
	Total SOIL & MOISTURE CONSERVATION		0	-	3,95,27,510
3.	PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	34	10,20,000
2	Community Storage Tanks	Nos.	300000	1	3,00,000
3	Village Ponds	Nos.	35000	8	2,80,000
4	Crematorium	Nos.	300000	8	24,00,000
5	Reward Money	HH*413			65,04,337
6	Community Power tiller		1100000		
	Total:			-	1,05,04,337
4.	RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	8.0	6,14,000
2	Eradication of Lantana and other Invasive species	Ha.	8000		
3	Nursery	Nos.	1220000/ 770000/ 550000/	-	45,30,000
4	Exposure visits for Forest Staff	Lump sum	12000000		14,40,000
5	Handling of Wild Life	Lump sum			4,00,000
	Total:				69,84,000
5 & 6.	INFRASTRUCTURE AND FOREST PROTECTION				

1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff			1,34,50,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	Lump Sum			14,50,000
3	Patrolling Kits	Nos.	10000	21	2,10,000
4	Demarcation of forests & Cons.of boundry pillars				-
5	Vehicles & POL	Cost Norm			2394967
		Total:	0	-	1,75,04,967
6	Wild Life Rescue & Research Centre at Rewalsar				1,55,70,400
	Total for Infrastructure				3,30,75,367
7.	WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	4	1,20,000
2	Veterinary	Nos.	5000	19	95,000
3	Trapping Cameras	Nos.	30800	9	2,77,200
4	Rewalsar WL R & RC	As Computed		-	2,78,41,976
5	Tranquilizer Gun	Nos.	250000	1	2,50,000
		Total:	0	-	2,85,84,176
	Total CAT Plan		0	-	15,56,46,240
8.	MONITORING & EVALUATION	5%		-	79,18,970
9.	Contingencies	10%		-	1,55,64,624
	Total CAT Plan for Financial Projections			-	17,91,29,834

MANDI FOREST DIVISION
BEAT WISE MANDI RANGE DATA (AFFORESTATION)

Sl.No.	Beat	Unit	Unit cost per ha. For plantation (Rs.)	Area (ha)	Total cost (Rs.)	Species to be Planted
A. New Plantation (1100 plants per ha.)						
1	Randhara	Ha.	76750	10	767500	Ban, Deodar.
2	Bijni	Ha.	76750	10	767500	Ban, Deodar.
3	Rehradhar	Ha.	76750	20	1535000	Ban, Deodar.
4	Tamlot	Ha.	76750	5	383750	Ban, Deodar.
5	Talyarh	Ha.	76750	5	383750	Ban, Deodar.
6	Badsu	Ha.	76750	5	383750	Ban, Deodar.
7	Kharnal	Ha.	76750	0	0	Ban, Deodar.
8	Rani Baain	Ha.	76750	5	383750	Ban, Deodar.
9	Ratti	Ha.	76750	0	0	Ban, Deodar.
10	Majheli	Ha.	76750	0	0	Ban, Deodar.
11	Rewalsar	Ha.	76750	0	0	Ban, Deodar.
12	Tarapur	Ha.	76750	0	0	Ban, Deodar.
13	Kangni	Ha.	76750	0	0	Ban, Deodar.
14	Sakroha	Ha.	76750	5	383750	Ban, Deodar.
15	Nelha	Ha.	76750	0	0	Ban, Deodar.
16	Chabwan	Ha.	76750	5	383750	Ban, Deodar.
17	Padhar	Ha.	76750	0	0	Ban, Deodar.
	Total:	Ha.	76750	70	5372500	
B. Enrichment 800 plants=1 notional ha.						
1	Randhara	Ha.	70500	10	705000	Ban, Deodar
2	Bijni	Ha.	70500	20	1410000	Ban, Deodar
3	Rehradhar	Ha.	70500	20	1410000	Ban, Deodar
4	Tamlot	Ha.	70500	10	705000	Ban, Deodar
5	Talyarh	Ha.	70500	10	705000	Ban, Deodar
6	Badsu	Ha.	70500	10	705000	Ban, Deodar
7	Kharnal	Ha.	70500	5	352500	Ban, Deodar
8	Rani Baain	Ha.	70500	10	705000	Ban, Deodar
9	Ratti	Ha.	70500	10	705000	Ban, Deodar
10	Majheli	Ha.	70500	10	705000	Ban, Deodar
11	Rewalsar	Ha.	70500	5	352500	Ban, Deodar
12	Tarapur	Ha.	70500	5	352500	Ban, Deodar
13	Kangni	Ha.	70500	15	1057500	Ban, Deodar
14	Sakroha	Ha.	70500	5	352500	Ban, Deodar
15	Nelha	Ha.	70500	10	705000	Ban, Deodar
16	Chabwan	Ha.	70500	10	705000	Ban, Deodar
17	Padhar	Ha.	70500	10	705000	Ban, Deodar
	Total:	Ha.	70500	175	12337500	Ban, Deodar
C. Natural Regeneration/ Closure						

Sl.No.	Beat	Unit	Unit cost per ha. For plantation (Rs.)	Area (ha)	Total cost (Rs.)	Species to be Planted
1	Randhara	Ha.	37100	5	185500	
2	Bijni	Ha.	37100	20	742000	
3	Rehradhar	Ha.	37100	15	556500	
4	Tamlot	Ha.	37100	10	371000	
5	Talyarh	Ha.	37100	10	371000	
6	Badsu	Ha.	37100	10	371000	
7	Kharnal	Ha.	37100	10	371000	
8	Bani Baain	Ha.	37100	10	371000	
9	Ratti	Ha.	37100	10	371000	
10	Majheli	Ha.	37100	5	185500	
11	Rewalsar	Ha.	37100	5	185500	
12	Tarapur	Ha.	37100	5	185500	
13	Kangni	Ha.	37100	10	371000	
14	Sakroha	Ha.	37100	5	185500	
15	Nelha	Ha.	37100	10	371000	
16	Chabwan	Ha.	37100	15	556500	
17	Padhar	Ha.	37100	10	371000	
	Total:	Ha.	37100	165	6121500	
D. Energy Plantation						
1	Randhara	Ha.	56150	4	224600	
2	Bijni	Ha.	56150	4	224600	
3	Rehradhar	Ha.	56150	2	112300	
4	Tamlot	Ha.	56150	2	112300	
5	Talyarh	Ha.	56150	8	449200	
6	Badsu	Ha.	56150	5	280750	
7	Kharnal	Ha.	56150	2	112300	
8	Rani Baain	Ha.	56150	4	224600	
9	Ratti	Ha.	56150	6	336900	
10	Majheli	Ha.	56150	3	168450	
11	Rewalsar	Ha.	56150	8	449200	
12	Tarapur	Ha.	56150	4	224600	
13	Kangni	Ha.	56150	3	168450	
14	Sakroha	Ha.	56150	9	505350	
15	Nelha	Ha.	56150	5	280750	
16	Chabwan	Ha.	56150	3	168450	
17	Padhar	Ha.	56150	5	280750	
	Total:	Ha.		77	4323550	
E. Pasture Reclamation						
1	Randhara	Ha.	21650	4	86600	
2	Bijni	Ha.	21650	4	86600	
3	Rehradhar	Ha.	21650	2	43300	
4	Tamlot	Ha.	21650	2	43300	

Sl.No.	Beat	Unit	Unit cost per ha. For plantation (Rs.)	Area (ha)	Total cost (Rs.)	Species to be Planted
5	Talyarh	Ha.	21650	8	173200	
6	Badsu	Ha.	21650	5	108250	
7	Kharnal	Ha.	21650	2	43300	
8	Rani Baain	Ha.	21650	4	86600	
9	Ratti	Ha.	21650	6	129900	
10	Majheli	Ha.	21650	3	64950	
11	Rewalsar	Ha.	21650	8	173200	
12	Tarapur	Ha.	21650	4	86600	
13	Kangni	Ha.	21650	3	64950	
14	Sakroha	Ha.	21650	9	194850	
15	Nelha	Ha.	21650	5	108250	
16	Chabwan	Ha.	21650	3	64950	
17	Padhar	Ha.	21650	5	108250	
	Total:			77	1667050	
Eradication of noxious Weeds						
1	Randhara	Ha.	15050	20	301000	
2	Bijni	Ha.	15050	30	451500	
3	Rehradhar	Ha.	15050	30	451500	
4	Tamlot	Ha.	15050	20	301000	
5	Talyarh	Ha.	15050	20	301000	
6	Badsu	Ha.	15050	20	301000	
7	Kharnal	Ha.	15050	30	451500	
8	Rani Baain	Ha.	15050	40	602000	
9	Ratti	Ha.	15050	30	451500	
10	Majheli	Ha.	15050	20	301000	
11	Rewalsar	Ha.	15050	15	225750	
12	Tarapur	Ha.	15050	20	301000	
13	Kangni	Ha.	15050	60	903000	
14	Sakroha	Ha.	15050	10	150500	
15	Nelha	Ha.	15050	30	451500	
16	Chabwan	Ha.	15050	50	752500	
17	Padhar	Ha.	15050	30	451500	
	Total			475	7148750	

Beat Wise Strengthening of Nurseries							
Sr. No.	Beat	Category/Status of Nursery	Area of Nursery (ha)	Planned cost	Intervention required	Amount (Rs.)	Grand Total
1	Randhara	..	..	..	..
2	Bijni	Existing Beat Level Nursery- Abandoned	0.5	0	Nursery to be restrated as new Nursery	770000	770000
3	Rehradhar	Existing Beat Level Nursery Skore	0.2	250000	Provisions to be made for watersupply etc.	0	250000
4	Tamlot	..	..	0	..	0	0
5	Badsu	..	..	0	..	0	0
6	Kharnal	..	..	0	..	0	0
7	Rani Baain	Existing Beat Level Nursery-Rani Baain	0.5	250000	Existing Nursery to be moderanised.	0	250000
8	Ratti	Existing Beat Level Nursery Ratti- Abandoned	0.6	0	To be started as New Nursery	770000	770000
9	Majheli	..	..	0	..	0	0
10	Rewalsar	New Range level nursery for gene pool research	2	1220000	..	0	1220000
11	Tarapur	..	..	0	..	0	0
12	Kangni	..	0.5	0	New Beat Level Nursery to be created at Kangni.	250000	250000
13	Sakroha	..	..	0	..	0	0
14	Nelha	..	..	0	..	0	0
15	Chabwan	Existing Beat Level Nursery- Chiladhar	0.5	0	One new Nursery required at Kotmos.	770000	770000
16	Padhar	..	..	..	..	0	
17	Talyar	Existing Beat Level Nursery- Tawambra	0.5	250000	Facilities of Water Tank Piped Water supply to be made	0	250000
		Total:		1970000	Total:	2560000	4530000

Beat Wise SMC Measures in Mandi Range of Mandi Forest Division

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
A	Gabion Checkdams/ Checkwalls							
1		Randhara	Patron Nala- 2KM	No.	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Chahair Nala-3 KM	No.	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Tandu Nala-2 KM	No.	1.50 x 1.50m	10000	16	160000
					2x2.5m	17230	4	68920
			Mandlog Nala-3 KM	No.	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Batahan Nala-4 KM	No.	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
						Total:	120	1445820
2		Bijni	Sih Nala-4 KM	No.	1.50 x 1.50m	10000	6	60000
					2x2.5m	17230	4	68920
			Dhansi Nala-1 KM	No.	1.50 x 1.50m	10000	6	60000
					2x2.5m	17230	4	68920
			LabandiNala 1.5 KM	No.	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Roonjh Nala-4 KM	No.	1.50 x 1.50m	10000	28	280000
					2x2.5m	17230	12	206760
						Total:	80	980750
3		Rehradhar	Ropa Nala 3 KM	Nos	1.50 x 1.50m	10000	35	350000
					2x2.5m	17230	15	258450
			Sakoh Nala-4 KM	Nos	1.50 x 1.50m	10000	35	350000
					2x2.5m	17230	15	258450
			Piplu Nala- 3 KM	Nos	1.50 x 1.50m	10000	25	250000
					2x2.5m	17230	10	172300
						Total:	135	1639200
4		Tamlot	Tamlot Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Runjh Nala 1.5 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
						Total:	35	422300
5		Talyarh	tombra Nala-4 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	5	86150
			Gandharb Nala- 2KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	5	86150
			Matt Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	65	758450
6		Badsu	Snora Nala-4 KM	Nos	1.50 x 1.50m	10000	20	200000

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
					2x2.5m	17230	10	172300
			Manglah Nala-3 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Saini Mohri Nala-4 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
						Total:	70	844600
7		Kharnal	Siharni Nala- 3KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
						Total:	30	372300
8		Rani Baain	Gaati Nala-2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Kunda Nal-4 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Chhanwari Nala-2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
						Total:	70	844600
9		Ratti	Hawanu Nala 2.5 KM	Nos	1.50 x 1.50m	10000	25	250000
					2x2.5m	17230	10	172300
			Mahesra Nal-2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	10	172300
			Nahot Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	75	930750
10		Majheli	Samblon Nala-2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Safu Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	35	422300
11		Rewalsar	Chora Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Jhair Nala-2 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Charhi Nala 2.5 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	10	172300
			Godahan Nala- 3 KM	Nos	1.50 x 1.50m	10000	16	160000
					2x2.5m	17230	4	68920
			Rewalsar Nala 1.5 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	90	1109670
12		Tarapur	Kharsi Nala 1.5 KM	Nos	1.50 x 1.50m	10000	12	120000
					2x2.5m	17230	3	51690
			Ber Nala 1.5 KM	Nos	1.50 x 1.50m	10000	11	110000

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
					2x2.5m	17230	4	68920
			Nihar Nala 1 KM	Nos	1.50 x 1.50m	10000	6	60000
					2x2.5m	17230	4	68920
						Total:	40	479530
13		Kangni	Gallu Nala 3 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Badog Nala 3 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Maighal Nal 2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Kangi Nala 2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Malori Nala 4 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			BardadharNala 4 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Sauli Khad-6 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
						Total:	190	2333800
14		Sakroha	Paje ra Nal-2 KM	Nos	1.50 x 1.50m	10000	15	150000
					2x2.5m	17230	5	86150
			Pindi Chhoh Nala- 2.5 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	35	422300
15		Nelha	Kamloh Nala2.5 KM	Nos	1.50 x 1.50m	10000	30	300000
					2x2.5m	17230	15	258450
			Trahna Nala-1	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Binu Nala- 0.5 KM	Nos	1.50 x 1.50m	10000	7	70000
					2x2.5m	17230	3	51690
			Kadhani Nala 2KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
						Total:	100	1238590
16		Chabwan	Saryal Nala 1.5 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Dhabwan Nala 1 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Jagar Nala-1 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
			Deoli Nala 1 KM	Nos	1.50 x 1.50m	10000	10	100000
					2x2.5m	17230	5	86150
						Total:	60	744600
17		Padhar	Sunsuna Nala 1.5 KM	Nos	1.50 x 1.50m	10000	18	180000

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
					2x2.5m	17230	5	86150
			Langhwar Nala 2KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Nihalag Nala- 2 KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
			Chatrot Nala- 2KM	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
						Total:	113	1383050
				Grand Total:			1343	16372610
B	Retaining Walls/ Toe walls							
2		Bijni	Maigal Nala	Nos	1.50 x 1.50m	10000	20	200000
					2x2.5m	17230	10	172300
12		Tarapur	Bhadyar Nala	Nos	1.50 x 1.50m	10000	6	60000
					2x2.5m	17230	4	68920
13		Kangni	Suketi Khad	Nos	1.50 x 1.50m	10000	45	450000
					2x2.5m	17230	15	258450
		Total:				0	100	1209670
C	Water Harvesting Structures							
1		Randhara	Cherh,Mandlogh,Bhatan	Nos	..	62150	3	186450
2		Bijni	Chhiplu, Sih, Runjh nal	Nos	..	62150	3	186450
3		Rehradhar	Scoh nal	..	..	62150	1	62150
4		Tamlot	Tamlot, Runjh Nal	..	..	62150	2	124300
5		Talyarh	..	..	..	62150	1	62150
6		Badsu	Saini Nala	Nos	..	62150	3	186450
7		Kharnal	..	..	..	62150	1	62150
8		Rani Baain	Nagchala Nala and Kunda Nal	Nos	..	62150	3	186450
11		Rewalsar	Rewalsar Nala for zoo	..	..	62150	1	62150
12		Tarapur	..	..	..	62150	2	124300
14		Sakroha	..	..	..	62150	1	62150
15		Nelha	DPF Rihanidhar	Nos	..	62150	1	62150
16		Chabwan	DPF Chabwan	Nos	..	62150	1	62150
17		Padhar	DPF Nihalag	Nos	..	62150	1	62150
			Total:		..	62150	24	1491600
1		Randhara	Water Holes	Nos		856920	1	856920
2		Bijni	Water Holes	Nos		856920	1	856920
3		Rehradhar	Water Holes	Nos		856920	1	856920
4		Tamlot	Water Holes	Nos		856920	1	856920
5		Talyarh	Water Holes	Nos		856920	1	856920
6		Badsu	Water Holes	Nos		856920	1	856920
7		Kharnal	Water Holes	Nos		856920	1	856920
8		Rani Baain	Water Holes	Nos		856920	1	856920

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
9		Ratti	Water Holes	Nos		856920	1	856920
10		Majheli	Water Holes	Nos		856920	1	856920
11		Rewalsar	Water Holes	Nos		856920	1	856920
12		Tarapur	Water Holes	Nos		856920	1	856920
13		Kangni	Water Holes	Nos		856920	1	856920
14		Sakroha	Water Holes	Nos		856920	1	856920
15		Nelha	Water Holes	Nos		856920	1	856920
16		Chabwan	Water Holes	Nos		856920	1	856920
17		Padhar	Water Holes	Nos		856920	1	856920
						Total:	17	14567640
D	Deflecting Spurs							
1		Randhara		Nos.	Same as above	48540	6	291240
2		Bijni		Nos.	Same as above	48540	6	291240
3		Rehradhar		Nos.	Same as above	48540	4	194160
4		Tamlot		Nos.	Same as above	48540	6	291240
5		Talyarh		Nos.	Same as above	48540	6	291240
6		Badsu		Nos.	Same as above	48540	6	291240
7		Kharnal		Nos.	Same as above	48540	6	291240
8		Rani Baain		Nos.	Same as above	48540	6	291240
9		Ratti		Nos.	Same as above	48540	4	194160
10		Majheli		Nos.	Same as above	48540	6	291240
11		Rewalsar		Nos.	Same as above	48540	6	291240
12		Tarapur		Nos.	Same as above	48540	6	291240
13		Kangni		Nos.	Same as above	48540	6	291240
14		Sakroha		Nos.	Same as above	48540	6	291240
15		Nelha		Nos.	Same as above	48540	6	291240
16		Chabwan		Nos.	Same as above	48540	6	291240
17		Padhar		Nos.	Same as above	48540	6	291240
		Total:					98	4756920
E	Trenching activities							
1		Randhara		Nos.	1mx30cmsx30 cms	15.3	100	1530
2		Bijni		Nos.	1mx30cmsx30 cms	15.3	100	1530
3		Rehradhar		Nos.	1mx30cmsx30 cms	15.3	200	3060

Sl. No.	Sub-Component/ Activity	Beat	Name of Nala/ Forest	Unit	Size	Unit Cost Rs.	Qty	Total Cost Rs.
4		Tamlot		Nos.	1mx30cmsx30 cms	15.3	100	1530
5		Talyarh		Nos.	1mx30cmsx30 cms	15.3	200	3060
6		Badsu		Nos.	1mx30cmsx30 cms	15.3	100	1530
8		Rani Baain		Nos.	1mx30cmsx30 cms	15.3	200	3060
9		Ratti		Nos.	1mx30cmsx30 cms	15.3	100	1530
10		Majheli		Nos.	1mx30cmsx30 cms	15.3	100	1530
11		Rewalsar		Nos.	1mx30cmsx30 cms	15.3	100	1530
12		Tarapur		Nos.	1mx30cmsx30 cms	15.3	100	1530
13		Kangni		Nos.	1mx30cmsx30 cms	15.3	100	1530
14		Sakroha		Nos.	1mx30cmsx30 cms	15.3	100	1530
15		Nelha		Nos.	1mx30cmsx30 cms	15.3	100	1530
16		Chabwan		Nos.	1mx30cmsx30 cms	15.3	100	1530
17		Padhar		Nos.	1mx30cmsx30 cms	15.3	100	1530
		Total:					1900	29070
		SMC TOATAL						19102950
								38427510
F	Observation Post							
		Randhara	Observation Post	Nos		1100000	1	1100000

Beat Wise PES Activities- Mandi Range of Mandi Forest Division

Sr. No.	Beat	Community Storage Tanks				Village Ponds				Crematorium				Solar Lights			Village reward	Grand total
		Location	Qty.	Unit Cost	Cost	Area	Qty.	Unit Cost	Cost	Area	Qty	Unit cost	Cost	Qty	Unit Cost	Cost		
1	Randhara			300000		..		35000		..		300000		2	30000	60000		
2	Bijni									Upper Maigal	1	300000	300000	2	30000	60000		
						..				Lower Maigal	1	300000	300000		30000	0		
3	Rehradhar									Skorah	1	300000	300000	2	30000	60000		
						..				Bihuli	1	300000	300000		30000	0		
4	Tamlot					..				..		300000	0	2	30000	60000		
5	Talyarh					Manyana	1	35000	35000	..		300000	0	2	30000	60000		
6	Badsu					..				..		300000	0	2	30000	60000		
7	Kharnal					..				..		300000	0	2	30000	60000		
8	Rani Baain					Kundanal	1	35000	35000		1	300000	300000	2	30000	60000		
						Nagchala	1	35000	35000			300000	0		30000	0		
9	Ratti					..				Nohat (Malti)	1	300000	300000	2	30000	60000		
10	Majheli					..				..		300000	0	2	30000	60000		
11	Rewalsar					..				..		300000	0	2	30000	60000		
12	Tarapur					..				Kharshi Jagar Nal	1	300000	300000	2	30000	60000		
13	Kangni					Barhadhar	1	35000	35000	..		300000	0	2	30000	60000		
14	Sakroha					..				..		300000	0	2	30000	60000		
15	Nelha	Trahna	1	300000	300000	Rihanidhar	1	35000	35000	Bihnu	1	300000	300000	2	30000	60000		
						Trahana	1	35000	35000			300000	0		30000	0		
16	Chabwan					Dhumadevi	2	35000	70000	..		300000	0	2	30000	60000		
17	Padhar					..				..		300000	0	2	30000	60000		
	Total:		1		300000		8		280000		8		2400000	34		1020000	6504337	10504337

Beat Wise Requirements of Mandi Range of Mandi Forest Division under Research, Training & Capacity Building								
Sr. No.	Beat	Demo plot Bamboo 0.5/ Ha)	Cost/ Ha.	Total cost (Rs.)	Exposure Visit	Training in handling Wild animals	Lab Equipment for WL Rescue research centre	Total
1	Randhara	0.5	76750	38375	90000	25000		
2	Bijni	0.5	76750	38375	90000	25000		
3	Rehradhar	0.5	76750	38375	90000	25000		
4	Tamlot	0.5	76750	38375	90000	25000		
5	Talyarh	0.5	76750	38375	90000	25000		
6	Badsu	0.5	76750	38375	90000	25000		
7	Kharnal	0.5	76750	38375	90000	25000		
8	Rani Baain	0.5	76750	38375	90000	25000		
9	Ratti	0.5	76750	38375	90000	25000		
10	Majheli	0.5	76750	38375	90000	25000		
11	Rewalsar	0	0	0				
12	Tarapur	0.5	76750	38375	90000	25000		
13	Kangni	0.5	76750	38375	90000	25000		
14	Sakroha	0.5	76750	38375	90000	25000		
15	Nelha	0.5	76750	38375	90000	25000		
16	Chabwan	0.5	76750	38375	90000	25000		
17	Padhar	0.5	76750	38375	90000	25000		
	Total:	8		614000	1440000	400000	1200000	3654000

Beat Wise Requirements of Mandi Range of Mandi Forest Division under Infrastructure Development and Forest Protection									
Sl. No.	Beat	New Construction/ Repair of Fgd. Huts, B.O. Qtrs. Etc.	Cost (Rs.)	Construction of Approach Road/Bridle Paths etc.	Cost. (Rs.)	Patrolling Kits	Cost	Vehicle 4X4 Double Cab as per cost norm	Total Cost
1	Randhara	New construction of Fgd. Hut.	900000	Construction of Forest Road from Drabal Nal to Deo ka Thara 1 KM.	100000	1	10000		1010000
2	Bijni	New Construction of Fgd. Hut at Khalyar	900000	C/o Bridle Path from Victoria Village to Dhangsi Temple- 2 KM	100000	1	10000		1010000
3	Rehradhar	New Construction of Fgd. Hut	900000		0	1	10000		910000
4	Tamlot	New Construction of Fgd. Hut at Kathindi	900000		0	1	10000		910000
5	Talyarh	Repair of Forest Guard Hut and fixing of 2 Solar Lights-	200000	Repair of path from Roadside to Fgd. Hut. And old Range Office-200 Mtr.	40000	1	10000		250000
6	Badsu	New Construction of Fgd. Hut	900000		0	1	10000		910000
7	Kharnal	New Costruction of Fgd. Hut.	900000	C/o Path from Taandi to Barnala-4 KM	160000	1	10000		1070000
8	Rani Baain	i.New C/o of FRH at Nagchala. (ii) Repair of Fgd. Hut Rani Bai alongwith solar light, (iii) C/o Boundary wall and Retaining wall to Fgd. Hut (iv) C/o Breast Wall to Fgd. Hut.	1200000	(i) Repair and Maintenance of path from Roadside to Fgd. Hut. (ii) Constructio of Parking shed near RaniBai Nursery and Fgd. Hut Rani Baai (iii) C/o Forest Road from Manyana to Baul- 3KM	200000	1	10000		1410000
9	Ratti	Repair of Fgd. Hut and fixing of solar light	150000		0	1	10000		160000
10	Majheli	New construction of Fgd. Hut and fixing of Solar light.	900000	C/o Bridle path from Roadside to Fgd. Hut 100 Mtr.	20000	1	10000		930000
11	Rewalsar	Special repair of Fgd. Hut, Rewalsar and fixing of 2 Solar Lights.	100000	C/o Path from Roadside to Fgd. Hut 50 Mtr.	20000	1	10000		130000
12	Tarapur	New construction of Fgd. Hut at Tarapur. (ii) New construction of Gang Hut at Tikkar-Kalan	1200000	C/o Forest Road from Chohla to Tarapur-5KM (ii) C/o Bridle Path from Tikkar Kalan to Mansamata Temple 3 KM.	200000	1	10000		1410000
13	Kangni	(i) New construction of B.O. Or. At Mandi (Paddal) (ii) Special repair of Fgd. Hut, Kangni, (iii) C/o Boundary Wall, Retaining Wall with Fgd.Hut (iv) C/o Parking with Fgd. Hut adjoining Petrol Pump. (v) Solar lights 3 Nos	1800000	(i) Repair of Bridle Path from Roadside to Fgt. Hut-30 Mtrs. (ii) Repair of Existig road from Dudhar Mandi Roaside to Kangni Mata Temple 1.5 KM.	200000	1	10000		2010000

Beat Wise Requirements of Mandi Range of Mandi Forest Division under Infrastructure Development and Forest Protection									
Sl. No.	Beat	New Construction/ Repair of Fgd. Huts, B.O. Qtrs. Etc.	Cost (Rs.)	Construction of Approach Road/Bridle Paths etc.	Cost. (Rs.)	Patrolling Kits	Cost	Vehicle 4X4 Double Cab as per cost norm	Total Cost
14	Sakroha	New constructio of Fg. Hut at Gagaj, Solar Light.		C/o Path from Roadside to Fgd. Hut-50 Mtr.	10000	1	10000		20000
15	Nelha	Construction of Fgd. Hut Nelha alongwith construction of Boundary Wall and Retaining Wall to Fgd. Hut, Solar Light.	900000	(i) Repair of Bridle Path from roadside to Fgd. Hut- 100 Mtr. (ii) Repair of B. Path from 5 Mile to Trahna Villag 1.5 KM. (iii) C/o Retaining wall in Jaladi Naldi DPF.	150000	1	10000		1060000
16	Chabwan	(i) Repair of Fgd. Hut and construction of Boundary wall,Retaining Wall. (ii) Repair of Frh. Dhuma Devi. (iii) Repair of out House at Dhumma Devi and (iv) Provision of 4 Solar Lights.	200000	(i) Repair of Bridle Pth from Tikri Roadside to Fgd. Huit-250 Mtr. (ii) C/o Breast Wall at FRH, Dhumma Devi.	100000	1	10000		310000
17	Padhar	(i) New Construction of B.O. Qr. At Majhewar. (ii) Repair of Fgd. Hut and construction of Retaining Wall. (iii) Repair of FRH, Majhewar.	1400000	(i) Construction of Boundary Wall of FRH Majhewar. (ii) Construction of Boundary wall of FRH Majhewar. Provision of 4 Solar Lights to FRH, Fgd. Hut and B.O.Qr.	150000	5	50000		1600000
18								2394967	
	Sub Total for all Beats		13450000		1450000	21	210000	2394967	17504967
19	Wild Life Rescue & Research Centre	Fencing for Rewalsar DPF & zoo 44 Ha at Rs.26600/Ha							1170400
		Construction of Admin & Research Block of 200 Sq. Mtrs@Rs. 15000/Sq. Mtr							3000000
		Construction of quartes for Director 100 Sq. Mtrs							1500000
		Construction of quartes for Chief veterinary surgeon 100Sq. Mtrs							1500000
		Construction of quartes for Senior WL Research Fellow 80 M2							1200000
		Construction of quartes for Veternary surgeon							1200000
		Construction of quartes for Veternary & Ministerial staff. 50 Sq. Mtrs each x 4							3000000
		Construction of Hostel for PG research students. 50 Sq. MrtsX4 i.e.200@Rs.15000							3000000
		Sub Total for WL R&RC							15570400
		Grand Total							33075367

YEAR WISE SUMMARY OF PROJECTIONS FOR DRUNG RNAGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	15	20	20	8	0	0	0	0	0	63
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	921750	1229000	1229000	491600	0	0	0	0	0	3871350
1st Year Maintenance											
Physical (Ha.)	0	0	15	20	20	8	0	0	0	0	63
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	84750	113000	113000	45200	0	0	0	0	355950
2nd Year Maintenance											
Physical (Ha.)	0	0	0	15	20	20	8	0	0	0	63
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	57000	76000	76000	30400	0	0	0	239400
3rd Year Maintenance											
Physical (Ha.)	0	0		0	15	20	20	8	0	0	63
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	29250	39000	39000	15600	0	0	122850
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	15	20	20	8	0	63
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	29250	39000	39000	15600	0	122850
5th Year Maintenance											
Physical (Ha.)						0	15	20	20	8	63
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	29250	39000	39000	15600	122850
Total New Plantation	0	921750	1313750	1399000	709850	189450	137650	93600	54600	15600	4835250
Enrichment Plantation											
Physical (Ha.)	0	5	0	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	276000	0	0	0	0	0	0	0	0	276000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
1st Year Maintenance											
Physical (Ha.)	0	0	5	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	28250	0	0	0	0	0	0	0	28250
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	19000	0	0	0	0	0	0	19000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	0	0	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	9750	0	0	0	0	0	9750
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	5	0	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	9750	0	0	0	0	9750
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	5	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	9750	0	0	0	9750
Total Enrichment Plantation	0	276000	28250	19000	9750	9750	9750	0	0	0	352500
Natural Regeneration											
Physical (Ha.)	0	15	20	10	10	0	0	0	0	0	55
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	497250	663000	331500	331500	0	0	0	0	0	1823250
1st Year Maintenance											
Physical (Ha.)		0	15	20	10	10	0	0	0	0	55
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	20250	27000	13500	13500	0	0	0	0	74250
2nd Year Maintenance											
Physical (Ha.)			0	15	20	10	10	0	0	0	55

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	14250	19000	9500	9500	0	0	0	52250
3rd Year Maintenance											
Physical (Ha.)				0	15	20	10	10	0		55
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	8250	11000	5500	5500	0	0	30250
4th Year Maintenance											
Physical (Ha.)					0	15	20	10	10	0	55
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	8250	11000	5500	5500	0	30250
5th Year Maintenance											
Physical (Ha.)						0	15	20	10	10	55
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	8250	11000	5500	5500	30250
Total Natural Regeneration	0	497250	683250	372750	372250	42250	34250	22000	11000	5500	2040500
Energy Planation											
Physical (Ha.)	0	10	20	11	10	0	0	0	0	0	51
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	561500	1123000	617650	561500	0	0	0	0	0	2863650
Total Energy Planatation	0	561500	1123000	617650	561500	0	0	0	0	0	2863650
Pasture Development											
Physical (Ha.)	0	10	20	19	0	0	0	0	0	0	49
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	166000	332000	315400	0	0	0	0	0	0	813400
1st Year Maintenance											
Physical (Ha.)	0	0	10	20	19	0	0				49
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	21000	42000	39900	0	0	0	0	0	102900
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	20	19	0	0	0	0	49
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	17700	35400	33630	0	0	0	0	86730

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	20	19	0	0	0	49
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	11800	23600	22420	0	0	0	57820
Total Pasture Development	0	166000	353000	375100	87100	57230	22420	0	0	0	1060850
Eradication of Noxious weeds											
Physical (Ha.)	40	20	20	30	0	0	0	0	0	0	110
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	602000	301000	301000	451500	0	0	0	0	0	0	1655500
Total Eradication of Noxious weeds	602000	301000	301000	451500	0	0	0	0	0	0	1655500
Total Plantation	602000	2723500	3802250	3235000	1740450	298680	204070	115600	65600	21100	12808250
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	53	54	53	54	0	0	0	0	0	0	214
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	530000	540000	530000	540000	0	0	0	0	0	0	2140000
Big Size (2mx2.5m)											
Physical (Nos.)	20	21	21	21	0	0	0	0	0	0	83
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	344600	361830	361830	361830	0	0	0	0	0	0	1430090
Total Gabion Checkdams	874600	901830	891830	901830	0	0	0	0	0	0	3570090
Gabion Retaining walls											
Small Size											
Physical (Nos.)	10	11	11	10	0	0	0	0	0	0	42
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	100000	110000	110000	100000	0	0	0	0	0	0	420000
Big Size											
Physical (Nos.)	9	9	9	9	0	0	0	0	0	0	36
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	155070	155070	155070	155070	0	0	0	0	0	0	620280
Total Gabion Retaining walls	255070	265070	265070	255070	0	0	0	0	0	0	1040280

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Water Harvesting Structures											
Physical (Nos.)	3	4	3	3	0	0	0	0	0	0	13
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	186450	248600	186450	186450	0	0	0	0	0	0	807950
Total Water Harvesting Structures	186450	248600	186450	186450	0	0	0	0	0	0	807950
Water Holes for wild life											
Physical (Nos.)	2	2	2	0	0	0	0	0	0	0	6
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	1713840	1713840	1713840	0	0	0	0	0	0	0	5141520
Total Water Holes for wild life	1713840	1713840	1713840	0	0	0	0	0	0	0	5141520
Gulli Plugging/Dry stone checkdams											
Total Soil & Moisture Conservation	3029960	3129340	3057190	1343350	0	0	0	0	0	0	10559840
Payment For Environment Services											
Power saving implements/Solar Lights	300000	300000	300000	0	0	0	0	0	0	0	900000
Physical (Nos.)	10	10	10	0							30
Norm/Ha. (Rs.)	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	
Financial (Rs.)	300000	300000	300000	0	0	0	0	0	0	0	900000
Community Storage Tanks	600000	600000	300000	0	0	0	0	0	0	0	1500000
Physical (Nos.)	2	2	1	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	600000	600000	300000	0	0	0	0	0	0	0	1500000
Village Pond	175000	175000	315000	0	0	0	0	0	0	0	665000
Physical (Nos.)	5	5	9	0	0	0	0	0	0	0	19
Norm/Ha. (Rs.)	35000	35000	35000	35000	35000	35000	35000	35000	35000	35000	
Financial (Rs.)	175000	175000	315000	0	0	0	0	0	0	0	665000
Crematorium	600000	600000	900000	0	0	0	0	0	0	0	2100000
Physical (Nos.)	2	2	3	0	0	0	0	0	0	0	7
Norm/Ha. (Rs.)	300000	300000	300000	300000	300000	300000	300000	300000	300000	300000	
Financial (Rs.)	600000	600000	900000	0	0	0	0	0	0	0	2100000
Reward Money	0	0	0	249865	0	0	0	0	0	0	249865
Total PES	1675000	1675000	1815000	249865	0	0	0	0	0	0	5414865

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Research Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	168850	176525	0	0	0	0	0	0	0	0	345375
Exposure visits for Forest Staff	0	0	200000	200000	200000	210000	0	0	0	0	810000
Capacity building for Nursery	750000	0	0	0	0	0	0	0	0	0	750000
Training in handling Wild Life	0	100000	0	0	125000	0	0	0	0	0	225000
Training in Modern Nursery	200000	500000	300000	0	0	0	0	0	0	0	1000000
Total TR & C	1118850	776525	500000	200000	325000	210000	0	0	0	0	3130375
Infrastructure & Forest Protection											
Construction of New Infrastructure like Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	1000000	1000000	1200000	1000000	830000	0	0	0	0	0	5030000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	200000	200000	110000	0	0	0	0	0	0	0	510000
Patrolling Kits	50000	60000	0	0	0	0	0	0	0	0	110000
Demarcation of forests & Cos. Of Boundry pillars	1951242	1951242	1951242	1951241	0	0	0	0	0	0	7804967
Vehicles & POL	399161	399161	399161	399161	399161	399162	0	0	0	0	2394967
Total Infrastructure & Forest Protection	3600403	3610403	3660403	3350402	1229161	399162	0	0	0	0	15849934
Wild life Habitat Management											
Veterinary Kit at Range & Beat Level	72000	72000	72000	72000	72000	0	0	0	0	0	360000
Trapping Cameras & Camera	60000	0	0	0	0	0	0	0	0	0	60000
GPS	184800	184800	0	0	0	0	0	0	0	0	369600
Total Wild life Habitat Management	316800	256800	72000	72000	72000	0	0	0	0	0	789600
Monitoring & Evaluation	0	0	0	0	0	2564301	0	0	0	0	2564301
Contingencies	479359	479359	479359	479359	479359	479359	479359	479359	541055	479359	4855286
Grand Total	10822372	12650927	13386202	8929976	3845970	3951502	683429	594959	606655	500459	55972451

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN-DRUNG RANGE

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy	Fin.
1.	AFFORESTATION				
1	New Plantation	Ha.	76750	63	48,35,250
2	Enrichment	Ha.	70500	5	3,52,500
3	Natural Regeneration	Ha.	37100	55	20,40,500
4	NTFP	Ha.	137825	-	-
5	Energy Plantation	Ha.	56150	51	28,63,650
6	Pasture Development	Ha.	21650	49	10,60,850
7	Eradication of Noxious weeds	Ha.	15050	110	16,55,500
	Total			333	1,28,08,250
	AFORESTATION	Total:			1,28,08,250
2.	SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	297	35,70,090
2	Gabion Retainingwalls	Nos.	10000/17230	78	10,40,280
3	Gabion Checkwalls	Nos.	10000/17230		
4	Gabion Spurs	Nos.	48540		
5	Water Harvesting Structures	Nos.	62150	13	8,07,950
6	Water Holes for Wild Life	Nos.	856920	6	51,41,520
7	Gulli Plugging/ Dry stone Checkdams	Nos.	4710		
8	Brushwood Checkdams	Nos.	78		
9	Trenching	Nos.	15.3		
10	Bio Engineering	Ha.	111700		
	SOIL & MOISTURE CONSERVATION	Total:	0	-	1,05,59,840
3.	PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	30	9,00,000
2	Community Storage Tanks	Nos.	300000	5	15,00,000
3	Village Ponds	Nos.	35000	19	6,65,000
4	Crematorium	Nos.	300000	7	21,00,000
5	Village Reward	Lump Sum			2,49,865
6	Community Power tiller		1100000		
		Total:		-	54,14,865
4.	RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	4.5	3,45,375
2	Nursery	Nos.	1220000/ 770000/ 550000/	-	7,50,000
3	Eradication of Lantana and other Invasive species	Ha.	8000		
4	Exposure visits for Forest Staff	Lump sum	12000000		8,10,000
5	Handling of Wild Life	Lump sum			2,25,000
6	Nursery Modernisation	Lump sum			10,00,000
		Total:			31,30,375
5 & 6.	INFRASTRUCTURE AND FOREST PROTECTION				

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy	Fin.
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff			50,30,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	Lump Sum			5,10,000
3	Patrolling Kits	Nos.	10000	11	110000
4	Demarcation of forests & Cons.of boundry pillers				78,04,967
8	Vehicles & POL	Cost Norm			23,94,967
		Total:			1,58,49,934
7.	WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	12	3,60,000
2	Veterinary	Nos.	5000	12	60,000
3	Trapping Cameras	Nos.	30800	12	3,69,600
4	GPS		30000	-	-
5	Tranquilizer Gun	Nos.	250000	1	-
		Total:	0	-	7,89,600
	Total CAT Plan		0	-	4,85,52,864
	8.MONITORING & EVALUATION	5%		-	25,64,301
	9. Contingencies	10%		-	48,55,286
	Total CAT Plan for Financial Projections			-	5,59,72,452

**BEAT WISE REQUIREMENTS OF DRUNG RANGE OF MANDI FOREST DIVISION UNDER
AFFORESTATION COMPONENT.**

Component	Beat Name	Area Name	Area in ha.	Unit cost per ha. (Rs.)	Total Cost (Rs.)	Species to be planted
AFFORESTATION						
a. New Plantation						
	Tandu		5	76750	383750	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Silag		8	76750	614000	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Kufri		5	76750	383750	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Sharda	Sharda DPF (10 ha, Dundha DPF 5 ha and Gwahan UPF 5 Ha	20	76750	1535000	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Kunnu	Sari	5	76750	383750	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Paddar	Kalaun DPF	10	76750	767500	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Sraun		10	76750	767500	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Total:		63		4835250	
	Tremli		5	70500	352500	Ban, Chir,Kafal, Sheesham, Shimbal, Tun,Sambha, Seghal
	Total:		5		352500	
c.Natural Regeneration/ Closures						
	Sharda		10	37100	371000	
	Kunnu		5	37100	185500	
	Paddar		10	37100	371000	
	Drung	Segal Dugh DPF	10	37100	371000	
	Tremli	Bassa Dhar DPF	10	37100	371000	
	Sraun	Badi Singhari DPF	10	37100	371000	
	Total:		55		2040500	

Component	Beat Name	Area Name	Area in ha.	Unit cost per ha. (Rs.)	Total Cost (Rs.)	Species to be planted
Energy Plantation						
	Tandu		10	56150	561500	
	Silag		5	56150	280750	
	Kufri		5	56150	280750	
	Sharda		5	56150	280750	
	Kunnu		4	56150	224600	
	Paddar		5	56150	280750	
	Drung		10	56150	561500	
	Tremli		5	56150	280750	
	Sraun		2	56150	112300	
	Total:		51		2863650	
Pasture Development						
	Tandu		8	21650	173200	
	Silag		5	21650	108250	
	Kufri		5	21650	108250	
	Sharda		5	21650	108250	
	Kunnu		4	21650	86600	
	Paddar		5	21650	108250	
	Drung		10	21650	216500	
	Tremli		5	21650	108250	
	Sraun		2	21650	43300	
	Total:		49		1060850	
Eradication of Noxious weeds						
	Tandu	Bharadi Nala	10	15050	150500	
		Gallu Dhar	10	15050	150500	
	Silag	Khuddi Nal DPF	5	15050	75250	
		Bada Gaon	5	15050	75250	
	Sharda		25	15050	376250	
	Kunnu	Chhoti Singhari DPF	20	15050	301000	
	Paddar	Pateun DPF	20	15050	301000	
	Drung	Nagrota Forest	5	15050	75250	
		Maseran DPF	10	15050	150500	
		Total	110		1655500	

BEAT WISE Requirements of Drung Range of Mandi Forest Division under SMC Measures.

Beat	Name of Nala/Forest	Activity	Size:	Unit	Unit Cost	Qty.	Cost (Rs.)
SMC Measures							
Tandu	Bharadi Nala 2.5 KM	Gabion Checkdams	1.5m x1.5m	No.	10000	11	110000
		Gabion Checkdams	2m x 2.5m	No.	17230	4	68920
	Mehad Nala 2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	10	100000
		Gabion Checkdams	2m x 2.5m	No.	17230	5	86150
	Hiun Nal 2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	11	110000
		Gabion Checkdams	2m x 2.5m	No.	17230	4	68920
				Total:		45	543990
Silag	Dohal Nala 2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	16	160000
		Gabion Checkdams	2m x 2.5m	No.	17230	4	68920
	Pahli Nala- 1.5 KM	Gabion Checkdams	1.5m x1.5m	No.	10000	8	80000
		Gabion Checkdams	2m x 2.5m	No.	17230	4	68920
				Total:		32	377840
Kufri	Shilli Khad-3KM	Gabion Checkdams	1.5m x1.5m	No.	10000	10	100000
		Gabion Checkdams	2m x 2.5m	No.	17230	5	86150
				Total:		15	186150
Sharda	Kharnali Nala 1KM	Gabion Checkdams	1.5m x1.5m	No.	10000	7	70000
		Gabion Checkdams	2m x 2.5m	No.	17230	3	51690
	Heund Nala 1KM	Gabion Checkdams	1.5m x1.5m	No.	10000	8	80000
		Gabion Checkdams	2m x 2.5m	No.	17230	2	34460
	Chauotra Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	11	110000
		Gabion Checkdams	2m x 2.5m	No.	17230	4	68920
				Total:		35	415070
Kunnu	Kunnu Nalla 1.5 KM	Gabion Checkdams	1.5m x1.5m	No.	10000	7	70000
		Gabion Checkdams	2m x 2.5m	No.	17230	3	51690
	Chehar Nala 1 KM	Gabion Checkdams	1.5m x1.5m	No.	10000	7	70000
		Gabion Checkdams	2m x 2.5m	No.	17230	3	51690
				Total:		20	243380
Paddar	Narla Snerh Nala 1KM	Gabion Checkdams		No.	10000	10	100000
	Sakrog Nala	Gabion Checkdams		No.	10000	10	100000
				Total:		20	200000
Drung	Nagrota Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	15	150000
		Gabion Checkdams	2m x 2.5m	No.	17230	5	86150
	Manha Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	14	140000
		Gabion Checkdams	2m x 2.5m	No.	17230	6	103380
				Total:		40	479530
Trehmli	Baahi Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	13	130000
		Gabion Checkdams	2m x 2.5m	No.	17230	7	120610
	Sambal Nala 1.5 KM	Gabion Checkdams	1.5m x1.5m	No.	10000	9	90000
		Gabion Checkdams	2m x 2.5m	No.	17230	6	103380
	Sangli Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	10	100000
		Gabion Checkdams	2m x 2.5m	No.	17230	5	86150
	Hullu Nala-3KM	Gabion Checkdams	1.5m x1.5m	No.	10000	17	170000
		Gabion Checkdams	2m x 2.5m	No.	17230	8	137840
				Total:		75	937980
Sraun	Riggarh Nala-2KM	Gabion Checkdams	1.5m x1.5m	No.	10000	10	100000
		Gabion Checkdams	2m x 2.5m	No.	17230	5	86150
				Total:		15	186150

Beat	Name of Nala/Forest	Activity	Size:	Unit	Unit Cost	Qty.	Cost (Rs.)
			G.Total:			297	3570090
Tandu	Bharadi Nala	Gabion Retaining walls		No.	10000	3	30000
		Gabion Retaining walls		No.	10000	3	30000
				Total		6	60000
Silag	Dohal Nala	Gabion Retaining walls		No.	10000	2	20000
	Pahli Nala	Gabion Retaining walls		No.	10000	2	20000
				No.	17230	3	51690
				Total		7	91690
Kufri	Shilli Khad	Gabion Retaining walls		No.	10000	7	70000
		Gabion Retaining walls		No.	17230	3	51690
				Total		10	121690
Sharda	Chauntra Nal	Gabion Retaining walls		No.	10000	4	40000
		Gabion Retaining walls		No.	17230	6	103380
		Gabion Retaining walls		Total		10	143380
Kunnu	Kunnu Nal	Gabion Retaining walls		No.	10000	5	50000
		Gabion Retaining walls		Total		5	50000
Drung	NagrotaNal	Gabion Retaining walls		No.	10000	5	50000
	Mahna Nal	Gabion Retaining walls		No.	17230	5	86150
		Gabion Retaining walls		Total		10	136150
Trehmli	Baahi Nal	Gabion Retaining walls		No.	10000	3	30000
		Gabion Retaining walls		No.	17230	2	34460
	Sambal Nal	Gabion Retaining walls		No.	10000	3	30000
		Gabion Retaining walls		No.	17230	2	34460
	Sangli Nala	Gabion Retaining walls		No.	10000	5	50000
	Hullu Nala	Gabion Retaining walls		No.	17230	5	86150
		Gabion Retaining walls		No.	17230	5	86150
				Total		25	351220
Sraun	Riggarh Nala	Gabion Retaining walls/ Toe walls		No.	17230	5	86150
				Total		5	86150
			Grand Total:			78	1040280
c. Water Harvesting Structures							
Tandu	Bharadi Nala	Water Harvesting Structures		No.	62150	1	62150
	Mehad Nala	Water Harvesting Structures		No.	62150	1	62150
	Hiund Nala	Water Harvesting Structures		No.	62150	1	62150
Silag	Dohal Nala	Water Harvesting Structures		No.	62150	1	62150
	Pahli Nala	Water Harvesting Structures		No.	62150	1	62150
Kufri	Chaura Nal	Water Harvesting Structures		No.	62150	1	62150
	Shilli Khad	Water Harvesting Structures		No.	62150	1	62150
Sharda	Sharda DPF	Water Harvesting Structures		No.	62150	1	62150

Beat	Name of Nala/Forest	Activity	Size:	Unit	Unit Cost	Qty.	Cost (Rs.)
	Bhatwan DPF	Water Harvesting Structures		No.	62150	1	62150
Drung	Mahna Nala	Water Harvesting Structures		No.	62150	1	62150
Trehmli	Jhajhru Kufru Nala	Water Harvesting Structures		No.	62150	1	62150
Sraun	Rigger Nala	Water Harvesting Structures		No.	62150	1	62150
	Lhaloo Nala	Water Harvesting Structures		No.	62150	1	62150
	Total					13	807950
	Water Holes						
Silag		Water Holes		No.	856920	1	856920
Kufri		Water Holes		No.	856920	1	856920
Kunnu		Water Holes		No.	856920	1	856920
Paddar		Water Holes		No.	856920	1	856920
Drung		Water Holes		No.	856920	1	856920
Tremli		Water Holes		No.	856920	1	856920
	Total:					6	5141520
	Grand Total					394	10559840

BEAT WISE Requirement of Drung Range of Mandi Forest Division under PES Component.																		
Sr. No.	Beat	Community Storage Tanks				Village Ponds				Crematorium				Solar Lights			Village reward	Grand total
		Location	Qty.	Unit Cost	Cost	Area	Qty.	Unit Cost	Cost	Area	Qty	Unit cost	Cost	Qty	Unit Cost	Cost	Cost	Cost
1	Tandu			0	0		4	35000	140000	0	1	300000	300000	4	30000	120000		560000
2	Silag	..	0	0	0	Pahli DPF	1	35000	35000	..	0	300000	0	1	30000	30000		65000
		..				Silag DPF	1	35000	35000	..	0	300000	0	1	30000	30000		65000
3	Kufri	..	0	0	0	Kufri	4	35000	140000	..	0	300000	0	4	30000	120000		260000
4	Sharda	..	0	0	0		0	35000	0	..	0	300000	0	2	30000	60000		60000
5	Kunnu	..	0	0	0		0	35000	0	Kandrayala nala	1	300000	300000	2	30000	60000		360000
		..					0	35000	0	Kateur	1	300000	300000	1	30000	30000		330000
6	Paddar	Narla Nala	1	300000			0	35000	0	Narla Nala	1	300000	300000	1	30000	30000		630000
			0	0	0		0	35000	0	..	0	300000	0	1	30000	30000		30000
7	Drung	..	0	0	0	Drung	4	35000	140000	..	0	300000	0	4	30000	120000		260000
8	Trehmli	Hiun Nala	1	300000	0	Trehmli	3	35000	105000	Bahi Nala (Silli Bihal)	1	300000	300000	3	30000	90000		795000
							0	35000	0	Hiun Nala	1	300000	300000	1	30000	30000		330000
9	Sraun	Padhru-Badidhar Panchayat	1	300000		Badi Singhari DPF	1	35000	35000	Lahloo Nala	1	300000	300000	1	30000	30000		665000
		Kasaun Village	1	300000		Kasaun Village	1	35000	35000	..	0	300000	0	2	30000	60000		395000
		Lhaloo Nala	1	300000		..	0	35000	0	..	0	300000	0	2	30000	60000	249865	609865
		Total:	5	1500000			19		665000		7		2100000	30		900000	249865	5414865

BEAT WISE Requirement of Drung Range of Mandi Forest Division under Research, Training and Capacity Building							
Sl. No.	Beat	Bamboo demonstration plot			Exposure Visit	Training in handling Wild animals	Nursery Modernisation Training
		Area (ha).	Unit Cost	Total	Cost		
1	Tandu	0.5	76750	38375	90000	25000	
2	Silag	0.5	76750	38375	90000	25000	
3	Kufri	0.5	76750	38375	90000	25000	
4	Sharda	0.5	76750	38375	90000	25000	
5	Kunnu	0.5	76750	38375	90000	25000	
6	Paddar	0.5	76750	38375	90000	25000	
7	Drung	0.5	76750	38375	90000	25000	
8	Trehmli	0.5	76750	38375	90000	25000	
9	Sraun	0.5	76750	38375	90000	25000	
	Total	4.5		345375	810000	225000	1000000

BEAT WISE Requirements of Drung Range of Mandi Forest Division under Infrastructure Development and Forest Protection

Sr. No.	Beat	New Construction/ Repair of Existing Buildings etc.	Cost	Construction of Bridle Paths/ Forest Roads	Length	Cost	Other activities	Cost	Total Cost
1	Tandu	Repair of Fgd. Hut, Tandu	100000	C/o Bridle Path from Tandu to Fgd. Hut-	300 Mtr.	30000	Demarcation of Forest and construction of Boundary Pillars	0	130000
2	Silag	Repair of Fgd. Hut, Silag, construction of Retaining wall, Construction of Boundary Wall	200000	..	..	0	0	0	200000
3	Kufri	Repair of Fgd. Hut, Kufri including construction of retaining wall.	100000	C/o Bridle Path from Kufri to Sr. School, Kufri	300 Mtrs.	30000	0	0	130000
4	Sharda	Repair of Fgd. Hut, Sharda, along with construction of retaining wall to Fgd. Hut and B.O.Qrts. , c/o Boundaryt wall to B.O. Qr. And Fgd. Hut.	200000	Metalling of approach road to FRH Padwahan.	300 Mtrs.	30000	0	0	230000
5	Kunnu	Construction of Fgd. Hut, Kunnu, Repair of FRH Dayna Park.	1000000	Construction of Bridle Path from Chhoti Singhari to Linda Bagla	2	80000	Construction of Sarai at Kunnu Nall and Narla Nalla Crematoriums	300000	1380000
				Construction of Bridle Path from Chhoti Singhari to Kunnu Nala Crematorium	3	90000	0	0	90000
				Constrrruction of Bridle Path from Kunnu to Kunnu Nala Crematorium	2	80000	0	0	80000

Sr. No.	Beat	New Construction/ Repair of Existing Buildings etc.	Cost	Construction of Bridle Paths/ Forest Roads	Length	Cost	Other activities	Cost	Total Cost
6	Paddar	Repair of Fgd. Hut, Poaddar, Repair of B.O. Qr. Oaddar including construction of retaining swall and boundary wall.	100000	Construction of Bridle path from Sarahan to Kalaun	1	40000	Construction of Boundlary Pillars required in Bahi DPF, Pateun DPF.	0	140000
7	Drung	Construction of new Fgd. Hut,	900000	Metalling of approach road fro Main Road to R.O.Officde.	1	40000	Construction of watch Tower in Drung, Berat-Sehgal Dugh.	3300000	4240000
		Repair of B.O. Qr.	50000						50000
		Repair of Out House	50000		0	0	Provisions for Patrolling Kits 11 Nos. for R.O., B.Os. And all Fgds.	110000	160000
		Repair of FRH, Drung	50000		0	0	0		50000
		Construction of Conference Hall at RO Drung	900000		0	0	Provision for Mobility support alongwith Running & Maintenanc and Replacement.	2394967	3294967
		Repair of R.O. Office Drung	200000		0	0			200000
		Construction of Range Store at Drung	300000		0	0			300000
		Repair of R.O. Residence	100000		0	0	Provisions for Manpower support for Watch & Ward and data entry.	400000	500000
		Retaining wall in R.O. Office	30000		0				30000
		Boundary/ Retainingwall to R.O. Office and B.O. Qr.	50000		0	0	Provisions for Lap Top, Printer and OHP Projector.	100000	150000

Sr. No.	Beat	New Construction/ Repair of Existing Buildings etc.	Cost	Construction of Bridle Paths/ Forest Roads	Length	Cost	Other activities	Cost	Total Cost
8	Trehmli	Repair of Fgd. Hut.	100000	C/o Bridle Path from Road side to Bassadhar Fgd. Hut.	150 Mtr.	20000	Construction of Boundary Pillars in Jhajharu Kufru DPF-10 No., Bassadhar DPF-45 Nos, Barnala DPF-80 Nos. And Check Pillars 21 Nos. (Total 156 Pillars).	100000	220000
		Repair of FRH Bassadhar	50000	C/o Retaining wall to Fgd. Hut.		20000	Construction of Watch Tower at Bassadhar.	1100000	1170000
		C/o Retaining Wall to FRH Bassdadhar.	50000	C/o Bridle Path from Bassadhar to Silli Bihal	2 KM	30000	0	0	80000
9	Sraun	Construction of Community Hall in Kumharda Village in Badi dhar Panchayat.	500000	Construction of Bridle Path from Road to Village Padhru	1 Km.	20000	0	0	520000
			5030000			510000		7804967	13344967

BEAT WISE Requirement of Drung Range of Mandi Forest Division under Wild Life Management.

Sr. No.	Beat	Trapping Cameras	Cost	Binoculars	Cost	Vety. Aid Kit	Cost	Total Cost
1	Tandu	1	30800	1	30000	1	5000	65800
2	Silag	1	30800	1	30000	1	5000	65800
3	Kufri	1	30800	1	30000	1	5000	65800
4	Sharda	1	30800	1	30000	1	5000	65800
5	Kunnu	1	30800	1	30000	1	5000	65800
6	Paddar	1	30800	1	30000	1	5000	65800
7	Drung	1	30800	1	30000	1	5000	65800
8	Tremli	1	30800	1	30000	1	5000	65800
9	Sraun	1	30800	1	30000	1	5000	65800
10	Range Office, Drung 1 R.O. +2 B.Os.	3	92400	3	90000	3	15000	197400
	Total:	12	369600	12	360000	12	60000	789600

YEAR WISE SUMMARY OF PROJECTIONS FOR KOTLI RNAGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
Enrichment Plantation											
Physical (Ha.)	0	10	10	18	0	0	0	0	0	0	38
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	552000	552000	993600	0	0	0	0	0	0	2097600
1st Year Maintenance											
Physical (Ha.)	0	0	10	10	18	0	0	0	0	0	38
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	56500	56500	101700	0	0	0	0	0	214700
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	10	18	0	0	0	0	38
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	38000	38000	68400	0	0	0	0	144400
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	10	18	0	0	0	38
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	19500	19500	35100	0	0	0	74100
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	10	10	18	0	0	38
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	19500	19500	35100	0	0	74100
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	10	10	18	0	38
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	19500	19500	35100	0	74100
Total Enrichment Plantation	0	552000	608500	1088100	159200	107400	74100	54600	35100	0	2679000
Natural Regeneration											
Physical (Ha.)	0	28	20	20	20						88
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	928200	663000	663000	663000	0	0	0	0	0	2917200
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)		0	28	20	20	20					88
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	37800	27000	27000	27000	0	0	0	0	118800
2nd Year Maintenance											
Physical (Ha.)			0	28	20	20	20				88
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	26600	19000	19000	19000	0	0	0	83600
3rd Year Maintenance											
Physical (Ha.)				0	28	20	20	20			88
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	15400	11000	11000	11000	0	0	48400
4th Year Maintenance											
Physical (Ha.)					0	28	20	20	20		88
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	15400	11000	11000	11000	0	48400
5th Year Maintenance											
Physical (Ha.)						0	28	20	20	20	88
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	15400	11000	11000	11000	48400
Total Natural Regeneration	0	928200	700800	716600	724400	72400	56400	33000	22000	11000	3264800
NTPP											
Physical (Ha.)	0	5	5	0	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	642750	642750	0	0	0	0	0	0	0	1285500
1st Year Maintenance											
Physical (Ha.)	0	0	5	5	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	19350	19350	0	0	0	0	0	0	38700
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	5	0	0	0	0	0	10
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	15440	15440	0	0	0	0	0	30880

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	5	0	0	0	0	10
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	11585	11585	0	0	0	0	23170
Total NTFP	0	642750	662100	34790	27025	11585	0	0	0	0	1378250
Total Plantation	0	2122950	1971400	1839490	910625	191385	130500	87600	57100	11000	7322050
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	26	26	28	26	0	0	0	0	0	0	106
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	260000	260000	280000	260000	0	0	0	0	0	0	1060000
Big Size (2mx2.5m)											
Physical (Nos.)	12	12	12	12	0	0	0	0	0	0	48
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	206760	206760	206760	206760	0	0	0	0	0	0	827040
Total Gabion Checkdams	466760	466760	486760	466760	0	0	0	0	0	0	1887040
Gabion Retaining walls											
Small Size											
Physical (Nos.)	5	5	3	2	0	0	0	0	0	0	15
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	50000	50000	30000	20000	0	0	0	0	0	0	150000
Big Size											
Physical (Nos.)	0	2	2	0	0	0	0	0	0	0	4
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	0	34460	34460	0	0	0	0	0	0	0	68920
Total Gabion Retaining walls	50000	84460	64460	20000	0	0	0	0	0	0	218920
Gabion Spurs											
Small Size											
Physical (Nos.)	6	6	6	6	0	0	0	0	0	0	24
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	291240	291240	291240	291240	0	0	0	0	0	0	1164960

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total Gabion Spurs	291240	291240	291240	291240	0	0	0	0	0	0	1164960
Water Harvesting Structures											
Physical (Nos.)	2	2	1	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	124300	124300	62150	0	0	0	0	0	0	0	310750
Total Water Harvesting Structures	124300	124300	62150	0	0	0	0	0	0	0	310750
Water Holes for wild life											
Financial (Rs.)	856920	856920	856920	856920	0	0	0	0	0	0	3427680
Total Water Holes for wild life	856920	856920	856920	856920	0	0	0	0	0	0	3427680
Brushwood Checkdams											
Small Size											
Physical (Nos.)	71	72	72	70	0	0	0	0	0	0	285
Norm/Ha. (Rs.)	78	78	78	78	78	78	78	78	78	78	
Financial (Rs.)	5538	5616	5616	5460	0	0	0	0	0	0	22230
Total Brushwood Checkdams	5538	5616	5616	5460	0	0	0	0	0	0	22230
Trenching											
Small Size											
Physical (Nos.)	437	438	438	437	0	0	0	0	0	0	1750
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	6686	6701	6701	6686	0	0	0	0	0	0	26774
Total Trenching	6686	6701	6701	6686	0	0	0	0	0	0	26774
Bio Engineering											
Physical (Nos.)	3	4									7
Norm/Ha. (Rs.)	111700	111700	111700	111700	111700	111700	111700	111700	111700	111700	
Financial (Rs.)	335100	446800	0	0	0	0	0	0	0	0	781900
Total Bio Engineering	335100	446800	0	0	0	0	0	0	0	0	781900
Total Soil & Moisture Conservation	2136544	2282797	1773847	1647066	0	0	0	0	0	0	7840254
Payment For Environment Services											
Power saving implements/Solar Lights	150000	150000	120000	150000	150000	0	0	0	0	0	720000
Community Storage Tanks	900000	1200000	0	0	0	0	0	0	0	0	2100000
Village Pond	70000	70000	105000	0	0	0	0	0	0	0	245000
Reward Money	0	100000	150000	0	0	0	0	0	0	0	250000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Community Power tiller	0	0	1100000	1100000	0	0	0	0	0	0	2200000
Total PES	1120000	1520000	1475000	1250000	150000	0	0	0	0	0	5515000
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	268625	0	0	0	0	0	0	0	0	0	268625
Exposure visits for Forest Staff	0	300000	200000	200000	200000	0	150000	210000	0	0	1260000
Capacity building for Nursery	500000	800000	1000000	490000	0	0	0	0	0	0	2790000
Training in handling Wild Life	0	0	150000	0	200000	0	0	0	0	0	350000
Total TR & C	768625	1100000	1350000	690000	400000	0	150000	210000	0	0	4668625
Infrastructure & Forest Protection											
Construction of New Infrastructure lje Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	500000	600000	700000	1000000	1200000	1000000	1000000	800000	0	0	6800000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	250000	270000	0	0	0	0	0	0	0	0	520000
Patrolling Kits	50000	60000	0	0	0	0	0	0	0	0	110000
Vehicles & POL	342138	342138	342138	342138	342138	342138	342139	0	0	0	2394967
Total Infrastructure & Forest Protection	1142138	1272138	1042138	1342138	1542138	1342138	1342139	800000	0	0	9824967
Wild life Habitat Management											
Binoculars	0	120000	0	0	0	0	0	0	0	0	120000
Veterinary Kit at Range & Beat Level	0	0	60000	0	0	0	0	0	0	0	60000
Trapping Cameras & Camera	0	123200	0	0	0	0	0	0	0	0	123200
Total Wild life Habitat Management	0	243200	60000	0	0	0	0	0	0	0	303200
Monitoring & Evaluation	0	0	0	0	0	0	1910365	0	0	0	1910365
Contingencies	0	579568	579568	579568	579568	649570	579568	0	0	0	3547410
Grand Total	5167307	9120653	8251953	7348262	3582331	2183093	4112572	1097600	57100	11000	40931871

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN- KOTLI RANGE

Sr. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
	1. AFFORESTATION				
1	New Plantation	Ha.	76750	-	-
2	Enrichment	Ha.	70500	38	26,79,000
3	Natural Regeneration	Ha.	37100	88	32,64,800
4	NTPF	Ha.	137825	10	13,78,250
5	Energy Plantation	Ha.	56150		
6	Pasture Development	Ha.	21650		
7	Eradication of Noxious weeds	Ha.	15050		
	Total			136	73,22,050
	AFORESTATION	Total:			73,22,050
	2. SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	154	18,87,040
2	Gabion Retainingwalls	Nos.	10000/17230	19	2,18,920
3	Gabion Checkwalls	Nos.	10000/17230		
4	Gabion Spurs	Nos.	48540	24	11,64,960
5	Water Harvesting Structures	Nos.	62150	5	3,10,750
6	Construction of Water Holes	Nos.	856920	4	34,27,680
7	Gulli Plugging/ Dry stoneCheckdams	Nos.	4710	-	-
8	Brushwood Checkdams	Nos.	78	285	22,230
9	Trenching	Nos.	15.3	1,750	26,775
10	Bio Engineering	Ha.	111700	7	7,81,900
	SOIL & MOISTURE CONSERVATION	Total:	0	-	78,40,255
	3. PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	24	7,20,000
2	Community Storage Tanks	Nos.	300000	7	21,00,000
3	Village Ponds	Nos.	35000	7	2,45,000
4	Crematorium	Nos.	300000		
5	Village Reward	Lump Sum	25000		2,50,000
6	Community Power tiller		1100000		22,00,000
		Total:		-	55,15,000
	4. RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	3.5	2,68,625
2	Eradication of Lantana and other Invasive species	Ha.	8000	-	-
3	Nursery	Nos.	1220000/ 770000/ 550000/	-	27,90,000
4	Exposure visits for Forest Staff	Lump sum	0		12,60,000
5	Handling of Wild Life	Lump sum			3,50,000
		Total:			46,68,625
	5 & 6. INFRASTRUCTURE AND FOREST PROTECTION				
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff			68,00,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	Lump Sum			5,20,000
3	Patrolling Kits	Nos.	10000	11	1,10,000
4	Demarcation of forests & Cons.of boundry				

Sr. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
	pillers				
8	Vehicles & POL	Cost Norm			23,94,967
		Total:	0	-	98,24,967
	7. WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	4	1,20,000
2	Veterinary	Nos.	5000	12	60,000
3	Trapping Cameras	Nos.	30800	4	1,23,200
4	GPS		30000	-	-
5	Tranquilizer Gun	Nos.	250000		
		Total:	0	-	3,03,200
	Total CAT Plan		0	-	3,54,74,097
	8.MONITORING & EVALUATION	5%		-	19,10,363
	9. Contingencies	10%		-	35,47,410
	Total CAT Planfor Financial Projections			-	4,09,31,870

BEAT WISE REQUIREMENTS OF KOTLI RANGE OF MANDI FOREST DIVISION UNDER CAT PLAN FOR THANA PLAUN HEP						
Out of 10 Beats in Kotli Range, only 7 Beats fall under CAT Plan of Thana Plaun HEP.						
Component/ Sub Component	Beat	Area Name	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)
(b) Enrichment						
	Nagan	Joondhar DPF 299 ha	Ha.	70500	9	634500
		Nagan DPF 51.20 ha	Ha.	70500	5	352500
	Kotli	Shilgadyada	Ha.	70500	5	352500
		Janjheru	Ha.	70500	5	352500
	Sai Gallu	Gandhiru	Ha.	70500	5	352500
	Beerh	Janjheru	Ha.	70500	5	352500
	Bani Kumrah	Jagrinala	Ha.	70500	2	141000
	Janetri	Janetri	Ha.	70500	2	141000
		Total			38	2679000
(c) Natural Regeneration/ Closures						
	Kotli	Rachhera Old	Ha.	37100	26	964600
	Sai Gallu	Gandhiru	Ha.	37100	10	371000
		Tandu-I	Ha.	37100	10	371000
		Tandu-II	Ha.	37100	2	74200
	Beerh	Jambher	Ha.	37100	10	371000
		Jamana	Ha.	37100	20	742000
		Gandhiru	Ha.	37100	10	371000
		Total			88	3264800
(d) NTFP/ Medicinal Plantation						
	Beerh		Ha.	137825	5	689125
	Koon		Ha.	137825	5	689125
		Total			10	1378250
		G. Total			136	7322050
Note: Negligible scope under Plantation component is reported by the HPFD Staff in Kotli Range.						

BEAT WISE Requirement of Kotli Range under Nurseries sub component of Afforestation Component.										
Sub Component	Beat	Name of Existing Nursery	Status	Area (ha)	Additional facility required	Amount (Rs.)	Name of New Nursery required	Area (ha.)	Amount	Grand Total
Nurseries										
	Sai Gallu	..	..	..	..	0	Tandu	0.5	770000	770000
	Bani Kumrah	Chilhar	Beat Level	0.2	C/o Water Storage Tank, 1 Water Harvesting Structure, Piped Water 3" dia and construction of 10 Checkdams	400000	..	..	0	400000
	Janeti	Lagdhar	Beat Level	0.2	C/o Water Storage Tank, Provision of Piped Water and 30 Check dams	400000	..	..	0	400000
	Gokhra	Gokhra	Range Level	0.2			..	..	1220000	1220000
			Total:	0.6		800000		0.5	1990000	2790000

BEAT WISE Requirements of Kotli Range of Mandi Forest Division under Soil & Moisture Conservation Component

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Cost (Rs.)
Kotli	Harnodi Khad	Gabion Check dams			17230	3	51690
					10000	6	60000
	Rachhera Khad	Gabion Check dams	..	No	10000	7	70000
					17230	3	51690
	Bhourjor Khad	Gabion Check dams	..	No	10000	6	60000
					17230	4	68920
				Total:		29	362300
Beerh	Jamwanma	Gabion Check dams	..	No	10000	6	60000
					17230	4	68920
				Total:		10	128920
	Jambhar	Gabion Check dams		No	10000	7	70000
					17230	3	51690
				Total:		10	121690
Bani Kumrah	Bani nala	Gabion Check dams		No	10000	7	70000
					17230	3	51690
	Chillar Nursery	Gabion Check dams		No	10000	6	60000
					17230	4	68920
				Total:		20	250610
Janetri	Janetri	Gabion Check dams		No	10000	10	100000
	Tundra	Gabion Check dams			10000	5	50000
	Lagdhar Nursery	Gabion Check dams		No	10000	10	100000
					17230	5	86150
				Total:		30	336150
Koon	Koon Nala	Gabion Check dams	..	No	10000	12	120000
					17230	8	137840
	Mahog Nala	Gabion Check dams		No	10000	14	140000
					17230	6	103380
						40	501220
Gokhra	INCLUDED FOR Range Level Nursery only	Gabion Check dams	..	No	10000	10	100000
					17230	5	86150
				Total:		15	186150
		Grand Total:				154	1887040
Kotli	Rachhera Khad	Water Harvesting Structure	..	No	62150	1	62150
Beerh	Jamwana	Water Harvesting Structure	..	No	62150	1	62150
Janetri	..	Water Harvesting Structure	..		62150	1	62150
Koon	Koon Nalla	Water Harvesting Structure		No	62150	1	62150
Gokhra	NOT IN CATCHMENT	Water Harvesting Structure for nursery			62150	1	62150
		TOTAL				5	310750
Nagan		Waterholes		No.	856920	1	856920
Sai Gallu		Waterholes		No.	856920	1	856920
Bani Kumrah		Waterholes		No.	856920	1	856920

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Cost (Rs.)
Janetri		Waterholes		No.	856920	1	856920
		TOTAL				4	3427680
Nagan	..	Spur Construction	3	RMT	48540	6	291240
Kotli	Harnodi Khad	Spur Construction	3	RMT	48540	6	291240
Sai Gallu	Sadoh Nal	Spur Construction	3	RMT	48540	6	291240
	Dolabal Nal	Spur Construction	3	RMT	48540	6	291240
		Total:		RMT		24	1164960
Nagan				No	78	20	1560
Kotli	..	Brushwood Checkdams/ Gully Plugging	..	No	78	20	1560
Sai Gallu	Devnala	Brushwood Checkdams/ Gully Plugging	..	No.	78	30	2340
	Sadoh Nal	Brushwood Checkdams/ Gully Plugging	..	No.	78	25	1950
	Dolabal Nal	Brushwood Checkdams/ Gully Plugging	..	No.	78	20	1560
Beerh	Jamwanma	Brushwood Checkdams/ Gully Plugging	..	No.	78	15	1170
	Jambhar	Brushwood Checkdams/ Gully Plugging		No.	78	20	1560
Bani Kumrah	Bani nala	Brushwood Checkdams/ Gully Plugging	..	No.	78	15	1170
Janetri	Janetri	Brushwood Checkdams/ Gully Plugging	..	No.	78	30	2340
	Suradi	Brushwood Checkdams/ Gully Plugging		No.	78	20	1560
	Tundra	Brushwood Checkdams/ Gully Plugging		No.	78	25	1950
Koon	Koon Nala	Brushwood Checkdams/ Gully Plugging	..	No.	78	25	1950
	Mahog Nala	Brushwood Checkdams/ Gully Plugging		No.	78	20	1560
		Total				285	22230
Nagan		Trenching	..	Nos.	15.3	200	3060
Kotli		Trenching	..	Nos.	15.3	300	4590
Sai Gallu		Trenching	..	Nos.	15.3	250	3825
Beerh		Trenching	..	Nos.	15.3	250	3825
Bani Kumrah		Trenching	..	Nos.	15.3	200	3060
Janetri		Trenching	..	Nos.	15.3	300	4590
Koon		Trenching	..	Nos.	15.3	250	3825
		Total:				1750	26775
Nagan		Bio Engineering		Ha.	111700	1	111700

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Cost (Rs.)
Kotli		Bio Engineering		Ha.	111700	1	111700
Sai Gallu	To be given later	Bio Engineering	..	Ha.	111700	1	111700
Beerh	To be given later	Bio Engineering	..	Ha.	111700	1	111700
Bani Kumrah	To be given later	Bio Engineering	..	Ha.	111700	1	111700
Janetri	To be given later	Bio Engineering	..	Ha.	111700	1	111700
Koon	To be given later	Bio Engineering	..	Ha.	111700	1	111700
	Total:					7	781900

BEAT WISE Requirements of Kotli Range of Mandi Forest Division under Soil & Moisture Conservation Component

Beat	Name of Nalla/ Forest	Activity	Unit	Unit Cost	Qty.	Cost (Rs.)	Remarks
Gabion Check dams							
Kotli	Harnodi Khad	Gabion Check dams		17230	3	51690	
				10000	6	60000	
	Rachhera Khad	Gabion Check dams	No	10000	7	70000	
				17230	3	51690	
	Bhourjor Khad	Gabion Check dams	No	10000	6	60000	
				17230	4	68920	
Beerh	Jamwanma	Gabion Check dams	No	10000	6	60000	
				17230	4	68920	
	Jambhar	Gabion Check dams	No	10000	7	70000	
				17230	3	51690	
Bani Kumrah	Bani nala	Gabion Check dams	No	10000	7	70000	
				17230	3	51690	
	Chillar Nursery	Gabion Check dams	No	10000	6	60000	
				17230	4	68920	
Janetri	Janetri	Gabion Check dams	No	10000	10	100000	
	Tundra	Gabion Check dams		10000	5	50000	
	Lagdhar Nursery	Gabion Check dams	No	10000	10	100000	
Koon	Koon N ala	Gabion Check dams	No	10000	12	120000	
				17230	8	137840	
	Mahog Nala	Gabion Check dams	No	10000	14	140000	
				17230	6	103380	
Gokhra	INCLUDED FOR Range Level Nursery only	Gabion Check dams	No	10000	10	100000	
				17230	5	86150	
		G. Total:	No		154	1887040	
Gabion Retaining wall							
	Lagdhar nursery			10000	15	150000	
Koon	Koon N ala	Gabion Retaining wall		17230	4	68920	

Beat	Name of Nalla/ Forest	Activity	Unit	Unit Cost	Qty.	Cost (Rs.)	Remarks
		Total			19	218920	
Water Harvesting Structure							
Kotli	Rachhera Khad			62150	2	124300	
Beerh	Jamwanma			62150	1	62150	
Koon	Koon N ala			62150	1	62150	
Gokhra	INCLUDED FOR Range Level Nursery only			62150	1	62150	
		Total			5	310750	
Trenching							
Nagan		Trenching	No.	15.3	200	3060	
Kotli		Trenching	No.	15.3	300	4590	
Sai Gallu		Trenching	Nos.	15.3	250	3825	
Beerh		Trenching	Nos.	15.3	250	3825	
Bani Kumrah		Trenching	Nos.	15.3	200	3060	
Janetri		Trenching	Nos.	15.3	300	4590	
Koon		Trenching	Nos.	15.3	250	3825	
		Total			1750	26775	
Nagan		Bio Engineering	Ha.	111700	1	111700	
Kotli		Bio Engineering	Ha.	111700	1	111700	
Sai Gallu		Bio Engineering	Ha.	111700	1	111700	
Beerh		Bio Engineering	Ha.	111700	1	111700	
Bani Kumrah		Bio Engineering	Ha.	111700	1	111700	
Janetri		Bio Engineering	Ha.	111700	1	111700	
Koon		Bio Engineering	Ha.	111700	1	111700	
		Total			7	781900	

BEAT WISE Requirements of Kotli Range of Mandi Forest Division under Payment for Environment Services.												
Sl. No.	Component	Beat	Solar Lights	Unit Cost	Cost	Community Storage Tanks	Unit Cost	Cost	Village Ponds	Unit Cost	Cost	Grand Total
1	PES	Nagan	1	30000	30000	1	300000	300000	1	35000	35000	365000
2		Kotli	1	30000	30000	1	300000	300000	1	35000	35000	365000
3		Sai Gallu	1	30000	30000	1	300000	300000	1	35000	35000	365000
4		Beerh	1	30000	30000	1	300000	300000	1	35000	35000	365000
5		Bani Kumrah	1	30000	30000	1	300000	300000	1	35000	35000	365000
6		Janetri	1	30000	30000	1	300000	300000	1	35000	35000	365000
7		Koon	1	30000	30000	1	300000	300000	1	35000	35000	365000
8		B.O. Qrs.	3	30000	90000	0	300000	0	0	35000	0	90000
9		Range Office	2	30000	60000	0	300000	0	0	35000	0	60000
10		Temples	12	30000	360000	0	300000	0	0	35000	0	360000
		Total:	24		720000	7		2100000	7		245000	3065000

BEAT WISE Requirements of Koti Range of Mandi Forest Division under Research, Training & Development

Sl. No.	Component	Beat	Area Name	Activity	Unit	Unit cost	Qty.	Cost	Amount	Exposure Visit	Handling of W/L
	Research, Training & Capacity Building										
1	PES	Nagan	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
2		Kotli	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
3		Sai Gallu	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
4		Beerh	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000

Sl. No.	Component	Beat	Area Name	Activity	Unit	Unit cost	Qty.	Cost	Amount	Exposure Visit	Handling of W/L
	Research, Training & Capacity Building										
5		Bani Kumrah	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
6		Janetri	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
7		Koon	To be given later	Demonstration Plots for Bamboo plantations	Nos.		0.5	76750	38375	90000	25000
		Total:	To be given later				3.5		268625		
1	PES	Nagan		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
2		Kotli		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
3		Sai Gallu		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
4		Beerh		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
5		Bani Kumrah		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
6		Janetri		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
7		Koon		Demonstration Plots for Other plantations	Nos.		0.5	76750	38375	90000	25000
		Total:			Nos.		3.5	537250	268625		
				Grand Total					268625	1260000	350000

BEAT WISE Requirements of Kotli Range of Mandi Forest Division under Infrastructure Development & Forest Protection

Sl. No.	Component	Beat	HPFD Bldg. Infrastructure	Cost (Rs.)	Bridle Paths & Approach Roads	Cost	Patrolling Kits	Cost	Total cost
1	Infrastructure & Forest Protection	Nagan	New Fgd. Hut at Nagan.	900000	Maintenance of road from Batahan road to Inspection Hut Nagan Batahan (5KM)	100000	1	10000	1010000
			C/o new B.O. Qr. at Nagan	1200000	..	0	1	10000	1210000
2		Kotli	Repair of Fgd. Hut, Kotli	100000	Approach Road NH 70 to R.O. Kotli 100 Mtr.	40000	1 for R.O. +3 for B.Os.	40000	180000
					Boundry wall around R.O. Office.	40000	0	0	40000
			Construction of Conference Room at R.O. Office.	900000		0	0	0	900000
3		Sai Gallu	Repair of Fgd. Hut	100000	..	0	1	10000	110000
4		Beerh	New Fgd. Hut at Beerh	900000	..	0	1	10000	910000
5		Bani Kumrah	New Fgd. Hut at Bani Kumrah	900000	..	0	1	10000	910000
6		Janetri	New Fgd. Hut at Lagdhar	900000	Maintenace of Bridle Path from Janetri to Baglu-22 KM	300000	1	10000	1210000
					Bridle Path from Nuresery to NH 70 (750 Mtrs.)	40000	0	10000	50000
7		Koon	New Fgd. Hut at Koon	900000	..	0	1	10000	910000
						0	0	10000	10000
		Total:		6800000		520000	11	110000	7430000

BEAT WISE Requirements of Kotli Range of Mandi Forest Division under Wild Life Management

Sl. No.	Component	Beat	Binoculars	Cost	Trapping Camers	Cost	Veterinary Kits	Cost	Total Cost:
1	WL Habitat Management	Nagan	0	0	1	30800	1	5000	35800
2		Kotli	0	0	0	0	1	5000	5000
3		Sai Gallu	0	0	1	30800	1	5000	35800
4		Beerh	0	0	0	0	1	5000	5000
5		Bani Kumrah	0	0	1	30800	1	5000	35800
6		Janetri	0	0	1	30800	1	5000	35800
7		Koon	0	0	0	0	1	5000	5000
9		Range Kotli (1 R.O.+4 B.Os.)	4	120000	0	0	5	25000	145000
		Total:	4	120000	4	123200	12	60000	303200
							Vehicles & POL		2394967
							Total		2698167

YEAR WISE SUMMARY OF PROJECTIONS FOR JOGINDER NAGAR DIVISION UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	50	65	65	20	0	0	0	0	0	200
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	3072500	3994250	3994250	1229000	0	0	0	0	0	12290000
1st Year Maintenance											
Physical (Ha.)	0	0	50	65	65	20	0	0	0	0	200
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	282500	367250	367250	113000	0	0	0	0	1130000
2nd Year Maintenance											
Physical (Ha.)	0	0	0	50	65	65	20	0	0	0	200
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	190000	247000	247000	76000	0	0	0	760000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	50	65	65	20	0	0	200
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	97500	126750	126750	39000	0	0	390000
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	50	65	65	20	0	200
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	97500	126750	126750	39000	0	390000
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	50	65	65	20	200
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	97500	126750	126750	39000	390000
Total New Plantation	0	3072500	4276750	4551500	1940750	584250	427000	292500	165750	39000	15350000
Enrichment Plantation											
Physical (Ha.)	0	50	55	63	40	0	0	0	0	0	208
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	2760000	3036000	3477600	2208000	0	0	0	0	0	11481600

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
1st Year Maintenance											
Physical (Ha.)	0	0	50	55	63	40	0	0	0	0	208
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	282500	310750	355950	226000	0	0	0	0	1175200
2nd Year Maintenance											
Physical (Ha.)	0	0	0	50	55	63	40	0	0	0	208
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	190000	209000	239400	152000	0	0	0	790400
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	50	55	63	40	0	0	208
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	97500	107250	122850	78000	0	0	405600
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	50	55	63	40	0	208
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	97500	107250	122850	78000	0	405600
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	50	55	63	40	208
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	97500	107250	122850	78000	405600
Total Enrichement Plantation	0	2760000	3318500	3978350	2870450	670150	479600	308100	200850	78000	14664000
Natural Regeneration											
Physical (Ha.)	0	70	70	70	60	0	0	0	0	0	270
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	2320500	2320500	2320500	1989000	0	0	0	0	0	8950500
1st Year Maintenance											
Physical (Ha.)	0	0	70	70	70	60	0	0	0	0	270
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	94500	94500	94500	81000	0	0	0	0	364500
2nd Year Maintenance											
Physical (Ha.)	0	0	0	70	70	70	60	0	0	0	270

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	66500	66500	66500	57000	0	0	0	256500
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	70	70	70	60	0	0	270
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	38500	38500	38500	33000	0	0	148500
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	70	70	70	60	0	270
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	38500	38500	38500	33000	0	148500
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	70	70	70	60	270
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	38500	38500	38500	33000	148500
Total Natural Regeneration	0	2320500	2415000	2481500	2188500	224500	172500	110000	71500	33000	10017000
NTFP											
Physical (Ha.)	0	35	30	39	0	0	0	0	0	0	104
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	4499250	3856500	5013450	0	0	0	0	0	0	13369200
1st Year Maintenance											
Physical (Ha.)	0	0	35	30	39	0	0	0	0	0	104
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	135450	116100	150930	0	0	0	0	0	402480
2nd Year Maintenance											
Physical (Ha.)	0	0	0	35	30	39	0	0	0	0	104
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	108080	92640	120432	0	0	0	0	321152
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	35	30	39	0	0	0	104
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	81095	69510	90363	0	0	0	240968
Total NTFP	0	4499250	3991950	5237630	324665	189942	90363	0	0	0	14333800

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Energy Planation											
Physical (Ha.)	0	46	61	55	37	20	0	0	0	0	219
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	2582900	3425150	3088250	2077550	1123000	0	0	0	0	12296850
Total Energy Planatation	0	2582900	3425150	3088250	2077550	1123000	0	0	0	0	12296850
Pasture Development											
Physical (Ha.)	0	46	46	60	57	30	10	0	0	0	249
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	763600	763600	996000	946200	498000	166000	0	0	0	4133400
1st Year Maintenance											
Physical (Ha.)	0	0	46	46	60	57	30	10	0	0	249
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	96600	96600	126000	119700	63000	21000	0	0	522900
2nd Year Maintenance											
Physical (Ha.)	0	0	0	46	46	60	57	30	10	0	249
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	81420	81420	106200	100890	53100	17700	0	440730
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	46	46	60	57	30	10	249
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	54280	54280	70800	67260	35400	11800	293820
Total Pasture Development	0	763600	860200	1174020	1207900	778180	400690	141360	53100	11800	5390850
Eradication of Noxious weeds											
Physical (Ha.)	170	200	329	365	0	0	0	0	0	0	1064
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	2558500	3010000	4951450	5493250	0	0	0	0	0	0	16013200
Total Eradication of Noxious weeds	2558500	3010000	4951450	5493250	0	0	0	0	0	0	16013200
Total Plantation	2558500	19008750	23239000	26004500	10609815	3570022	1570153	851960	491200	161800	88065700
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	355	357	354	355	0	0	0	0	0	0	1421

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	3550000	3570000	3540000	3550000	0	0	0	0	0	0	14210000
Big Size (2mx2.5m)											
Physical (Nos.)	128	127	129	127	0	0	0	0	0	0	511
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	2205440	2188210	2222670	2188210	0	0	0	0	0	0	8804530
Total Gabion Checkdams	5755440	5758210	5762670	5738210	0	0	0	0	0	0	23014530
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	150	150	153	149	0	0	0	0	0	0	602
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	1500000	1500000	1530000	1490000	0	0	0	0	0	0	6020000
Big Size											
Physical (Nos.)	112	115	107	107	0	0	0	0	0	0	441
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	1929760	1981450	1843610	1843610	0	0	0	0	0	0	7598430
Total Gabion Retainingwalls	3429760	3481450	3373610	3333610	0	0	0	0	0	0	13618430
Gabion Checkwalls											
Small Size											
Physical (Nos.)	28	28	28	29	0	0	0	0	0	0	113
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	280000	280000	280000	290000	0	0	0	0	0	0	1130000
Big Size (2mx2.5m)											
Physical (Nos.)	6	6	4	4	0	0	0	0	0	0	20
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	103380	103380	68920	68920	0	0	0	0	0	0	344600
Total Gabion Checkwalls	383380	383380	348920	358920	0	0	0	0	0	0	1474600
Gabion Spurs											
Small Size											
Physical (Nos.)	42	41	41	32	0	0	0	0	0	0	156
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	2038680	1990140	1990140	1553280	0	0	0	0	0	0	7572240

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Big Size											
Physical (Nos.)	0	0	0	0	0	0	0	0	0	0	0
Norm/Ha. (Rs.)	0	0	0	0	0	0	0	0	0	0	
Financial (Rs.)	0	0	0	0	0	0	0	0	0	0	0
Total Gabion Spurs	2038680	1990140	1990140	1553280	0	0	0	0	0	0	7572240
Water Harvesting Structures											
Physical (Nos.)	8	5	7	1	0	0	0	0	0	0	21
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	497200	310750	435050	62150	0	0	0	0	0	0	1305150
Total Water Harvesting Structures	497200	310750	435050	62150	0	0	0	0	0	0	1305150
Water Holes for wild life											
Physical (Nos.)	9	6	7	4	0	0	0	0	0	0	26
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	7712280	5141520	5998440	3427680	0	0	0	0	0	0	22279920
Total Water Holes for wild life	7712280	5141520	5998440	3427680	0	0	0	0	0	0	22279920
Observation Post											
Physical (Nos.)	1	0	0	0	0	0	0	0	0	0	1
Norm/Ha. (Rs.)	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	
Financial (Rs.)	1100000	0	0	0	0	0	0	0	0	0	1100000
Total Observation Post	1100000	0	0	0	0	0	0	0	0	0	1100000
Gulli Plugging/Dry stone checkdams											
Small Size											
Physical (Nos.)	3	3	2	2	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	4710	4710	4710	4710	4710	4710	4710	4710	4710	4710	
Financial (Rs.)	14130	14130	9420	9420	0	0	0	0	0	0	47100
Total Gulli Plugging/Dry stone checkdams	14130	14130	9420	9420	0	0	0	0	0	0	47100
Brushwood Checkdams											
Small Size											
Physical (Nos.)	34	34	35	32	0	0	0	0	0	0	135
Norm/Ha. (Rs.)	78	78	78	78	78	78	78	78	78	78	
Financial (Rs.)	2652	2652	2730	2496	0	0	0	0	0	0	10530

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total Brushwood Checkdams	2652	2652	2730	2496	0	0	0	0	0	0	10530
Trenching											
Small Size											
Physical (Nos.)	1535	1540	1555	1555	0	0	0	0	0	0	6185
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	23486	23562	23792	23792	0	0	0	0	0	0	94632
Total Trenching	23486	23562	23792	23792	0	0	0	0	0	0	94632
Bio Engineering											
Physical (Nos.)	7	7	0	0	0	0	0	0	0	0	14
Norm/Ha. (Rs.)	111700	111700	111700	111700	111700	111700	111700	111700	111700	111700	
Financial (Rs.)	781900	781900	0	0	0	0	0	0	0	0	1563800
Total Bio Engineering	781900	781900	0	0	0	0	0	0	0	0	1563800
Total Soil & Moisture Conservation	21738908	17887694	17944772	14509558	0	0	0	0	0	0	72080932
Payment For Environment Services											
Power saving implements/Solar Lights	330000	420000	420000	270000	150000	150000	0	0	0	0	1740000
Community Storage Tanks	2700000	3000000	1800000	1800000	0	0	0	0	0	0	9300000
Village Pond	630000	910000	840000	490000	490000	350000	350000	350000	0	0	4410000
Crematorium	300000	300000	300000	600000	0	0	0	0	0	0	1500000
Reward Money	1065254	1068091	1015256	1015255	1015254	1015254	1960611	638952	638952	638952	10071831
Community Power tiller	0	0	0	0	1100000	0	1100000	0	0	0	2200000
Total PES	5025254	5698091	4375256	4175255	2755254	1515254	3410611	988952	638952	638952	29221831
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	537250	690750	844250	0	0	0	0	0	0	0	2072250
Exposure visits for Forest Staff	300000	850000	380000	660000	200000	400000	0	0	0	0	2790000
Financial (Rs.)	300000	850000	380000	660000	200000	400000	0	0	0	0	2790000
Capacity building for Nursery	2545000	1972500	4982500	1480000	0	0	0	0	0	0	10980000
Training in handling Wild Life	100000	250000	225000	0	200000	0	0	0	0	0	775000
Training in Modern Nursery	0	100000	120000	0	0	0	0	0	0	0	220000
Manpower Support	480000	480000	480000	480000	480000	480000	480000	480000	480000	480000	4800000
Total TR & C	3962250	4343250	7031750	2620000	880000	880000	480000	480000	480000	480000	21637250

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Infrastructure & Forest Protection											
Construction of New Infrastructure like Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	2480000	2980000	3080000	2980000	1480000	0	0	0	0	0	13000000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	2070000	1770000	2160000	1380000	2000000	3000000	600000	220000	0	0	13200000
Patrolling Kits	50000	0	50000	130000	130000	0	0	0	0	0	360000
Demarcation of forests & Cos. Of Boundry pillars	200000	450000	500000	800000	810000	0	0	0	0	0	2760000
Vehicles & POL	0	957990	957986	957986	957986	957986	0	0	0	0	4789934
Total Infrastructure & Forest Protection	4800000	6157990	6747986	6247986	5377986	3957986	600000	220000	0	0	34109934
Wild life Habitat Management											
Binoculars	300000	30000	210000	0	30000	0	0	0	0	0	570000
Veterinary Kit at Range & Beat Level	80000	30000	70000	0	0	0	0	0	0	0	180000
Trapping Cameras & Camera	246400	0	123200	154000	0	0	0	0	0	0	523600
GPS	0	0	0	90000	0	0	0	0	0	0	90000
Total Wild life Habitat Management	626400	60000	403200	244000	30000	0	0	0	0	0	1363600
Monitoring & Evaluation	0	0	0	0	0	9398741	3195475	276407	0	0	12870623
Contingencies	2392129	2792130	3092129	3161610.8	3150903	2192129	2292125	2190485	1692129	1692129	24647898.8
Grand Total	41103441	55947905	62834093	56962909.8	22803958	21514132	11548364	5007804	3302281	2972881	283997768.8

YEAR WISE SUMMARY OF PROJECTIONS FOR DHARAMPUR RANGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	20	20	25	0	0	0	0	0	0	65
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	1229000	1229000	1536250	0	0	0	0	0	0	3994250
1st Year Maintenance											
Physical (Ha.)	0	0	20	20	25	0	0	0	0	0	65
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	113000	113000	141250	0	0	0	0	0	367250
2nd Year Maintenance											
Physical (Ha.)	0	0	0	20	20	25					65
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	76000	76000	95000	0	0	0	0	247000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	20	20	25				65
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	39000	39000	48750	0	0	0	126750
4th Year Maintenance											
Physical (Ha.)					0	20	20	25			65
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	39000	39000	48750	0	0	126750
5th Year Maintenance											
Physical (Ha.)						0	20	20	25		65
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	39000	39000	48750	0	126750
Total New Plantation	0	1229000	1342000	1725250	256250	173000	126750	87750	48750	0	4988750
Enrichment Plantation											
Physical (Ha.)	0	10	20	23	20	0	0	0	0	0	73
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	552000	1104000	1269600	1104000	0	0	0	0	0	4029600
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	0	10	20	23	20	0	0	0	0	73
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	56500	113000	129950	113000	0	0	0	0	412450
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	20	23	20	0	0	0	73
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	38000	76000	87400	76000	0	0	0	277400
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	20	23	20	0	0	73
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	19500	39000	44850	39000	0	0	142350
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	10	20	23	20	0	73
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	19500	39000	44850	39000	0	142350
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	10	20	23	20	73
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	19500	39000	44850	39000	142350
Total Enrichment Plantation	0	552000	1160500	1420600	1329450	258900	179350	122850	83850	39000	5146500
Natural Regeneration											
Physical (Ha.)	0	10	15	20	20						65
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	331500	497250	663000	663000	0	0	0	0	0	2154750
1st Year Maintenance											
Physical (Ha.)		0	10	15	20	20					65
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	13500	20250	27000	27000	0	0	0	0	87750
2nd Year Maintenance											
Physical (Ha.)			0	10	15	20	20				65
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	9500	14250	19000	19000	0	0	0	61750

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)				0	10	15	20	20			65
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	5500	8250	11000	11000	0	0	35750
4th Year Maintenance											
Physical (Ha.)					0	10	15	20	20		65
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	5500	8250	11000	11000	0	35750
5th Year Maintenance											
Physical (Ha.)						0	10	15	20	20	65
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	5500	8250	11000	11000	35750
Total Natural Regenration	0	331500	510750	692750	709750	59750	43750	30250	22000	11000	2411500
NTFP											
Physical (Ha.)	0	5	10	14	0	0	0	0	0	0	29
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	642750	1285500	1799700	0	0	0	0	0	0	3727950
1st Year Maintenance											
Physical (Ha.)	0	0	5	10	14	0	0	0	0	0	29
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	19350	38700	54180	0	0	0	0	0	112230
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	10	14	0	0	0	0	29
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	15440	30880	43232	0	0	0	0	89552
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	10	14	0	0	0	29
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	11585	23170	32438	0	0	0	67193
Total NTFP	0	642750	1304850	1853840	96645	66402	32438	0	0	0	3996925
Energy Planation											
Physical (Ha.)	0	10	10	15	12						47

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	561500	561500	842250	673800	0	0	0	0	0	2639050
Total Energy Planatation	0	561500	561500	842250	673800	0	0	0	0	0	2639050
Pasture Development											
Physical (Ha.)	0	10	10	10	17						47
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	166000	166000	166000	282200	0	0	0	0	0	780200
1st Year Maintenance											
Physical (Ha.)	0	0	10	10	10	17	0				47
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	21000	21000	21000	35700	0	0	0	0	98700
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	10	10	17	0	0	0	47
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	17700	17700	17700	30090	0	0	0	83190
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	10	10	17			47
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	11800	11800	11800	20060	0	0	55460
Total Pasture Development	0	166000	187000	204700	332700	65200	41890	20060	0	0	1017550
Eradication of Noxious weeds											
Physical (Ha.)	40	30	30	25	0						125
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	602000	451500	451500	376250	0	0	0	0	0	0	1881250
Total Eradication of Noxious weeds	602000	451500	451500	376250	0	0	0	0	0	0	1881250
Total Plantation	602000	3934250	5518100	7115640	3398595	623252	424178	260910	154600	50000	22081525
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	53	54	53	54	0	0	0	0	0	0	214
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	530000	540000	530000	540000	0	0	0	0	0	0	2140000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Big Size (2mx2.5m)											
Physical (Nos.)	19	18	19	18							74
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	327370	310140	327370	310140	0	0	0	0	0	0	1275020
Total Gabion Checkdams	857370	850140	857370	850140	0	0	0	0	0	0	3415020
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	5	6	5	6	0	0	0	0	0	0	22
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	50000	60000	50000	60000	0	0	0	0	0	0	220000
Big Size											
Physical (Nos.)	1	2									3
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	17230	34460	0	0	0	0	0	0	0	0	51690
Total Gabion Retainingwalls	67230	94460	50000	60000	0	0	0	0	0	0	271690
Gabion Spurs											
Small Size											
Physical (Nos.)	4	4	4	4	0	0	0	0	0	0	16
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	194160	194160	194160	194160	0	0	0	0	0	0	776640
Total Gabion Spurs	194160	194160	194160	194160	0	0	0	0	0	0	776640
Water Harvesting Structures											
Physical (Nos.)	2	2	3	0	0	0	0	0	0	0	7
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	124300	124300	186450	0	0	0	0	0	0	0	435050
Total Water Harvesting Structures	124300	124300	186450	0	0	0	0	0	0	0	435050
Water Holes for wild life											
Physical (Nos.)	2	2	2	2							8
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	1713840	1713840	1713840	1713840	0	0	0	0	0	0	6855360
Total Water Holes for wild life	1713840	1713840	1713840	1713840	0	0	0	0	0	0	6855360
Brushwood Checkdams											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Small Size											
Physical (Nos.)	34	34	35	32	0	0	0	0	0	0	135
Norm/Ha. (Rs.)	78	78	78	78							
Financial (Rs.)	2652	2652	2730	2496	0	0	0	0	0	0	10530
Total Brushwood Checkdams	2652	2652	2730	2496	0	0	0	0	0	0	10530
Bio Engineering											
Physical (Nos.)	4	4									8
Norm/Ha. (Rs.)	111700	111700	111700	111700	111700	111700	111700	111700	111700	111700	
Financial (Rs.)	446800	446800	0	0	0	0	0	0	0	0	893600
Total Bio Engineering	446800	446800	0	0	0	0	0	0	0	0	893600
Total Soil & Moisture Conservation	3406352	3426352	3004550	2820636	0	0	0	0	0	0	12657890
Payment For Environment Services											
Power saving implements/Solar Lights	120000	120000	120000	120000	0	0	0	0	0	0	480000
Community Storage Tanks	1200000	1200000	1200000	1200000	0	0	0	0	0	0	4800000
Village Pond	140000	350000	350000	0	0	0	0	0	0	0	840000
Reward Money	376302	376302	376302	376302	376302	376302	376302	0	0	0	2634114
Total PES	1836302	2046302	2046302	1696302	376302	376302	376302	0	0	0	8754114
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	153500	230250	230250	0	0	0	0	0	0	0	614000
Exposure visits for Forest Staff	0	200000	0	320000	200000	0	0	0	0	0	720000
Capacity building for Nursery	0	0	3110000	0	0	0	0	0	0	0	3110000
Training in handling Wild Life	0	0	100000	0	100000	0	0	0	0	0	200000
Total TR & C	153500	430250	3440250	320000	300000	0	0	0	0	0	4644000
Infrastructure & Forest Protection											
Construction of New Infrastructure Iije Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	980000	980000	980000	980000	980000	0	0	0	0	0	4900000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	770000	770000	0	0	0	0	0	0	0	0	1540000
Patrolling Kits	0	0	0	0	80000	0	0	0	0	0	80000
Vehicles & POL	0	478995	478993	478993	478993	478993	0	0	0	0	2394967

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total Infrastructure & Forest Protection	1750000	2228995	1458993	1458993	1538993	478993	0	0	0	0	8914967
Wild life Habitat Management											
Binoculars	60000	0	0	0	0	0	0	0	0	0	60000
Veterinary Kit at Range & Beat Level	60000	0	0	0	0	0	0	0	0	0	60000
Trapping Cameras & Camera	123200	0	0	0	0	0	0	0	0	0	123200
Total Wild life Habitat Management	243200	0	0	0	0	0	0	0	0	0	243200
Monitoring & Evaluation	0	0	0	0	0	2725036	0	276407	0	0	3001443
Contingencies	545007	545008	545007	545007	545007	545007	585008	784505	545007	545007	5729570
Grand Total	8536361	12611157	16013202	13956578	6158897	4748590	1385488	1321822	699607	595007	66026709

Summary of Projections under HEP Thana Plaun CAT Plan - DHARAMPUR RANGE

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
1.	AFFORESTATION				
1	New Plantation	Ha.	76750	65	49,88,750
2	Enrichment	Ha.	70500	73	51,46,500
3	Natural Regeneration	Ha.	37100	65	24,11,500
4	NTFP	Ha.	137825	29	39,96,925
5	Energy Plantation	Ha.	56150	47	26,39,050
6	Pasture Development	Ha.	21650	47	10,17,550
7	Eradication of Noxious weeds	Ha.	15050	125	18,81,250
	Total			451	2,20,81,525
	AFORESTATION	Total:			2,20,81,525
2.	SOIL &MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	288	34,15,020
2	Gabion Retainingwalls	Nos.	10000/17230		2,71,690
3	Gabion Checkwalls	Nos.	10000/17230	-	-
4	Gabion Spurs	Nos.	48540	16	7,76,640
5	Water Harvesting Structures	Nos.	62150	7	4,35,050
6	Water Holes for wild life	Nos.	856920	8	68,55,360
7	Gulli Plugging/ Dry stoneCheckdams	Nos.	4710	-	-
8	Brushwood Checkdams	Nos.	78	135	10,530
9	Trenching	Nos.	15.3	-	-
10	Bio Engineering	Ha.	111700	8	8,93,600
	SOIL &MOISTURE CONSERVATION	Total:		-	1,26,57,890
3.	PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	16	4,80,000
2	Community Storage Tanks	Nos.	300000	16	48,00,000
3	Village Ponds	Nos.	35000	24	8,40,000
4	Crematorium	Nos.	300000		-
5	Reward Money	HH*413			26,34,114
6	Community Power tiller		1100000		-
		Total:		-	87,54,114
4.	RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	8.0	6,14,000
2	Eradication of Lantana and other Invasive species	Ha.	8000		-
3	Nursery	Nos.	1220000/ 770000/ 550000/	-	31,10,000
4	Exposure visits for Forest Staff	Lump sum			7,20,000
5	Handling of Wild Life	Lump sum			2,00,000

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
		Total:			46,44,000
	5 & 6. INFRASTRUCTURE AND FOREST PROTECTION				
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff		-	49,00,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	..	Lump Sum	-	15,40,000
3	Patrolling Kits	Nos.	10000	8	80,000
4	Demarcation of forests & Cons.of boundry pillers				-
5	Vehicles & POL	Cost Norm			23,94,967
		Total:	0	-	89,14,967
	7. WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	2	60,000
2	Veterinary Kit	Nos.	5000	12	60,000
3	Trapping Cameras	Nos.	30800	4	1,23,200
4	Tranquilizer Gun	Nos.	250000	-	-
		Total:	0	-	2,43,200
	Total CAT Plan		0	-	5,72,95,696
	8.MONITORING & EVALUATION	5%			30,01,444
	9. Contingencies	10%			57,29,570
	Total CAT Planfor Financial Projections				6,60,26,709

BEAT WISE REQUIREMENTS OF DHARAMPUR RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER VARIOUS COMPONENTS OF THANA PLAUN HEP CAT PLAN.

Component/ Sub Component	Beat	Area	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
AFFORESTATION							
a: New Plantation							
	Bahi		Ha.	76,750	3	2,30,250	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Sidhpur		Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Dharampur		Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Mandap		Ha.	76,750	10	7,67,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Baroti	Banjali	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Baral	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Ludhiana	Kaunsal DPF	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Jathehri DPF	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Mhan	Kalehari	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Monal Gehara	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Mhan	Ha.	76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Brang	Katali	Ha.	76,750	2	1,53,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo

Component/ Sub Component	Beat	Area	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
		Shanaragalu		76,750	5	3,83,750	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
			Total		65	49,88,750	
b. Enrichment							
	Bahi	C1	Ha.	70,500	3	2,11,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		C2	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		C3	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Sidhpur		Ha.	70,500	2	1,41,000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Dharampur		Ha.	70,500	3	2,11,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Mandap	Sundal	Ha.	70,500	10	7,05,000	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Cloga	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Oddi	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Baroti		Ha.	70,500	-	-	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Ludhiana	Jatkehri DPF	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Mhan	Kalehari	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Monal Gehara	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal,

Component/ Sub Component	Beat	Area	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
							Sheesham, Bamboo
		Mhan	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Brang	Didnu	Ha.	70,500	5	3,52,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Lower Brang	Ha.	70,500	5	3,52,500	
		Chaunta Galu	Ha.	70,500	5	3,52,500	
				Total	73	51,46,500	
c. Natural Regeneration/ Closures							
	Bahi C3		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Bahi Parchu		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Mandap		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
			Ha.	37,100	-	-	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Dharampur Khairi		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Dharampur Langha		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Baroti		Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Kaunsal DPF	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Jaythehri DPF	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal,

Component/ Sub Component	Beat	Area	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
							Sheesham, Bamboo
	Mhan	Mhan DPF	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Roparu	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
	Brang	Badhyar DPF	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Didnu DPF	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
		Darku Kathaili	Ha.	37,100	5	1,85,500	Ban, Chir, Brass, Kafal, Sheesham, Bamboo
			Total:		65	24,11,500	
d. NTFP/ Medicinal Plantations							
	Bahi		Ha.	1,37,825	5	6,89,125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
	Mandap		Ha.	1,37,825	5	6,89,125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
	Sidhpur		Ha.	1,37,825	5	6,89,125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
	Dharampur Chaus		Ha.	1,37,825	4	5,51,300	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
	Ludhiana	Janetri DPF	Ha.	1,37,825	5	6,89,125	Amla, Bahera, Hard, Daru, Akhrot, Gurpatraj, Reetha
	Brang	Kathaili	Ha.	1,37,825	5	6,89,125	Amla, Bahera, Hard,

Component/ Sub Component	Beat	Area	Unit	Unit Cost per ha. (Rs.)	Qty.	Cost (Rs.)	Species to be planted
							Daru, Akhrot, Gurpatraj, Reetha
			Total:		29	39,96,925	
Energy Plantation							
	Bahi		Ha.	56,150	10	5,61,500	
	Mandap		Ha.	56,150	5	2,80,750	
	Sidhpur		Ha.	56,150	8	4,49,200	
	Dharampur		Ha.	56,150	10	5,61,500	
	Ludhiana		Ha.	56,150	5	2,80,750	
	Mhan		Ha.	56,150	4	2,24,600	
	Brang		Ha.	56,150	5	2,80,750	
					47	26,39,050	
Pasture Development							
	Bahi		Ha.	21,650	10	2,16,500	
	Mandap		Ha.	21,650	5	1,08,250	
	Sidhpur		Ha.	21,650	8	1,73,200	
	Dharampur		Ha.	21,650	10	2,16,500	
	Ludhiana		Ha.	21,650	5	1,08,250	
	Mhan		Ha.	21,650	4	86,600	
	Brang		Ha.	21,650	5	1,08,250	
					47	10,17,550	
Eradication of Noxious weeds							
	Bahi		Ha.	15,050	20	3,01,000	
	Mandap		Ha.	15,050	20	3,01,000	
	Sidhpur		Ha.	15,050	15	2,25,750	
	Dharampur		Ha.	15,050	15	2,25,750	
	Baroti		Ha.	15,050	10	1,50,500	
	Ludhiana		Ha.	15,050	10	1,50,500	
	Mhan		Ha.	15,050	15	2,25,750	
	Brang		Ha.	15,050	20	3,01,000	
					125	18,81,250	
				Total	451	2,20,81,525	

Beat Wise Requirements of Dharampur Range of Joginder Forest Division under Nursery sub component of Afforestation Component												
Sl. No.	Sub Component	Beat	Name of Existing Nursery	Status	Area (ha)	Additional facility required	Amount (Rs.)	Name of New Nursery required	Status	Area (ha.)	Amount (Rs)	Grand Total
	Afforestation:											
	Nursery											
1		Bahi	..	..	..	..	-	..	..	..	-	-
2		Mandap	Odhi	Beat Level	0.75	Provisions for Water Storage Tank, Piped Water Supply and Watch & Ward Straff to be made	2,50,000	Murhadhar	Gypsey	0.5	5,50,000	8,00,000
3		Sidhpur	..	..	..	..	-	..	..	..	-	-
4		Dharamur	Dharampur	Beat Level	..	Provisions for Water Storage Tank, Piped Water Supply and Watch & Ward Straff to be made		Dharampur	Beat Level	0.75	7,70,000	7,70,000
5		Baroti	Malaun	Beat Level	0.5	Provisions for Water Storage Tank, Piped Water Supply and Watch & Ward Straff to be made	2,50,000	..	..	..	-	-
6		Ludhiana	..	..	..	..	-	..	..	..	-	-
7		Mhan	..	..	..	..	-	Mhan at Mhan	Beat Level	0.5	7,70,000	7,70,000
8		Brang	..	..	..	..	-	Muradhar	Beat Level	0.5	7,70,000	7,70,000
						Total	5,00,000				28,60,000	31,10,000

Beat Wise Requirements of Dharampur Range of Joginder Nagar Forest Division under SMC Measures for Thana Plaun HEP CAT Plan

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Amount
Bahi	Tohri Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
		Gabion Checkdams	2mx2.5m	Nos.	17230	4	68920
	Kulti Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	9	90000
			2mx2.5m	Nos.	17230	3	51690
	Parchhu Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
			2mx2.5m		17230	2	34460
Sidhpur	Bardana Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Parang Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
			2mx2.5m		17230	2	34460
	Chopannu Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
Dharampur	Chhej Khobla	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
	Khairi Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
	Chaus Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
	Narwahl	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
Baroti	Malaun	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Jejun Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
			2mx2.5m		17230	5	86150
	Langherh Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	DPF Janettri	Gabion Checkdams	1.5mx1.5m	Nos.	10000	5	50000
Ludhiana	Banehardi Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
			2mx2.5m		17230	2	34460
	Kothi Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Kulhan Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
			2mx2.5m		17230	4	68920
	Khara Kumharardha Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Duga kumharadha Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
			2mx2.5m		17230	4	68920
	Sihan Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Pahad Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Konsal Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
Mhan	Mhan Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	7	70000
			2mx2.5m		17230	3	51690
	Ropadu Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
			2mx2.5m		17230	4	68920
	Kalheri Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
			2mx2.5m		17230	2	34460
	Munal gehra Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	13	130000
			2mx2.5m		17230	7	120610

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Amount
Brang	Brang Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	8	80000
			2mx2.5m		17230	2	34460
Mandap	Odi Ka Nal	Gabion Checkdams	1.5mx1.5m	Nos.	10000	6	60000
			2mx2.5m		17230	4	68920
	Chowki Nala	Gabion Checkdams	1.5mx1.5m	Nos.	10000	10	100000
			2mx2.5m		17230	5	86150
		Total:				288	3415020
Sidhpur	Ser Khobla	Gabion Retaining Walls/Toe Walls		Nos.	10000	7	70000
					17230	3	51690
Dharampur	Lhanga	Gabion Retaining Walls/Toe Walls		Nos.	10000	8	80000
Brang	Badhyar	Gabion Retaining Walls/Toe Walls	..	Nos.	10000	7	70000
					Total:	25	271690
Mandap	Odi KaNal	Deflecting Spurs		Nos.	48540	6	291240
Sidhpur	Ser Khobla & Narhwal 4 each	Deflecting Spurs		Nos.	48540	6	291240
Dharampur	Lhanga	Deflecting Spurs		Nos.	48540	4	194160
		Total:		Nos.		16	776640
Bahi	Tohri Nala	Water Harvesting Structures	..	Nos.	62150	1	62150
Mandap	Odi Perennial Khad	Water Harvesting Structures	..	Nos.	62150	2	124300
Baroti	Jejun Nala	Water Harvesting Structures	..	Nos.	62150	1	62150
	Langherh Nala	Water Harvesting Structures	..	Nos.	62150	1	62150
Ludhiana	Konsal Nala	Water Harvesting Structures	..	Nos.	62150	2	124300
		Total:				7	435050
Bahi		Waterholes			856920	1	856920
Mandap		Waterholes			856920	1	856920
Sidhpur		Waterholes			856920	1	856920
Dharampur		Waterholes			856920	1	856920
Baroti		Waterholes			856920	1	856920
Ludhiana		Waterholes			856920	1	856920
Mhan		Waterholes			856920	1	856920
Brang		Waterholes			856920	1	856920
		Total:				8	6855360
Bahi		Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
Mandap		Gulli Plugging by brush wood Checkdam		Nos.	78	20	1560
Sidhpur		Gulli Plugging by brush wood Checkdam		Nos.	78	20	1560
Dharampur		Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
Baroti		Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
Ludhiana		Gulli Plugging by brush		Nos.	78	15	1170

Beat	Name of Nalla/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Amount
		wood Checkdam					
Mhan		Gulli Plugging by brush wood Checkdam		Nos.	78	15	1170
Brang		Gulli Plugging by brush wood Checkdam		Nos.	78	20	1560
Total						135	10530
Bahi		Bio Engineering		Ha.	111700	1	111700
Mandap		Bio Engineering		Ha.	111700	1	111700
Sidhpur		Bio Engineering		Ha.	111700	1	111700
Dharampur		Bio Engineering		Ha.	111700	1	111700
Baroti		Bio Engineering		Ha.	111700	1	111700
Ludhiana		Bio Engineering		Ha.	111700	1	111700
Mhan		Bio Engineering		Ha.	111700	1	111700
Brang		Bio Engineering		Ha.	111700	1	111700
Total						8	893600

Beat Wise Requirement of Dharampur Range of Joginder Nagar Forest Division under Payment for Environment Services Component													
Sl.No.	Beat	Solar Lights	Unit cost	Cost	Community Tanks	Storage	Unit Cost	Cost	Village Ponds	Unit Cost	Cost	Reward Money	Total Cost
1	Bahi	2	30000	60000		2	300000	600000	3	35000	105000		765000
2	Mandap	2	30000	60000		2	300000	600000	3	35000	105000		765000
3	Sidhpur	2	30000	60000		2	300000	600000	3	35000	105000		765000
4	Dharampur	2	30000	60000		2	300000	600000	3	35000	105000		765000
5	Baroti	2	30000	60000		2	300000	600000	3	35000	105000		765000
6	Ludhiana	2	30000	60000		2	300000	600000	3	35000	105000		765000
7	Mhan	2	30000	60000		2	300000	600000	3	35000	105000		765000
8	Brang	2	30000	60000		2	300000	600000	3	35000	105000		765000
	Total	16		480000		16		4800000	24		840000	2634114	8754114

Beat Wise Requirements of Dharampur Range of Jogindernagar Forest Division under Research, Training & Capacity Building										
Sl. No.	Component	Beat	Activity	Unit	Unit cost	Qty.	Cost	Exposure Visits	Handling W/L	Nursery training
1	Capacti Building	Bahi	Demonstrationnn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
2		Mandap	Demonstrationnn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
3		Sidhpur	Demonstrationnn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
4		Dharampur	Demonstrationnn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
5		Baroti	Demonstrationnn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	

Beat Wise Requirements of Dharampur Range of Jogindernagar Forest Division under Research, Training & Capacity Building										
Sl. No.	Component	Beat	Activity	Unit	Unit cost	Qty.	Cost	Exposure Visits	Handling W/L	Nursery training
6		Ludhiana	Demonstrationn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
7		Mhan	Demonstrationn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
8		Brang	Demonstrationn Plots for Bamboo Plantations	Ha.	76750	1	76750	90000	25000	
		Total		Ha.		8	614000	720000	200000	1000000

Beat Wise Requirements of Dharampur Range of Joginder Nagar Forest Division under Infrastructure Development and Forest Protection.												
Beat	HPFD Infrastructure	Bldg. Cost (Rs.)	Bridle Paths & Approach Roads	Cost	Patrolling Kits	Cost	Laptop	Cost	Veh+ Driver + POL	Boundry Pillars	Cost	Total cost
Bahi	C/o New Fgd. Hut Bahi	900000	C/O Footbridge at Stair Khad-20 Mtr. Span	300000	1	10000	0	0	0	0	0	1210000
	Repair of Inspection Hut, Longni	80000		0	0	0	0	0	0	0	0	80000
Mandap	Repair of Fgd. Hut, Mandap	80000	C/o Approach Road from PWD RH Mandap to B.O. Qr. Mandap.	80000	1	10000	0	0	0	0	0	170000
	Repair of B.O. Qr. Mandap	80000	C/o Bridle Path from Mandap Beat Office to Murhadhar-3 KM.	100000	0	0	0	0	0	0	0	180000
Sidhpur	Construction of New Fgd. Hut	900000		0	0	0	0	0	0	0	0	900000

Beat Wise Requirements of Dharampur Range of Joginder Nagar Forest Division under Infrastructure Development and Forest Protection.												
Beat	HPFD Infrastructure Bldg.	Cost (Rs.)	Bridle Paths & Approach Roads	Cost	Patrolling Kits	Cost	Laptop	Cost	Veh+ Driver + POL	Boundry Pillars	Cost	Total cost
Dharampur			C/o Bridle Path from Dharampur to Banaal (2KM)	80000	1	10000	0	0	2394967	0	0	2484967
	Construction of New B.O. Qr. At Dharampur	900000		0	0	0	0	0	0	0	0	900000
Baroti	New Construction of Fgd. Hut.	900000	Foot Bridge on Jeun Nala near Chhirjajar Village-Span 4 Mtr.	200000	1	10000	0	0	0	0	0	1110000
			C/o Forest Bridle Path from Giuni to Janettri via Cher Jajjar 5 KMs	200000	1	10000	0	0	0	0	0	210000
Ludhiana	Repair of Forest Guard Hut	80000		0	0	0	0	0	0	0	0	80000
Mhan	New Construction of Fgd. Hut.	900000		0	0	0	0	0	0	0	0	900000
Brang	Repair of Forest Guard Hut	80000	C/o Bridle Path from Brang to Padhar 2 KM	80000	0	0	0	0	0	0	0	160000
		0	C/o Bridle Path from Lower Brang to Shivdwala 3km	120000	0	0	0	0	0	0	0	120000
		0	C/o Foot Bridge at Didnunala (Balh) 6 Mtr. Span.	300000	0	0	0	0	0	0	0	300000

Beat Wise Requirements of Dharampur Range of Joginder Nagar Forest Division under Infrastructure Development and Forest Protection.												
Beat	HPFD Infrastructure Bldg.	Cost (Rs.)	Bridle Paths & Approach Roads	Cost	Patrolling Kits	Cost	Laptop	Cost	Veh+ Driver + POL	Boundry Pillars	Cost	Total cost
Range Office, Dharampur		0	Approach road from PWD Rest House to Dharampur FRH and FRO-1 KM.	80000	3 (1 RO +2 BO)	30000	1	40000	0	0	0	150000
	Grand Total:	4900000		1540000		80000		40000	2394967	0	0	8954967

Beat Wise Requirements of Dharampur Range of Jogindernagar Forest Range under Wild Life Habitat Management.									
Sl. No.	Component	Beat	Binoculars	Cost	Trapping Cameras	Cost	Veterinary Kits	Cost	Total Cost
1		Bahi	0	0	0	0	1	5000	5000
2		Mandap	0	0	0	0	1	5000	5000
3		Sidhpur	0	0	1	30800	1	5000	35800
4		Dharampur	0	0	1	30800	1	5000	35800
5		Baroti	0	0	0	0	1	5000	5000
6		Ludhiana	0	0	0	0	1	5000	5000
7		Mhan	0	0	1	30800	1	5000	35800
8		Brang	0	0	1	30800	1	5000	35800
9		Dharampur Range(1 R.O. +3 B.Os	2	60000	0	0	4	20000	80000
		Total:	2	60000	4	123200	12	60000	243200

YEAR WISE SUMMARY OF PROJECTIONS FOR JOGINDER NAGAR RANGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	10	15	10	10	0	0	0	0	0	45
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	614500	921750	614500	614500	0	0	0	0	0	2765250
1st Year Maintenance											
Physical (Ha.)	0	0	10	15	10	10	0	0	0	0	45
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	56500	84750	56500	56500	0	0	0	0	254250
2nd Year Maintenance											
Physical (Ha.)			0	10	15	10	10				45
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	38000	57000	38000	38000	0	0	0	171000
3rd Year Maintenance											
Physical (Ha.)				0	10	15	10	10			45
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	19500	29250	19500	19500	0	0	87750
4th Year Maintenance											
Physical (Ha.)					0	10	15	10	10		45
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	19500	29250	19500	19500	0	87750
5th Year Maintenance											
Physical (Ha.)	0					0	10	15	10	10	45
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	19500	29250	19500	19500	87750
Total New Plantation	0	614500	978250	737250	747500	143250	106250	68250	39000	19500	3453750
Enrichment Plantation											
Physical (Ha.)	0	20	15	20	20	0	0	0	0	0	75
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	1104000	828000	1104000	1104000	0	0	0	0	0	4140000
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	0	20	15	20	20	0	0	0	0	75
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	113000	84750	113000	113000	0	0	0	0	423750
2nd Year Maintenance											
Physical (Ha.)	0	0	0	20	15	20	20	0	0	0	75
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	76000	57000	76000	76000	0	0	0	285000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	20	15	20	20	0	0	75
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	39000	29250	39000	39000	0	0	146250
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	20	15	20	20	0	75
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	39000	29250	39000	39000	0	146250
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	20	15	20	20	75
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	39000	29250	39000	39000	146250
Total Enrichment Plantation	0	1104000	941000	1264750	1313000	257250	183250	107250	78000	39000	5287500
Natural Regeneration											
Physical (Ha.)	0	20	20	30	25						95
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	663000	663000	994500	828750	0	0	0	0	0	3149250
1st Year Maintenance											
Physical (Ha.)		0	20	20	30	25					95
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	27000	27000	40500	33750	0	0	0	0	128250
2nd Year Maintenance											
Physical (Ha.)			0	20	20	30	25				95
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	19000	19000	28500	23750	0	0	0	90250

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)				0	20	20	30	25			95
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	11000	11000	16500	13750	0	0	52250
4th Year Maintenance											
Physical (Ha.)					0	20	20	30	25		
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	11000	11000	16500	13750	0	52250
5th Year Maintenance											
Physical (Ha.)						0	20	20	30	25	
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	11000	11000	16500	13750	52250
Total Natural Regenration	0	663000	690000	1040500	899250	84250	62250	41250	30250	13750	3524500
NTPP											
Physical (Ha.)	0	15	10	15	0	0	0	0	0	0	40
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	1928250	1285500	1928250	0	0	0	0	0	0	5142000
1st Year Maintenance											
Physical (Ha.)	0	0	15	10	15	0	0	0	0	0	40
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	58050	38700	58050	0	0	0	0	0	154800
2nd Year Maintenance											
Physical (Ha.)	0	0	0	15	10	15	0	0	0	0	40
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	46320	30880	46320	0	0	0	0	123520
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	15	10	15	0	0	0	40
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	34755	23170	34755	0	0	0	92680
Total NTPP	0	1928250	1343550	2013270	123685	69490	34755	0	0	0	5513000
Energy Planation											
Physical (Ha.)	0	20	30	25	25	20					120

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	1123000	1684500	1403750	1403750	1123000	0	0	0	0	6738000
Total Energy Planatation	0	1123000	1684500	1403750	1403750	1123000	0	0	0	0	6738000
Pasture Development											
Physical (Ha.)	0	20	20	30	30	20	0	0	0	0	120
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	332000	332000	498000	498000	332000	0	0	0	0	1992000
1st Year Maintenance											
Physical (Ha.)	0	0	20	20	30	30	20				120
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	42000	42000	63000	63000	42000	0	0	0	252000
2nd Year Maintenance											
Physical (Ha.)	0	0	0	20	20	30	30	20	0	0	120
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	35400	35400	53100	53100	35400	0	0	212400
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	20	20	30	30	20	0	120
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	23600	23600	35400	35400	23600	0	141600
Total Pasture Development	0	332000	374000	575400	620000	471700	130500	70800	23600	0	2598000
Eradication of Noxious weeds											
Physical (Ha.)	100	120	269	300	0						789
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	1505000	1806000	4048450	4515000	0	0	0	0	0	0	11874450
Total Eradication of Noxious weeds	1505000	1806000	4048450	4515000	0	0	0	0	0	0	11874450
Total Plantation	1505000	7570750	10059750	11549920	5107185	2148940	517005	287550	170850	72250	38989200
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	222	223	222	222	0	0	0	0	0	0	889
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	2220000	2230000	2220000	2220000	0	0	0	0	0	0	8890000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Big Size (2mx2.5m)											
Physical (Nos.)	84	84	84	84							336
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	1447320	1447320	1447320	1447320	0	0	0	0	0	0	5789280
Total Gabion Checkdams	3667320	3677320	3667320	3667320	0	0	0	0	0	0	14679280
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	123	122	123	123	0	0	0	0	0	0	491
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	1230000	1220000	1230000	1230000	0	0	0	0	0	0	4910000
Big Size											
Physical (Nos.)	107	107	107	107							428
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	1843610	1843610	1843610	1843610	0	0	0	0	0	0	7374440
Total Gabion Retainingwalls	3073610	3063610	3073610	3073610	0	0	0	0	0	0	12284440
Gabion Spurs											
Small Size											
Physical (Nos.)	26	25	25	28	0	0	0	0	0	0	104
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	1262040	1213500	1213500	1359120	0	0	0	0	0	0	5048160
Total Gabion Spurs	1262040	1213500	1213500	1359120	0	0	0	0	0	0	5048160
Water Harvesting Structures											
Physical (Nos.)	2	2	2	1	0	0	0	0	0	0	7
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	124300	124300	124300	62150	0	0	0	0	0	0	435050
Total Water Harvesting Structures	124300	124300	124300	62150	0	0	0	0	0	0	435050
Water Holes for wild life											
Physical (Nos.)	3	2	3	2							10
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	2570760	1713840	2570760	1713840	0	0	0	0	0	0	8569200
Total Water Holes for wild life	2570760	1713840	2570760	1713840	0	0	0	0	0	0	8569200
Observation Post											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Nos.)	1	0	0	0	0	0	0	0	0	0	1
Norm/Ha. (Rs.)	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	1100000	
Financial (Rs.)	1100000	0	0	0	0	0	0	0	0	0	1100000
Total Observation Post	1100000	0	0	0	0	0	0	0	0	0	1100000
Trenching											
Small Size											
Physical (Nos.)	760	765	780	780	0	0	0	0	0	0	3085
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	11628	11704.5	11934	11934	0	0	0	0	0	0	47200.5
Total Trenching	11628	11704.5	11934	11934	0	0	0	0	0	0	47200.5
Total Soil & Moisture Conservation	11809658	9804274.5	10661424	9887974	0	0	0	0	0	0	42163331
Payment For Environment Services											
Power saving implements/Solar Lights	150000	150000	150000	150000	150000	150000	0	0	0	0	900000
Community Storage Tanks	600000	600000	600000	600000	0	0	0	0	0	0	2400000
Village Pond	350000	350000	350000	350000	350000	350000	350000	350000	0	0	2800000
Crematorium	300000	300000	300000	0	0	0	0	0	0	0	900000
Reward Money	638952	638952	638954	638953	638952	638952	638952	638952	638952	638952	6389523
Total PES	2038952	2038952	2038954	1738953	1138952	1138952	988952	988952	638952	638952	13389523
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	153500	153500	153500	0	0	0	0	0	0	0	460500
Exposure visits for Forest Staff	300000	400000	380000	0	0	0	0	0	0	0	1080000
Capacity building for Nursery	972500	972500	972500	972500	0	0	0	0	0	0	3890000
Training in handling Wild Life	100000	100000	100000	0	0	0	0	0	0	0	300000
Training in Modern Nursery	0	100000	100000	0	0	0	0	0	0	0	200000
Total TR & C	1526000	1726000	1706000	972500	0	0	0	0	0	0	5930500
Infrastructure & Forest Protection											
Construction of New Infrastructure Iije Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	500000	800000	700000	500000	500000	0	0	0	0	0	3000000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	500000	400000	1000000	500000	2000000	3000000	600000	220000	0	0	8220000
Patrolling Kits	0	0	50000	50000	50000	0	0	0	0	0	150000
Demarcation of forests & Cos. Of Boundry pillars	200000	300000	500000	800000	810000	0	0	0	0	0	2610000
Total Infrastructure & Forest Protection	1200000	1500000	2250000	1850000	3360000	3000000	600000	220000	0	0	13980000
Wild life Habitat Management											
Binoculars	210000	0	210000	0	0	0	0	0	0	0	420000
Veterinary Kit at Range & Beat Level	20000	20000	30000	0	0	0	0	0	0	0	70000
Trapping Cameras & Camera	123200	0	123200	123200	0	0	0	0	0	0	369600
Total Wild life Habitat Management	353200	20000	363200	123200	0	0	0	0	0	0	859600
Monitoring & Evaluation					0	5902267	0	0	0	0	5902267
Contingencies	1147122	1147122	1147122	1147122	1147122	1147122	1207117	1147122	1147122	1147122	11531215
Grand Total	19579932	23807098.5	28226450	27269669	10753259	13337281	3313074	2643624	1956924	1858324	132745636

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN-JOGINDAR NAGAR RANGE

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
	1. AFFORESTATION				
1	New Plantation	Ha.	76750	45	34,53,750
2	Enrichment	Ha.	70500	75	52,87,500
3	Natural Regeneration	Ha.	37100	95	35,24,500
4	NTPP	Ha.	137825	40	55,13,000
5	Energy Plantation	Ha.	56150	120	67,38,000
6	Pasture Development	Ha.	21650	120	25,98,000
7	Eradication of Noxious weeds	Ha.	15050	789	1,18,74,450
	Total			1,284	3,89,89,200
	AFORESTATION	Total:			3,89,89,200
	2. SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	1,225	1,46,79,280
2	Gabion Retaining walls	Nos.	10000/17230	919	1,22,84,440
3	Gabion Checkwalls	Nos.	10000/17230		
4	Gabion Spurs	Nos.	48540	106	50,48,160
5	Water Harvesting Structures	Nos.	62150	7	4,35,050
6	Water Holes for wild life	Nos.	856920	10	85,69,200
7	Observation Post	Nos.	1100000	1	11,00,000
8	Gulli Plugging/ Dry stone Checkdams	Nos.	4710	-	-
9	Brushwood Checkdams	Nos.	78	-	-
10	Trenching	Nos.	15.3	3,085	47,201
11	Bio Engineering	Ha.	111700	-	-
	SOIL & MOISTURE CONSERVATION	Total:	0	-	4,21,63,331
	3. PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	30	9,00,000
2	Community Storage Tanks	Nos.	300000	8	24,00,000
3	Village Ponds	Nos.	35000	80	28,00,000
4	Crematorium	Nos.	300000	3	9,00,000
5	Reward Money	HH*413			63,89,523
6	Community Power tiller		1100000		-
	Total:			-	1,33,89,523
4.	RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	6.0	4,60,500
2	Eradication of Lantana and other Invasive species	Ha.	8000	-	-
3	Nursery	Nos.	1220000/ 770000/ 550000/	4	38,90,000
4	Exposure visits for Forest Staff	Lump sum	12000000		10,80,000
5	Handling of Wild Life	Lump sum			3,00,000

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
6	Nursery Modernisation	Lump sum			2,00,000
		Total:			59,30,500
	5 & 6. INFRASTRUCTURE AND FOREST PROTECTION				
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff		-	30,00,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	..	Lump Sum	-	82,20,000
3	Patrolling Kits	Nos.	10000	15	1,50,000
4	Demarcation of forests & Cons.of boundry pillers				26,10,000
8	Vehicles & POL	Cost Norm			
		Total:	0	-	1,39,80,000
	7. WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	14	4,20,000
2	Veterinary	Nos.	5000	14	70,000
3	Trapping Cameras	Nos.	30800	12	3,69,600
4	GPS		30000		
5	Tranquilizer Gun	Nos.	250000		-
		Total:	0	-	8,59,600
	Total CAT Plan		0	-	11,53,12,154
	8.MONITORING & EVALUATION	5%		-	59,02,267
	9. Contingencies	10%		-	1,15,31,215
	Total CAT Plan for Financial Projections			-	13,27,45,636

FOREST DIVISION: JOGINDERNAGAR. FOREST RANGE: JOGINDERNAGAR.
Beat Wise Requirement of Jogindernagar Range of Jogindernagar Forest Division under Afforestation
(Plantation) Component.

Sr. No.	Type of Plantation	Name of Beat	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
1	New Plantation						Ban, Chir, Brass, Kafal, Sheesham, Bamboo, Cuclyptsios and other B/L species
		Drubbal	Ha.	76750	5	383750	
			Ha.	76750	5	383750	
2		Drahl	Ha.	76750	5	383750	
3		Nainpur	Ha.	76750	10	767500	
4		Bhraru	Ha.	76750	10	767500	
5		Banaun	Ha.	76750	0	0	
6		Lower Chauntra	Ha.	76750	0	0	
7		Upper Chauntra	Ha.	76750	5	383750	
8		Hara Bagh	Ha.	76750	5	383750	
9		Chhaprot	Ha.	76750	0	0	
10		Jogindernagar	Ha.	76750	0	0	
11		Bagra	Ha.	76750	0	0	
12		Ghatta	Ha.	76750	0	0	
				Total	45	3453750	
1	Enrichment	Drubbal	Ha.	70500	5	352500	
2		Drahl	Ha.	70500	5	352500	
3		Nainpur	Ha.	70500	10	705000	
4		Bhraru	Ha.	70500	5	352500	
5		Banaun	Ha.	70500	0	0	
6		Lower Chauntra	Ha.	70500	5	352500	
7		Upper Chauntra	Ha.	70500	5	352500	
8		Hara Bagh	Ha.	70500	10	705000	
9		Chhaprot	Ha.	70500	0	0	
10		Jogindernagar	Ha.	70500	10	705000	
11		Bagra	Ha.	70500	10	705000	
12		Ghatta	Ha.	70500	10	705000	
			Ha.	Total:	75	5287500	
1	Natural Regeneration/ Closure	Drubbal	Ha.	37100	5	185500	
2		Drahl	Ha.	37100	5	185500	
3		Nainpur	Ha.	37100	10	371000	
4		Bhraru	Ha.	37100	5	185500	
5		Banaun	Ha.	37100	0	0	
6		Lower Chauntra	Ha.	37100	10	371000	
7		Upper Chauntra	Ha.	37100	10	371000	
8		Hara Bagh	Ha.	37100	0	0	
9		Chhaprot	Ha.	37100	20	742000	
10		Jogindernagar	Ha.	37100	10	371000	
11		Bagra	Ha.	37100	10	371000	
12		Ghatta	Ha.	37100	10	371000	
			Ha.	Total:	95	3524500	
1	NTPP Plantation	Drubbal	Ha.	137825	5	689125	
2		Drahl	Ha.	137825	5	689125	

Sr. No.	Type of Plantation	Name of Beat	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
3		Nainpur	Ha.	137825	5	689125	
4		Bhraru	Ha.	137825	5	689125	
5		Banaun	Ha.	137825	0	0	
6		Lower Chauntra	Ha.	137825	0	0	
7		Upper Chauntra	Ha.	137825	5	689125	
8		Hara Bagh	Ha.	137825	5	689125	
9		Chhaprot	Ha.	137825	0	0	
10		Jogindernagar	Ha.	137825	5	689125	
11		Bagra	Ha.	137825	5	689125	
12		Ghatta	Ha.	137825	0	0	
			Ha.	Total:	40	5513000	
	Energy Plantation						
1		Drubbal	Ha.	56150	10	561500	
2		Drahl	Ha.	56150	10	561500	
3		Nainpur	Ha.	56150	10	561500	
4		Bhraru	Ha.	56150	10	561500	
5		Banaun	Ha.	56150	10	561500	
6		Lower Chauntra	Ha.	56150	10	561500	
7		Upper Chauntra	Ha.	56150	10	561500	
8		Hara Bagh	Ha.	56150	10	561500	
9		Chhaprot	Ha.	56150	10	561500	
10		Jogindernagar	Ha.	56150	10	561500	
11		Bagra	Ha.	56150	10	561500	
12		Ghatta	Ha.	56150	10	561500	
					120	6738000	
	Pasture Development						
1		Drubbal	Ha.	21650	10	216500	
2		Drahl	Ha.	21650	10	216500	
3		Nainpur	Ha.	21650	10	216500	
4		Bhraru	Ha.	21650	10	216500	
5		Banaun	Ha.	21650	10	216500	
6		Lower Chauntra	Ha.	21650	10	216500	
7		Upper Chauntra	Ha.	21650	10	216500	
8		Hara Bagh	Ha.	21650	10	216500	
9		Chhaprot	Ha.	21650	10	216500	
10		Jogindernagar	Ha.	21650	10	216500	
11		Bagra	Ha.	21650	10	216500	
12		Ghatta	Ha.	21650	10	216500	
					120	2598000	
	Eradication of Noxious Weeds						
	Drubbal	DPF Sill	10	15050	150500		
		DPF Ramsi	10	15050	150500		

Sr. No.	Type of Plantation	Name of Beat	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
		DPF Drubbal	10	15050	150500		
		DPF Kunkar	6	15050	90300		
		DPF Charonjh	5	15050	75250		
		DPF Pipli	5	15050	75250		
		DPF Hiun Banaun	10	15050	150500		
		Total:	56		842800		
	Drahl	DPF Kamrerh	30	15050	451500		
		DPF Drahl I,II,III	15	15050	225750		
		Bahaila	10	15050	150500		
		DPF Makredi	25	15050	376250		
		DPF Baghori Dhar	40	15050	602000		
		Total:	120		1806000		
	Nainpur	Sill DPF	20	15050	301000		
		DPF Ghaghas Nal	20	15050	301000		
		Majhakhar DPF	10	15050	150500		
		Bihun DPF	10	15050	150500		
		DPF Haar	5	15050	75250		
		DPF Chanehar	4	15050	60200		
		DPF Birdhar	5	15050	75250		
		DPF Karnjh	10	15050	150500		
		DPF Batnagar	5	15050	75250		
		DPF Manaru	10	15050	150500		
		DPF Kafal Kut	10	15050	150500		
		DPF Nagdehra	10	15050	150500		
		DPF Rihra	10	15050	150500		
		UPF Chhamb	10	15050	150500		
		Total:	139		2091950		
	Bhraru	DPF Makora	25	15050	376250		
		DPF Khron	20	15050	301000		
		DPF Bindh	15	15050	225750		
		DPF Bhraru	0	15050	0		
		DPF Gaduhi	20	15050	301000		
		DPF Kumahra	0	15050	0		
		Total:	80		1204000		
	Banaun	DPF Banaun	25	15050	376250		
		DPF Jamoti	0	15050	0		
		DPF Nalarrihra	20	15050	301000		
		DPF Magru	0	15050	0		
		DPF Magrudhar	40	15050	602000		
		Total:	85		1279250		
	Lower Chauntra	..	0	15050	0		
	Upper Chauntra	DPF Khaprotu	15	15050	225750		
		DPF Khalainai	25	15050	376250		
		DPF Marhola	20	15050	301000		
		DPF Chauntra	0	15050	0		

Sr. No.	Type of Plantation	Name of Beat	Unit	Unit cost for Plantation (Rs.)	Qty	Total Cost (Rs.)	Species to be planted
		Total:	60		903000		
	Harabagh	DPF Digli II	20	15050	301000		
		DPF Harabagh II	20	15050	301000		
		Total:	40		602000		
	Chhaprot	DPF Siuri I, II	80	15050	1204000		
		Total:	80		1204000		
	Jogindernagar	DPF Jimjima	5	15050	75250		
		DPF Trimunda	20	15050	301000		
		DPF Dhelu I,II	6	15050	90300		
		DPF Jari Tikkar	20	15050	301000		
		DPF Suhi	15	15050	225750		
		DPF Bagla Rana Khad	5	15050	75250		
		Total:	71		1068550		
	Bagra	DPF Kannpur I & II	20	15050	301000		
		Bagra III DPF	20	15050	301000		
		DPF Garu	8	15050	120400		
		Total:	48		722400		
	Ghatta	DPFD Aijoo	10	15050	150500		
		Total:	10		150500		
		Grand Total:	789		11874450		

Beat Wise Requirement of Jogindernagar Range of Joginder Nagar Division under Nurseries.												
Component	Name of Beat	Existing Nursery	Category	Area (Ha.)	Lat Long	Intervention required	Cost	New Nursery	Category	Area (Ha)	Cost	Total
Nurseries:												
	Drubbal	..	..	..	..	..	0	New	Beat Level	0.2	550000	550000
	Drahl	..	..	..	..	..	0	New	Beat Level	0.2	550000	550000
	Nainpur	..	..	..	..	..	0	..	Beat Level	0.2	550000	550000
	Upper Chauntra	Existing	Range Level	2		Modernisation as per annexature I	1220000	..	..	..	0	1220000
	Upper Chauntra	Exisrting	Beat Level	0.2		Modernisation	250000	..	..	..	0	250000
	Hara Bagh	Existing	Range Level	0.5		..Water tank, Piped water, hand pump	770000	..	..	..	0	770000
				3.1			2240000			0.6	1650000	3890000

Beat Wise Requirements of Jogindernagar Range of Joginder Forest Division under Soil & Moisture Conservation Component.

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
	Drubbal	Basai Nala-5 km	Gabion Check Dam	1.5mx1.5m	Nos	10000	17	170000
				2mx2.5m	Nos	17230	8	137840
		Dadwan Nala-4km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Ramsi Nala-5km	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		Bagru Nala-4 km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Heun Nala-2 km	Gabion Check Dam	1.5mx1.5m	Nos	10000	7	70000
				2mx2.5m	Nos	17230	3	51690
					Total:		100	1187980
	Drahl	Nag Nala-4 km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Bhadyara Nala-5 km	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		Chho Nala-4km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Kamerh Nala-4km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Drahl Nala-3km	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150
					Total:		100	1180750
	Nainpur	Ghuri Nala-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		Ghaghas Nala-4kn	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Charadu Nala-5 km	Gabion Check	1.5mx1.5m	Nos	10000	18	180000

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
			Dam					
				2mx2.5m	Nos	17230	7	120610
		Balhi Nal-4km	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Baserh Nal-3KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150
		Tikar Nal-3KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150
		Dramman Nal-4KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Bihun Nal-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		Bhagwar Nal-3KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150
		Sarwaldi Nal-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	7	70000
				2mx2.5m	Nos	17230	3	51690
		Manharu Nala-3KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	3	51690
		Banogi Nal-2.5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	8	80000
				2mx2.5m	Nos	17230	4	68920
					Total:		217	2582110
	Bhararu	Makora Nal-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	10	172300
		Gaduhi Nal-4KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Katwali Nal-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		Kothi Nal-3KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150
		Haar Nal-	Gabion	1.5mx1.5m	Nos	10000	8	80000

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		2KM	Check Dam					
				2mx2.5m	Nos	17230	4	68920
					Total:		97	1179670
	Banaun	..	Gabion Check Dam	1.5mx1.5m	Nos	10000	0	0
				2mx2.5m	Nos	17230	0	0
					Total:		0	0
	Lower Chauntra	Kholi Nala	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
		Sukka bagh Nala				10000	5	50000
		Sukhed Khad				10000	5	50000
				2mx2.5m	Nos	17230	0	0
					Total:		20	200000
	Upper Chauntra	Khalai Nal-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	7	70000
				2mx2.5m	Nos	17230	3	51690
		Hardbedu Nal1.5 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	6	60000
				2mx2.5m	Nos	17230	2	34460
		Baidhni Nala 2 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	7	70000
				2mx2.5m	Nos	17230	3	51690
		Marola Nala 4 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		DPF Old Marola	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	8	137840
					Total:		68	831830
	Hara Bagh	Digli Nala-4KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		DPF HarA Bagh II	Gabion Check Dam	1.5mx1.5m	Nos	10000	6	60000
				2mx2.5m	Nos	17230	4	68920
		DPF Siuri CIII	Gabion Check Dam	1.5mx1.5m	Nos	10000	10	100000
				2mx2.5m	Nos	17230	5	86150

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		DPF Digli	Gabion Check Dam	1.5mx1.5m	Nos	10000	5	50000
				2mx2.5m	Nos	17230	5	86150
		DPF Badan	Gabion Check Dam	1.5mx1.5m	Nos	10000	6	60000
				2mx2.5m	Nos	17230	4	68920
		DPF Chhangdhar	Gabion Check Dam	1.5mx1.5m	Nos	10000	9	90000
				2mx2.5m	Nos	17230	3	51690
		DPF Digli II	Gabion Check Dam	1.5mx1.5m	Nos	10000	8	80000
				2mx2.5m	Nos	17230	4	68920
		Brahman Nala-2 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	6	60000
				2mx2.5m	Nos	17230	2	34460
		DPF Siuri CIV	Gabion Check Dam	1.5mx1.5m	Nos	10000	25	250000
				2mx2.5m	Nos	17230	10	172300
		Khani Nala-9KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	30	300000
				2mx2.5m	Nos	17230	15	258450
		Sukhar Nala-4KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		Lhala Nala-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	18	180000
				2mx2.5m	Nos	17230	7	120610
		Shehlan Nala-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	6	103380
					Total:		240	2942250
	Chhaprot	Ner Khad-12 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	6	103380
		Chhaprot Babanal-6KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	5	50000
				2mx2.5m	Nos	17230	2	34460
		Majharnu Nal-5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	22	220000
				2mx2.5m	Nos	17230	8	137840
		Magru Nal-	Gabion	1.5mx1.5m	Nos	10000	14	140000

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		4KM	Check Dam					
				2mx2.5m	Nos	17230	4	68920
		DPF Siuri CII	Gabion Check Dam	1.5mx1.5m	Nos	10000	8	80000
				2mx2.5m	Nos	17230	4	68920
		DPF Siuri CI	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	6	103380
					Total:		103	1246900
	Joginder nagar	Dhelu DPF	Gabion Check Dam	1.5mx1.5m	Nos	10000	12	120000
				2mx2.5m	Nos	17230	8	137840
		Jari Tikkar DPF	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	10	172300
		Tarmunda DPF	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	10	172300
		Gugli Khad-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	5	50000
				2mx2.5m	Nos	17230	0	0
		Garh Nala-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	4	40000
				2mx2.5m	Nos	17230	1	17230
		Phegru Nala 2.5 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	4	40000
				2mx2.5m	Nos	17230	2	34460
		Mundokhar Nala 2.5KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	5	50000
				2mx2.5m	Nos	17230	1	17230
					Total:		102	1251360
	Bagra	Patt Nala-2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	18	180000
				2mx2.5m	Nos	17230	5	86150
		Miara Nal-2 KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	22	220000
				2mx2.5m	Nos	17230	8	137840
		Bagra Nal-6KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	40	400000
				2mx2.5m	Nos	17230	10	172300
		Garh Nala 2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
				2mx2.5m	Nos	17230	5	86150
		Dramman Nal 2KM	Gabion Check Dam	1.5mx1.5m	Nos	10000	15	150000
				2mx2.5m	Nos	17230	5	86150
		DPF Kapurdhar I	Gabion Check Dam	1.5mx1.5m	Nos	10000	20	200000
				2mx2.5m	Nos	17230	5	86150
		DPF Kanpur II	Gabion Check Dam	1.5mx1.5m	Nos	10000	7	70000
				2mx2.5m	Nos	17230	3	51690
					Total:		178	2076430
	Ghatta	..	Gabion Check Dam	1.5mx1.5m	Nos	10000	0	0
				2mx2.5m	Nos	17230	0	0
					Total		0	0
				Grand Total:			1225	14679280
Retaining Walls Gabion								
	Drubbal	Basai Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
		Ladwan Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
		Ramsi Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Magru Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
		Hiun Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
					Total:		22	379060
	Drahl	Nag Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
		Kamerh Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Kuthera Nala		10000	Nos	10000	0	0
				17230	Nos	17230	0	0
		Badyara Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Kudnu Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
					Total:		22	379060
	Nainpur	Ghuri Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		Ghaghas Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		Chardu Nala		10000	Nos	10000	0	0

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
				17230	Nos	17230	8	137840
		Balhi Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Basedh Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Tikkar Nal		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		Drahman Nala		10000	Nos	10000	0	0
				17230	Nos	17230	10	172300
		Bhagwar Nala		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		Petu Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
					Total:		68	1171640
	Bhararu	Makora Nala		10000	Nos	10000	0	0
				17230	Nos	17230	10	172300
		Kothi Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		Gadui Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		Haar Nala		10000	Nos	10000	0	0
				17230	Nos	17230	4	68920
					Total:		30	516900
	Banaun	Rana Khad		10000	Nos	10000	0	0
				17230	Nos	17230	30	516900
		Mordug Nala		10000	Nos	10000	0	0
				17230	Nos	17230	12	206760
		Balh Nala		10000	Nos	10000	0	0
				17230	Nos	17230	10	172300
					Total:		52	895960
	Lower Chaunbtra	Kholi Nala		10000	Nos	10000	0	0
						17230	8	137840
		Sukhad Khad				10000	0	0
						17230	8	137840
		Sukhad Bagh Nala				10000	0	0
						17230	8	137840
		Sukked Khad				10000	0	0
						17230	8	137840
		Bajgarh Khad				10000	0	0
						17230	8	137840

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		..			Total:		40	689200
	Upper Chauntra	Khalai Nala		10000	Nos	10000	10	100000
				17230	Nos	17230	0	0
		Hards Behru Nala		10000	Nos	10000	5	50000
				17230	Nos	17230	0	0
		Marhola Nala, I, II and III		10000	Nos	10000	30	300000
				17230	Nos	17230	15	258450
		DPF old Marola		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
					Total:		70	830140
	Hara Bagh	Digli Nala		10000	Nos	10000	0	0
				17230	Nos	17230	8	137840
		DPF HarA Bagh		10000	Nos	10000	0	0
				17230	Nos	17230	6	103380
		DPF Siuri CIII		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		DPF Digli		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		DPF Badan		10000	Nos	10000	9	90000
				17230	Nos	17230	3	51690
		DPF ChhangdhaR		10000	Nos	10000	11	110000
				17230	Nos	17230	4	68920
		DPF Digli II		10000	Nos	10000	15	150000
				17230	Nos	17230	5	86150
		Brahman Nala		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		DPF Siuri CIV		10000	Nos	10000	22	220000
				17230	Nos	17230	8	137840
		Khani Nala		10000	Nos	10000	28	280000
				17230	Nos	17230	7	120610
		Sukhar Nala		10000	Nos	10000	11	110000
				17230	Nos	17230	4	68920
		LhaLA Nala		10000	Nos	10000	16	160000
				17230	Nos	17230	4	68920
		Shehlan Nala		10000	Nos	10000	6	60000
				17230	Nos	17230	4	68920
		Bahmanu Nala		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		Khani Nala Landslide		10000	Nos	10000	19	190000
				17230	Nos	17230	6	103380

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
					Total:		236	2873330
	Chhaprot	Siuri CII		10000	Nos	10000	8	80000
				17230	Nos	17230	4	68920
		Siuri CI		10000	Nos	10000	15	150000
				17230	Nos	17230	5	86150
		Majharnu DPF		10000	Nos	10000	4	40000
				17230	Nos	17230	1	17230
		DPF Chhaprot		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		DPF Manoh		10000	Nos	10000	3	30000
				17230	Nos	17230	2	34460
		Ner Khad		10000	Nos	10000	11	110000
				17230	Nos	17230	4	68920
		Chhaprot Nala		10000	Nos	10000	10	100000
				17230	Nos	17230	5	86150
		Majharnu Nala		10000	Nos	10000	7	70000
				17230	Nos	17230	3	51690
		Magru Nala		10000	Nos	10000	6	60000
				17230	Nos	17230	4	68920
					Total:		102	1244130
	Jogindernagar	Ner KhaD		10000	Nos	10000	20	200000
				17230	Nos	17230	8	137840
		Rana Khad		10000	Nos	10000	30	300000
				17230	Nos	17230	10	172300
		Giugli Khad		10000	Nos	10000	14	140000
				17230	Nos	17230	6	103380
		Garh Nal		10000	Nos	10000	10	100000
				17230	Nos	17230	4	68920
		Phegru Nala		10000	Nos	10000	14	140000
				17230	Nos	17230	6	103380
		Mandokhar Nal		10000	Nos	10000	25	250000
				17230	Nos	17230	10	172300
		Major landslide in DPF Suhi		10000	Nos	10000	40	400000
				17230		17230	10	172300
					Total:		207	2460420
	Bagra	Bagra Nala		10000	Nos	10000	20	200000
				17230	Nos	17230	10	172300
		DPF Banala Landslide		10000	Nos	10000	30	300000
				17230	Nos	17230	10	172300
					Total:		70	844600
	Ghatta	..		10000	Nos	10000	0	0
				17230		17230		0
					Total:		0	0

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
				Grand Total:			919	12284440
	Drubbal	..	Water Harvesting Structures		Nos	62150	0	0
	Drahl	DPF Baghoridhar	Water Harvesting Structures		Nos	62150	1	62150
	Nainpur	DPF Silh	Water Harvesting Structures		Nos	62150	1	62150
		Haar Nal			Nos	62150	1	62150
		Petu Nal			Nos	62150	1	62150
		Naun Village			Nos	62150	0	0
		Garli Nala			Nos	62150	1	62150
		Andrahl Nala			Nos	62150	1	62150
	Bhraru	..	..		Nos	62150	0	0
	Banaun	..	..		Nos	62150	0	0
	Lower Chauntra	..	..		Nos	62150	0	0
	Upper Chauntra	..	..		Nos	62150	0	0
	Hara Bagh	..	..		Nos	62150	0	0
	Chhaprot	..	..		Nos	62150	0	0
	Jogindern agar	Jalpa	Water Harvesting Structures		Nos	62150	1	62150
	Bagra	..	..		Nos	62150	0	0
	Ghatta	..	..		Nos	62150	0	0
			..		Total:		7	435050
	Drubbal		Waterholes			856920	1	856920
	Drahl		Waterholes			856920	0	0
	Nainpur		Waterholes			856920	1	856920
	Bhraru		Waterholes			856920	1	856920
	Banaun		Waterholes			856920	1	856920
	Lower Chauntra		Waterholes			856920	1	856920
	Upper Chauntra		Waterholes			856920	1	856920
	Hara Bagh		Waterholes			856920	1	856920
	Chhaprot		Waterholes			856920	1	856920
	Jogindern agar		Waterholes			856920	1	856920
	Bagra		Waterholes			856920	1	856920
	Ghatta		Waterholes			856920	0	0
					Total:		10	8569200
Spurs								
	Drubbal	Basai Nala	Spurs		Nos	48540	2	97080
		Ladwan Nala	Spurs		Nos	48540	2	97080
		Ramsi Nala	Spurs		Nos	48540	2	97080

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		Magru Nala	Spurs		Nos	48540	2	97080
		Hiun Nala	Spurs		Nos	48540	2	97080
						48540	10	485400
	Drahl	Kutheda Nala	Spurs		Nos	48540	0	0
		Nag Nala	Spurs		Nos	48540	0	0
		Kamerh Nala	Spurs		Nos	48540	0	0
		Rana Khad	Spurs		Nos	48540	10	485400
						Total:	10	485400
	Nainpur	Petu Nal	Spurs		Nos	48540	2	97080
		Foot Nala	Spurs		Nos	48540	2	97080
		Spaidu Nala	Spurs		Nos	48540	2	97080
		Bhagwar Nala	Spurs		Nos	48540	2	97080
		Manharu Nala	Spurs		Nos	48540	2	97080
						Total	10	485400
	Bhraru	Rana Khad	Spurs		Nos	48540	10	485400
		Gaduhi Khad	Spurs		Nos	48540	0	0
		Kothi Nala	Spurs		Nos	48540	0	0
						Total:	10	485400
	Banaun	Rana Khad	Spurs		Nos	48540	8	388320
		Balhj Nala	Spurs		Nos.	48540	0	0
		Jamoti Nala	Spurs		Nos.	48540	2	97080
		Dugh Nal	Spurs		Nos.	48540	0	0
		Dudan Nal	Spurs		Nos.	48540	0	0
						Total	10	485400
	Lower Chauntra	Kholi Nal	Spurs		..	48540	2	97080
		Sukhad Khad	Spurs			48540	2	97080
		Sukhed Khad	Spurs			48540	2	97080
		Bajgarh Khad	Spurs			48540	2	97080
			..		..	Total	8	388320
	Upper Chauntra	Khalai Nala	Spurs		Nos.	48540	0	0
		Hadbeharu Nala	Spurs		Nos.	48540	5	242700
		Baidni Nala	Spurs		Nos.	48540	0	0
		Sukka Bag Nala	Spurs		Nos.	48540	5	242700
		Marhola Nala I,II,III	Spurs		Nos.	48540	0	0
						Total:	10	388320
	Hara Bagh	Khani Nala	Spurs		Nos	48540	2	97080
		Sukhar Nala	Spurs		Nos	48540	2	97080
		Lhahla NaLA	Spurs		Nos	48540	2	97080
		Snehlan	Spurs		Nos	48540	2	97080

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		Nala						
		Bahmanu Nala	Spurs		Nos	48540	2	97080
						Total:	10	485400
	Chhaprot	DPF Suiri CII	Spurs		Nos	48540	0	0
		Ner Khad	Spurs		Nos	48540	4	194160
		Chhaprot Baba Nala	Spurs		Nos	48540	4	194160
		Majharnu Nala	Spurs		Nos	48540	0	0
		Magru Nala	Spurs		Nos	48540	2	97080
						Total:	10	485400
	Jogindernagar	Ner Khad	Spurs		Nos	48540	0	0
		Rana Khad	Spurs		Nos	48540	10	485400
		Gugli Khad	Spurs		Nos	48540	0	0
		Garh Nal	Spurs		Nos	48540	0	0
						Total	10	485400
	Bagra	Bagra Nala	Spurs		Nos	48540	2	97080
		Garh Nala	Spurs		Nos	48540	2	97080
		Patt Nala	Spurs		Nos	48540	2	97080
		Dramman Nala	Spurs		Nos	48540	2	97080
						Total:	8	388320
	Ghatta	..	..		Grand Total		106	5048160
	Total							
Trenching								
	Drubbal	Ramsi	Trenching	1m x30cmx30cm	Nos.	15.3	150	2295
		Drubbal	Trenching	1m x30cmx30cm	Nos.	15.3	100	1530
		Kunkar	Trenching	1m x30cmx30cm	Nos.	15.3	80	1224
		Charonjh	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		Hiun Banaun	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
					Total:		430	6579
	Drahl	DPF Bhabhori dhar	Trenching	1m x30cmx30cm	Nos.	15.3	250	3825
		DPF Kamerh	Trenching	1m x30cmx30cm	Nos.	15.3	80	1224
		DPF Drahl I,II,III	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		DPF Baihla	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		DPF Samkhetar	Trenching	1m x30cmx30cm	Nos.	15.3	40	612
		DPF Makredhi	Trenching	1m x30cmx30cm	Nos.	15.3	40	612
					Total		510	7803
	Nainpur	Nainpur DPF	Trenching	1m x30cmx30cm	Nos.	15.3	150	2295

Component	Name of Beat	Name of Area	Kind of work	Size	Unit	Unit Cost	Qty	Total Cost (Rs/)
		Sill DPF	Trenching	1m x30cmx30cm	Nos.	15.3	80	1224
					Total		230	3519
	Bhraru	DPF Makora	Trenching	1m x30cmx30cm	Nos	15.3	50	765
		DPF Khron	Trenching	1m x30cmx30cm	Nos	15.3	50	765
		DPF Bindh	Trenching	1m x30cmx30cm	Nos	15.3	50	765
		DPF Gaduhi	Trenching	1m x30cmx30cm	Nos	15.3	50	765
		DPF Kumharda	Trenching	1m x30cmx30cm	Nos	15.3	50	765
		DPF Bhraru	Trenching	1m x30cmx30cm	Nos	15.3	50	765
					Total:	15.3	300	4590
	Banaun	Banaun DPF	Trenching	1m x30cmx30cm	Nos.	15.3	300	4590
		Jamoti DPF	Trenching	1m x30cmx30cm	Nos.	15.3	200	3060
					Total:		500	7650
	Lower Chauntra	Sukked DPF 1	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		Sukhed DPF 1	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
	Upper Chauntra	DPF Chauntra	Trenching	1m x30cmx30cm	Nos	15.3	60	918
		DPF Khali Haar	Trenching	1m x30cmx30cm	Nos	15.3	60	918
		DPF Khalaiknal	Trenching	1m x30cmx30cm	Nos	15.3	100	1530
		DPF Khaprotui I,II	Trenching	1m x30cmx30cm	Nos	15.3	150	2295
		DPF Marhola I,II,III	Trenching	1m x30cmx30cm	Nos	15.3	175	2677.5
					Total:		645	9868.5
	Hara Bagh	..	Trenching	1m x30cmx30cm	Nos.	0	0	0
	Chhaprot	..	Trenching	1m x30cmx30cm	Nos.	0	0	0
	Jogindernagar	DPF Jimjima	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		DPF Dhelu	Trenching	1m x30cmx30cm	Nos.	15.3	50	765
		DPF Trimunda	Trenching	1m x30cmx30cm	Nos.	15.3	70	1071
		DPF Dugha Dhar	Trenching	1m x30cmx30cm	Nos.	15.3	100	1530
					Total:		270	4131
	Bagra	DPF Kanpurdhar	Trenching	1m x30cmx30cm	Nos.	15.3	200	3060
					Total:		200	3060
	Ghatta	..	Trenching	1m x30cmx30cm	Nos.	15.3	0	0
					Total:		0	0
			Total Trenching				3085	47200.5
			Grand Total:				5345	41063330.5

Beat Wise Requirements of Joginder Range of Joginder Forest Division under Research, Training & Capacity Building.							
Sr. No.	Beat	Bamboo demonstration plot			Exposure Visit	Training in handling Wild animals	Nursery Modernisation Training
		Area (ha).	Unit Cost	Total			
1	Drubbal	0.5	76750	38375	90000	25000	
2	Drahl	0.5	76750	38375	90000	25000	
3	Nainpur	0.5	76750	38375	90000	25000	
4	Bhraru	0.5	76750	38375	90000	25000	
5	Banaun	0.5	76750	38375	90000	25000	
6	Lower Chauntra	0.5	76750	38375	90000	25000	
7	Upper Chauntra	0.5	76750	38375	90000	25000	
8	Hara Bagh	0.5	76750	38375	90000	25000	
9	Chhaprot	0.5	76750	38375	90000	25000	
10	Jogindernagar	0.5	76750	38375	90000	25000	
11	Bagra	0.5	76750	38375	90000	25000	
12	Ghatta	0.5	76750	38375	90000	25000	
	Total	6		460500	1080000	300000	200000

Beat Wise Infrastructure requirements of Jogindernagar Forest Range of Jogindernagar Forest Division.

Sr. No.	Name of Beat	Name of activity	Unit	Qty	Unit cost (Rs.)	Amount (Rs.)
1	Drubbal	Construction of new Forestr Guard Hut, Drubbal	No.	1	900000	900000
		Construction of Bridle path Balla ra Bagla to Primary School	KM	4	40000	160000
		C/o Bridle Path from Kunkar to Ambgera	KM	2.5	40000	100000
2	Drahl	C/o Tool Store at Drahl	No.	1	Lump Sum	200000
		C/o Bridle Path from Darkoti to Sara ra Galu	KM	3	40000	120000
		C/o Bridle Path from Kamerh to Gallu	KM	2	40000	80000
		C/o Bridle Path from Tremlu to Bhabori Jatra Mandir	KM	4	40000	160000
		C/o Bridle Path from Chalotidhar to Sara ra Galu	KM	4	40000	160000
3	Nainpur	Reconstruction of B.Path from Kafal Kut to Sill Kund	KM	5	40000	200000
		Reconstruction of B.Path from Majhakhar to Kund	KM	3	40000	120000
		Reconstruction of B.Path from Basehar to Banog Gani	KM	4	40000	160000
		Reconstruction of B. Path from Chhamb to Banogi	KM	3	40000	120000

Sr. No.	Name of Beat	Name of activity	Unit	Qty	Unit cost (Rs.)	Amount (Rs.)
		Reconstruction of B. Path from Petu to Birdhar	KM	2.5	40000	100000
		Reconstruction of Mule track from Pando to GhaghasNal	KM	15	20000	300000
4	Bhraru	Construction of B.Path froj Ropik to Makora	KM	4	40000	160000
		Construction of B. Path fro Makoda to Khaprotu	KM	3	40000	120000
		Construction of B. Path from Khaprotu to Subbalpani	KM	2	40000	80000
		Construction of B. Path from Subbal to Kharnu	KM	2	40000	80000
5	Banaun	Construction of Fg. Hut, Firewatch Tower to Magru Dhar	No.	1	900000	900000
		Reconstruction of B.Path from Namelari to Jagatpur	KM	4	40000	160000
		Construction of Fireline Magrudhar to Gabhoridhar	KM	10	40000	400000
		Construction of B. Path from Balh to Tarena	KM	4	40000	160000
6	Lower ChaUNTRA	..	..	..		0
		Total:				
7	Upper Chauntra	Construction of B. Path from Ladrui Village to Maluri Village	KM	3	40000	120000
		Construction of B. Path from Bag Village to Devi Dhar	KM	5	40000	200000
		New consdtruction of Outhouse for Chowkidar and one outhouse for Drivers at Inspection hut Chauntra	Nos.	2	40000	500000
		Repair of Fgd. Hut Upper Chauntra Beat	No.	1	40000	40000
8	Hara Bagh	Reconstruction B. Path from Digli to Trimunda	KM	2	40000	80000
		Reconstruction of B. Path from Digli to Badan	KM	4	40000	160000
		Reconstruction of B. Path from Nagchala to Digli	KM	3	40000	120000
		Reconstruction of Bridle Path from Badfan to Chardugh	KM	3	40000	120000
		Reconstruction of Bridle Path from Galu to Patulmand	KM	1	40000	40000
		Reconstruction of Bridle Path froj Gharon to Banehar	KM	4	40000	160000
		Reconstruction of Bridle Path from Lhahla Nala to Chhanagdhar	KM	2	40000	80000
		Reconstruction of B. Path from Bahman Nala to Chari Dugh	KM	3	40000	120000
		Construction of Fireline from Pattal Rihra to Ghron Gala	KM	10	40000	400000
		Construction of Firelinhe between Siuri CIII and C IV	KM	8	40000	320000
9	Chhaprot	Construction of Approach Road frrom Dchhaprot to Fgd. Hut	KM	0.5	40000	20000

Sr. No.	Name of Beat	Name of activity	Unit	Qty	Unit cost (Rs.)	Amount (Rs.)
		Reconstruction of B. Path from CI DPF Siuri to CII DPR Siuri	KM	5	40000	200000
		Reconstruction of Bridle Path from Ghron Gala to Thapi	KM	4	40000	160000
		Reconstruction of B.Path from Manjharnu to Ashapuri	KM	2	40000	80000
		Reconstruction of B. Path from Chhaprot to Thati	KM	3	40000	120000
		Repair of Fireline from Siuri Mandir to Nagdhar	KM	3	40000	120000
		Construction of Fireline from Siuri CII to Ghron Gala	KM	3	40000	120000
		Construction of Fireline from Ghron Gala to Nagdhar	KM	5	40000	200000
		Total:				
10	Joginder nagar	Construction of B.Path from Phegru to Adhrabaan (Gulli)	KM	4	40000	160000
		Construction of B. Path from Phegru to Dhundhi	KM	3	40000	120000
		Construction of B. Path from Dundhi to Adhrabaan	KM	3	40000	120000
		Construction of Saukni Dhugh to Bijnaki B. Path	KM	2	40000	80000
		Maintenance of B. Path from Dudhi to Trimunda	KM	5	40000	200000
		Maintenance of B. Path from Hedgare to Udilanga	KM	4	40000	160000
		Maintenance of B. Path from Suhi to Beachcamp	KM	2	40000	80000
		Maintenance of B. Path from Trimunda to Suhi	KM	2	40000	80000
		Maintenance of B. Path from Phegru to Dhundhi	KM	4	40000	120000
		C/o Addl. Accommodation in Range Office, Jogindernagar	No.	1	40000	40000
		Construction of one out house for Chowkidar, one for Peon.	No.	2	200000	400000
		Construction of Store Room in R.O. Office	No.	1	200000	200000
		Construction of Badminton Court in R.O. Office	No.	1	40000	40000
		Major repair of Division Office , Jogindernagar	No.		Lump Sum	200000
		Maintenance and Repair of D.F.O. Anhd A.C.F. Residence			Lump Sum	200000
		Major maintenance of Fgd. Hut, Jogindernagar.	Lump Sum		Lump Sum	100000
		Major maintenance of B.O. Qtr. At Jogindernagar.	Lump Sum		Lump Sum	100000
		Fixing of tiles in the Compound of D.F.O. Office.	Lump Sum		Lump Sum	100000

Sr. No.	Name of Beat	Name of activity	Unit	Qty	Unit cost (Rs.)	Amount (Rs.)
		Provision of one Four Wheeler and one Bike in Range Office alongwith provisions of POL and Maintenance and Contractual Driver.			Lump Sum	1200000
		Additional Manpower for Data Entry/Watch & Ward staff.			Lump Sum	400000
		Construction of Bridle path from Nichla Bagra to Dhundhi	KM	2	40000	80000
		Construction of B. Path from Mehda to Bagrehta	KM	4	40000	160000
		Construction of Tool store at Fg. Hut. Bagra	No.	1	200000	200000
12	Ghatta	Construction of Bridle Path from Village Trahmat to Garh Mandir	KM	4	40000	160000
		Total:				13120000
		Provision for Patrolling Kits.				150000
		Demarcation of Kanpur I and II DPF and construction of Boundary Pillars, thereafter.	Lump sum		Lump Sum	30000
		Maintenance of Fireline Kannpur	Lump sum		Lump Sum	30000
11	Bagra	Construction of Approach Road from Dramman to Fgd.Hut	Meter	0.6	Lump Sum	50000

Beat Wise REQUIREMENT OF JOGINDERNAGAR RANGE OF JOGINDER FOREST DIVISION UNDER WILDLIFE MANAGEMENT.

Sl. No.	Beat	Trapping Cameras	Cost	Vet Aid Kit	Cost	Binoculars	Cost	Total Cost
1	Drubbal	1	30800	1	5000	1	30000	65800
2	Drahl	1	30800	1	5000	1	30000	65800
3	Nainpur	1	30800	1	5000	1	30000	65800
4	Bhraru	1	30800	1	5000	1	30000	65800
5	Banaun	1	30800	1	5000	1	30000	65800
6	Lower Chauntra	1	30800	1	5000	1	30000	65800
7	Upper Chauntra	1	30800	1	5000	1	30000	65800
8	Hara Bagh	1	30800	1	5000	1	30000	65800
9	Chhaprot	1	30800	1	5000	1	30000	65800
10	Jogindernagar	1	30800	1	5000	1	30000	65800
11	Bagra	1	30800	1	5000	1	30000	65800
12	Ghatta	1	30800	1	5000	1	30000	65800
13	Range Office, Jogindernagar (1 R.O.+3 B.Os.)			2	10000	2	60000	70000
	Total:	12	369600	14	70000	14	420000	859600

YEAR WISE SUMMARY OF PROJECTIONS FOR URLA RANGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	10	20	20	0	0	0	0	0	0	50
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	614500	1229000	1229000	0	0	0	0	0	0	3072500
1st Year Maintenance											
Physical (Ha.)	0	0	10	20	20	0	0	0	0	0	50
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	56500	113000	113000	0	0	0	0	0	282500
2nd Year Maintenance											
Physical (Ha.)			0	10	20	20					50
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	38000	76000	76000	0	0	0	0	190000
3rd Year Maintenance											
Physical (Ha.)				0	10	20	20				50
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	19500	39000	39000	0	0	0	97500
4th Year Maintenance											
Physical (Ha.)					0	10	20	20			50
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	19500	39000	39000	0	0	97500
5th Year Maintenance											
Physical (Ha.)						0	10	20	20		50
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	19500	39000	39000	0	97500
Total New Plantation	0	614500	1285500	1380000	208500	134500	97500	78000	39000	0	3837500
Enrichment Plantation											
Physical (Ha.)	0	15	20	20	0	0	0	0	0	0	55
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	828000	1104000	1104000	0	0	0	0	0	0	3036000
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	0	15	20	20	0	0	0	0	0	55
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	84750	113000	113000	0	0	0	0	0	310750
2nd Year Maintenance											
Physical (Ha.)	0	0	0	15	20	20	0	0	0	0	55
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	57000	76000	76000	0	0	0	0	209000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	15	20	20	0	0	0	55
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	29250	39000	39000	0	0	0	107250
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	15	20	20	0	0	55
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	29250	39000	39000	0	0	107250
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	15	20	20	0	55
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	29250	39000	39000	0	107250
Total Enrichement Plantation	0	828000	1188750	1274000	218250	144250	107250	78000	39000	0	3877500
Natural Regeneration											
Physical (Ha.)	0	35	35	20	15						105
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	1160250	1160250	663000	497250	0	0	0	0	0	3480750
1st Year Maintenance											
Physical (Ha.)		0	35	35	20	15					105
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	47250	47250	27000	20250	0	0	0	0	141750
2nd Year Maintenance											
Physical (Ha.)			0	35	35	20	15				105
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	33250	33250	19000	14250	0	0	0	99750

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)				0	35	35	20	15			105
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	19250	19250	11000	8250	0	0	57750
4th Year Maintenance											
Physical (Ha.)					0	35	35	20	15		105
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	19250	19250	11000	8250	0	57750
5th Year Maintenance											
Physical (Ha.)						0	35	35	20	15	105
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	19250	19250	11000	8250	57750
Total Natural Regeneration	0	1160250	1207500	743500	576750	77750	63750	38500	19250	8250	3895500
NTFP											
Physical (Ha.)	0	10	10	10	0	0	0	0	0	0	30
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	1285500	1285500	1285500	0	0	0	0	0	0	3856500
1st Year Maintenance											
Physical (Ha.)	0	0	10	10	10	0	0	0	0	0	30
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	38700	38700	38700	0	0	0	0	0	116100
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	10	10	0	0	0	0	30
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	30880	30880	30880	0	0	0	0	92640
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	10	10	0	0	0	30
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	23170	23170	23170	0	0	0	69510
Total NTFP	0	1285500	1324200	1355080	92750	54050	23170	0	0	0	4134750
Energy Planation											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	10	15	15							40
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	561500	842250	842250	0	0	0	0	0	0	2246000
Total Energy Plantation	0	561500	842250	842250	0	0	0	0	0	0	2246000
Pasture Development											
Physical (Ha.)	0	10	10	20	10	10	10	0	0	0	70
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	166000	166000	332000	166000	166000	166000	0	0	0	1162000
1st Year Maintenance											
Physical (Ha.)	0	0	10	10	20	10	10	10			70
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	21000	21000	42000	21000	21000	21000	0	0	147000
2nd Year Maintenance											
Physical (Ha.)	0	0	0	10	10	20	10	10	10	0	70
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	17700	17700	35400	17700	17700	17700	0	123900
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	10	10	20	10	10	10	70
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	11800	11800	23600	11800	11800	11800	82600
Total Pasture Development	0	166000	187000	370700	237500	234200	228300	50500	29500	11800	1515500
Eradication of Noxious weeds											
Physical (Ha.)	20	40	30	40	0						130
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	301000	602000	451500	602000	0	0	0	0	0	0	1956500
Total Eradication of Noxious weeds	301000	602000	451500	602000	0	0	0	0	0	0	1956500
Total Plantation	301000	5217750	6486700	6567530	1333750	644750	519970	245000	126750	20050	21463250
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	65	65	64	64	0	0	0	0	0	0	258
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Financial (Rs.)	650000	650000	640000	640000	0	0	0	0	0	0	2580000
Big Size (2mx2.5m)											
Physical (Nos.)	20	20	21	20							81
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	344600	344600	361830	344600	0	0	0	0	0	0	1395630
Total Gabion Checkdams	994600	994600	1001830	984600	0	0	0	0	0	0	3975630
Gabion Retainingwalls											
Small Size											
Physical (Nos.)	22	22	25	20	0	0	0	0	0	0	89
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	220000	220000	250000	200000	0	0	0	0	0	0	890000
Big Size											
Physical (Nos.)	2	3									5
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	34460	51690	0	0	0	0	0	0	0	0	86150
Total Gabion Retainingwalls	254460	271690	250000	200000	0	0	0	0	0	0	976150
Gabion Checkwalls											
Small Size											
Physical (Nos.)	14	15	14	15	0	0	0	0	0	0	58
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	140000	150000	140000	150000	0	0	0	0	0	0	580000
Big Size (2mx2.5m)											
Physical (Nos.)	3	2									5
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	51690	34460	0	0	0	0	0	0	0	0	86150
Total Gabion Checkwalls	191690	184460	140000	150000	0	0	0	0	0	0	666150
Gabion Spurs											
Small Size											
Physical (Nos.)	10	10	10		0	0	0	0	0	0	30
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	485400	485400	485400	0	0	0	0	0	0	0	1456200
Total Gabion Spurs	485400	485400	485400	0	0	0	0	0	0	0	1456200
Water Harvesting Structures											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Nos.)	2	1	2	0	0	0	0	0	0	0	
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	124300	62150	124300	0	0	0	0	0	0	0	310750
Total Water Harvesting Structures	124300	62150	124300	0	0	0	0	0	0	0	310750
Water Holes for wild life											
Physical (Nos.)	3	2	2								7
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	2570760	1713840	1713840	0	0	0	0	0	0	0	5998440
Total Water Holes for wild life	2570760	1713840	1713840	0	0	0	0	0	0	0	5998440
Trenching											
Small Size											
Physical (Nos.)	775	775	775	775	0	0	0	0	0	0	3100
Norm/Ha. (Rs.)	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	15.3	
Financial (Rs.)	11857.5	11857.5	11857.5	11857.5	0	0	0	0	0	0	47430
Total Trenching	11857.5	11857.5	11857.5	11857.5	0	0	0	0	0	0	47430
Bio Engineering											
Physical (Nos.)	3	3									6
Norm/Ha. (Rs.)	111700	111700	111700	111700	111700	111700	111700	111700	111700	111700	
Financial (Rs.)	335100	335100	0	0	0	0	0	0	0	0	670200
Total Bio Engineering	335100	335100	0	0	0	0	0	0	0	0	670200
Total Soil & Moisture Conservation	4968167.5	4059097.5	3727227.5	1346457.5	0	0	0	0	0	0	14100950
Payment For Environment Services											
Power saving implements/Solar Lights	60000	120000	120000	0	0	0	0	0	0	0	300000
Community Storage Tanks	900000	900000	0	0	0	0	0	0	0	0	1800000
Village Pond	70000	140000	140000	140000	140000	0	0	0	0	0	630000
Crematorium	0	0	0	300000	0	0	0	0	0	0	300000
Reward Money	0	0	0	0	0	0	945357	0	0	0	945357
Community Power tiller	0	0	0	0	1100000	0	1100000	0	0	0	2200000
Total PES	1030000	1160000	260000	440000	1240000	0	2045357	0	0	0	6175357
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/Bamboo Plantations	230250	307000	383750	0	0	0	0	0	0	0	921000
Exposure visits for Forest Staff	0	250000	0	250000	0	400000	0	0	0	0	900000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Capacity building for Nursery	802500	1000000	900000	507500	0	0	0	0	0	0	3210000
Training in handling Wild Life	0	150000	0	0	100000	0	0	0	0	0	250000
Manpower Support	480000	480000	480000	480000	480000	480000	480000	480000	480000	480000	4800000
Total TR & C	1512750	2187000	1763750	1237500	580000	880000	480000	480000	480000	480000	10081000
Infrastructure & Forest Protection											
Construction of New Infrastructure Iije Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	600000	800000	900000	1000000	0	0	0	0	0	0	3300000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	800000	600000	1000000	880000	0	0	0	0	0	0	3280000
Patrolling Kits	50000	0	0	50000	0	0	0	0	0	0	100000
Demarcation of forests & Cos. Of Boundry pillars	0	150000	0	0	0	0	0	0	0	0	150000
Vehicles & POL	0	478995	478993	478993	478993	478993	0	0	0	0	2394967
Total Infrastructure & Forest Protection	1450000	2028995	2378993	2408993	478993	478993	0	0	0	0	9224967
Wild life Habitat Management											
Binoculars	0	30000	0	0	30000	0	0	0	0	0	60000
Veterinary Kit at Range & Beat Level	0	0	40000	0	0	0	0	0	0	0	40000
Trapping Cameras & Camera	0	0	0	30800	0	0	0	0	0	0	30800
Total Wild life Habitat Management	0	30000	40000	30800	30000	0	0	0	0	0	130800
Monitoring & Evaluation	0	0	0	0	0	0	3195475	0	0	0	3195475
Contingencies	500000	800000	1000000	1100000	1458774	500000	500000	258858	0	0	6117632
Grand Total	9761917.5	15482842.5	15656670.5	13131280.5	5121517	2503743	6740802	983858	606750	500050	70489431

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN - URLA RANGE

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
1.	AFFORESTATION				
1	New Plantation	Ha.	76750	50	3,837,500
2	Enrichment	Ha.	70500	55	3,877,500
3	Natural Regeneration	Ha.	37100	105	3,895,500
4	NTFP	Ha.	137825	30	4,134,750
5	Energy Plantation	Ha.	56150	40	2,246,000
6	Pasture Development	Ha.	21650	70	1,515,500
7	Eradication of Noxious weeds	Ha.	15050	130	1,956,500
	Total			480	21,463,250
	AFFORESTATION	Total:			21,463,250
2.	SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	339	3,975,630
2	Gabion Retaining walls	Nos.	10000/17230	94	976,150
3	Gabion Checkwalls	Nos.	10000/17230	63	666,150
4	Gabion Spurs	Nos.	48540	30	1,456,200
5	Water Harvesting Structures	Nos.	62150	5	310,750
6	Construction of Water Holes	Nos.	856920	7	5,998,440
7	Gulli Plugging/ Dry stone Checkdams	Nos.	4710		
8	Brushwood Checkdams	Nos.	78	-	-
9	Trenching	Nos.	15.3	3,100	47,430
10	Bio Engineering	Ha.	111700	6	670,200
	SOIL & MOISTURE CONSERVATION	Total:	0	-	14,100,950
3.	PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	10	300,000
2	Community Storage Tanks	Nos.	300000	6	1,800,000
3	Village Ponds	Nos.	35000	18	630,000
4	Crematorium	Nos.	300000	1	300,000
5	Reward Money	HH*413			945,357
6	Community Power tiller		1100000	2	2,200,000
	Total:			-	6,175,357
4.	RESEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	12.0	921,000
2	Eradication of Lantana and other Invasive species	Ha.	8000		-
3	Nursery	Nos.	1220000/ 770000/ 550000/	3	3,210,000
4	Manpower support				4,800,000
5	Exposure visits for Forest Staff	Lump sum			900,000
6	Handling of Wild Life	Lump sum			250,000
	Total:				10,081,000
5 & 6.	INFRASTRUCTURE AND FOREST PROTECTION				
1	Construction of New Infrastructure like Fgd. Hut, B.O. Or. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff		-	3,300,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	Lump Sum		-	3,280,000

Sl. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy.	Fin.
3	Patrolling Kits	Nos.	10000	10	100,000
4	Demarcation of forests & Cons.of boundry pillers				150,000
5	Vehicles & POL	Cost Norm			2,394,967
	Total:		0	-	9,224,967
	7. WILD LIFE MANAGEMENT				
1	Trapping Cameras	Nos.	30800	1	30,800
2	GPS		30000	-	-
3	Binoculars	Nos.	30000	2	60,000
4	Veterinary Kits	Nos.	5000	8	40,000
5	Tranquilizer Gun	Nos.	250000		-
	Total:		0	-	130,800
	Total CAT Plan		0	-	61,176,324
	8.MONITORING & EVALUATION	5%		-	3,195,475
	9. Contingencies	10%		-	6,117,632
	Total CAT Plan for Financial Projections			-	70,489,431

Beat Wise Requirement of Urla Range of Jogindernagar Forest Division under Afforestation Component of HEP Thana Plaun CAT Plan.

Component/ Activity	Beat	Unit	Area (ha)	Unit cost	Cost	Species to be planted	Remarks
I. AFFORESTATION							
a. New Plantation							
	Khajri	Ha.	5	76750	383750	Chir, Ban, Kail, Deodar, Rai-tosh and all B/L species.	Area details to be given by Fgd/
	Chuku	Ha.	5	76750	383750		
	Nagan	Ha.	5	76750	383750		
	Urla	Ha.	10	76750	767500		
	Gwali	Ha.	5	76750	383750		
	Thorat	Ha.	10	76750	767500		
	Shilla Swarh	Ha.	10	76750	767500		
	Total:		50	0	3837500		
b. Enrichment							
	Khajri	Ha.	5	70500	352500		
	Chuku	Ha.	5	70500	352500		
	Nagan	Ha.	5	70500	352500		
	Urla	Ha.	10	70500	705000		
	Gwali	Ha.	10	70500	705000		
	Thorat	Ha.	10	70500	705000		
	Shilla Swarh	Ha.	10	70500	705000		
	Total:		55	0	3877500		
d. Natural Regeneration/ Closures							
	Khajri	Ha.	5	37100	185500		
	Chuku	Ha.	20	37100	742000		
	Nagan	Ha.	10	37100	371000		
	Urla	Ha.	10	37100	371000		
	Gwali	Ha.	20	37100	742000		
	Thorat	Ha.	20	37100	742000		
	Shilla Swarh	Ha.	20	37100	742000		
	Total:		105	0	3895500		
e. NTFP/ Medicinal Plantations							
	Chuku	Ha.	5	137825	689125		
	Nagan	Ha.	5	137825	689125		
	Urla	Ha.	5	137825	689125		
	Gwali	Ha.	5	137825	689125		
	Thorat	Ha.	5	137825	689125		
	Shilla Swarh	Ha.	5	137825	689125		
	Total:		30	0	4134750		
Energy Plantation							
	Khajri	Ha.	5	56150	280750		
	Chuku	Ha.	5	56150	280750		
	Nagan	Ha.	5	56150	280750		
	Urla	Ha.	5	56150	280750		
	Gwali	Ha.	10	56150	561500		
	Thorat	Ha.	5	56150	280750		
	Shilla Swarh	Ha.	5	56150	280750		
	Total:		40		2246000		
e. Pasture Development							

Component/ Activity	Beat	Unit	Area (ha)	Unit cost	Cost	Species to be planted	Remarks
	Khajri	Ha.	10	21650	216500		
	Chuku	Ha.	10	21650	216500		
	Nagan	Ha.	10	21650	216500		
	Urla	Ha.	10	21650	216500		
	Gwali	Ha.	10	21650	216500		
	Thorat	Ha.	10	21650	216500		
	Shilla Swarh	Ha.	10	21650	216500		
	Total:	Ha.	70	0	1515500		
F. Eradication of Noxious weeds							
	Khajri	Ha.	10	15050	150500		
	Chuku	Ha.	20	15050	301000		
	Nagan	Ha.	20	15050	301000		
	Urla	Ha.	20	15050	301000		
	Gwali	Ha.	20	15050	301000		
	Thorat	Ha.	20	15050	301000		
	Shilla Swarh	Ha.	20	15050	301000		
	Total:	Ha.	130		1956500		

Beat Wise Requirement of Urla Forest Range of Joginder Division under Nursery component.										
Component	Beat	Existing Nursery	Area (ha)	Upgradation required	Cost (Rs.).	New Nursery required	Lat Long	Area	Cost (Rs.)	Grand Total
Nurseries										
	Khajri	Beat Level, Sajerh	0.2	Equipment and Piped Water	100000	Dehri		0.5	770000	870000
	Chuku	Beat Level, Nagan	0.25	Small equipments and Piped Water	250000	..		0	0	250000
	Urla	Beat Level , Urla	0.2	Modernise	250000	..		0	0	250000
	Gwali	Beat Level, Gwali	0.25	Piped Water:1.5 KM	250000	..		0	0	250000
	Thorat	Beat Level, Haar	0.2		50000	New Beat Nursery required. Name to be given later.		0.5	770000	820000
	Shilla Swarh	Beat Level, Kadhaar	0		0	New Beat Nursery required. Name to be given later.		0.5	770000	770000
	Total:		1.1		900000			1.5		3210000

Beat Wise Requirement of Urla Range of Joginder Nagar Forest Division under SMC Measures.

Beat	Name of Nala/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Total
Khajri	Chah Braru Nala	Gabion Check dams	1.5x1.5m	Nos	10000	10	100000
			2x2.5m		17230	5	86150
	Sajerh Nalla	Gabion Check dams	1.5x1.5m	Nos	10000	15	150000
			2x2.5m		17230	7	120610
	Khajri Nalla	Gabion Check dams	1.5x1.5m	Nos	10000	8	80000
			2x2.5m		17230	4	68920
	Galmatha Nalla	Gabion Check dams	1.5x1.5m	Nos	10000	5	50000
	Patnahar Nalla	Gabion Check dams	1.5x1.5m	Nos	10000	5	50000
			2x2.5m		17230	2	34460
					Total	61	740140
Chuku	Luni Khad- 2KM	Gabion Check dams	1.5x1.5m	Nos	10000	6	60000
	Jujhalu Nala-1 KM	Gabion Check dams	1.5x1.5m	Nos	10000	5	50000
Nagan	Thorat Nala-2 KM	Gabion Check dams	1.5x1.5m	Nos	10000	3	30000
					Total	14	140000
	Nausa Nala 3KM	Gabion Check dams	1.5x1.5m	Nos	10000	3	30000
Urla	Tal-gairh Nala 1.5 KM	Gabion Check dams	1.5x1.5m	Nos	10000	15	150000
			2x2.5m		17230	5	86150
	Bhalana Nala 1.5 KM	Gabion Check dams	1.5x1.5m	Nos	10000	15	150000
			2x2.5m		17230	5	86150
	Urla Nala 3 KM	Gabion Check dams	1.5x1.5m	Nos	10000	15	150000
	Kasain Nala 8 KM	Gabion Check dams	1.5x1.5m	Nos	10000	30	300000
			2x2.5m		17230	10	172300
	Rawa Nala 8 KM	Gabion Check dams	1.5x1.5m	Nos	10000	45	450000
			2x2.5m		17230	15	258450
Gwali	Sarwala Nala-10 KM	Gabion Check dams	1.5x1.5m	Nos	10000	45	450000
			2x2.5m		17230	15	258450
Thorat	Janwan Nala-2 KM	Gabion Checkdams	1.5x1.5m	Nos	10000	7	70000
			2x2.5m		17230	3	51690
	Lundra Nala 1.5 KM	Gabion Checkdams	1.5x1.5m	Nos	10000	10	100000
			2x2.5m		17230	5	86150
	Panchhyan Nalka 1 KM	Gabion Checkdams	1.5x1.5m	Nos	10000	6	60000
Shilla Swarh	Siharu Nala- 10KM	Gabion Checkdams	1.5x1.5m	Nos	10000	10	100000
			2x2.5m		17230	5	86150

Beat	Name of Nala/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Total
Total:						339	3975630
	Gabion Retaining Walls						
Khajri	Khajri Nala	Gabion Retaining Walls	1.5x1.5m	Nos.	10000	5	50000
Chuku	Luni Khad-2KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	10	100000
			2x2.5m		17230	5	86150
	Nagan Nala	Gabion Retaining Walls	1.5x1.5m	Nos	10000	3	30000
	Jujhalu Nala	Gabion Retaining Walls	1.5x1.5m	Nos	10000	4	40000
Nagan	Thorat Nala-2 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	3	30000
	Nausa Nala 3 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	3	30000
Urla	Talgairh Nala 1.5 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Bhalana Nala 1.5 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Urla Nala 3 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Kasain Nala 8 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Rawa Nala 8 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	10	100000
Gwali	Sarwali Nala 10 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	10	100000
Thorat	Janwan Nala 2 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Lundra Nala 1.5 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	8	80000
	Panchhyan Nala 1 KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	5	50000
	Haar Nala 1KM	Gabion Retaining Walls	1.5x1.5m	Nos	10000	3	30000
						94	976150
	Gabion Check wall						
Chuku	Nagan Nala 1.5 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	7	70000
	Pabo Nala 1.5 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	5	50000
	Jujhalu Nala 1 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	4	40000
Nagan	Thorat Nala 2 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	7	70000
	Nausa Nala 3 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	7	70000

Beat	Name of Nala/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Total
Urla	Kasain Nala 8 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	5	50000
	Rawa Nala 8 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	7	70000
			2x2.5m		17230	3	51690
Gwali	Sarwali Nala 10 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	8	80000
			2x2.5m		17230	2	34460
Shilla Swarh	Siharu Nala- 10 KM	Gabion Checkwalls	1.5x1.5m	Nos	10000	8	80000
Total:					0	63	666150
Deflecting Spurs							
Khajri	Chah Bararu	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
	Sajerh Nalla	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
	Khajri Nalla	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
	Galmatha Nala	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
	Patnahr Nalla	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
	Luni Khad	Deflecting Spurs	10 Mtrs. Each.	Nos	48540	5	242700
Total:					0	30	1456200
Water Harvesting Stlructures							
Khajri	Chah Bararu		..	Nos	62150	1	62150
	Sajerh Nalla	Water Harvesting Stlructures	..	Nos	62150	1	62150
Gwali	Sarwala Nala	Water Harvesting Stlructures	..	Nos	62150	2	124300
Thorat	Haar Nala	Water Harvesting Stlructures	..	Nos	62150	1	62150
Total:					0	5	310750
Khajri		Water Holes		Nos	856920	1	856920
Chuku		Water Holes		Nos	856920	1	856920
Nagan		Water Holes		Nos	856920	1	856920
Urla		Water Holes		Nos	856920	1	856920
Gwali		Water Holes		Nos	856920	1	856920
Thorat		Water Holes		Nos	856920	1	856920
Shilla Swarh		Water Holes		Nos	856920	1	856920
Total:						7	5998440
Trenching							
Khajri	..		1mx30cmx3	Nos	15.3	500	7650

Beat	Name of Nala/ Forest	Activity	Size	Unit	Unit Cost	Qty.	Total
			0m				
Chuku	..	Trenching	1mx30cmx3 0m	Nos	15.3	500	7650
Nagan	..	Trenching	1mx30cmx3 0m	Nos	15.3	500	7650
Urla	..	Trenching	1mx30cmx3 0m	Nos	15.3	300	4590
Gwali	..	Trenching	1mx30cmx3 0m	Nos	15.3	500	7650
Thorat	..	Trenching	1mx30cmx3 0m	Nos	15.3	300	4590
Shilla Swarh	..	Trenching	1mx30cmx3 0m	Nos	15.3	500	7650
Total:		3100	47430
Bio Engineering							
Khajri	..	Bio Engineering		Ha	111700	1	111700
Chuku	..	Bio Engineering			111700	1	111700
Urla	..	Bio Engineering			111700	1	111700
Gwali	..	Bio Engineering			111700	1	111700
Thorat	..	Bio Engineering			111700	1	111700
Shilla Swarh	..	Bio Engineering			111700	1	111700
Total:	..					6	670200

Beat Wise Requirements of Urla Range of Jogindernagar Forest Division under Payment for Environment Services																		
Sl. No.	Component	Beat	Villages	No. Of Water Ponds	Unit Cost	Cost (Rs.)	No. Of Community Storage Tanks	Unit Cost	Cost	No. Solar Lights	Unit Cost	Cost	No. of crematorium	Unit Cost	Cost	Village Reward (lumsu m)	Community power tiler	Grand Total
1	PES	Khajri	Khajri, drahman, Batnahr, Nauhli, Chah Braru	3	35000	105000	1	300000	300000	1	30000	30000	1	300000	300000		2200000	2935000
2		Chuku	Chuku, Bhelkhat, Ghughana	3	35000	105000	1	300000	300000	1	30000	30000						435000
3		Nagan	..	0	35000	0	0	300000	0	1	30000	30000						30000
4		Urla	Urla, Gail, Gal Gail, Saasti, Suraj Bagla	3	35000	105000	1	300000	300000	1	30000	30000						435000
5		Gwali	Gwali, Pundal, Sarwal, Upper Gwali	3	35000	105000	1	300000	300000	1	30000	30000						435000
6		Thorat	Bhordhar, Kharnaal, Haar	3	35000	105000	1	300000	300000	1	30000	30000						435000
7		Shilla Swarh	Ghatasani, Shilla Swarh, Phulladhar	3	35000	105000	1	300000	300000	1	30000	30000						435000
8		Barot	..	0	35000	0	0	300000	0	1	30000	30000						30000
9		Kahlog	..	0	35000	0	0	300000	0	1	30000	30000						30000
10		Jatingri	..	0	35000	0	0	300000	0	1	30000	30000						30000
		Total:	..	18		630000	6		1800000	10		300000	1		300000	945357	2200000	5230000

Beat Wise Requirement of Urla Range of Jogindernagar Forest Divison under ResearchI Training & Capacity Building

Sl.No.	Beat	Activity	Unit	Unit cost	Qty.	Cost	Exposure Visits	Handling of W/L	Man power support
1	Khajri	Two Demonstration Plots for fruit bearing trees of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
	Khajri	Two Demonstration plots for Bamboo Plantations of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
2	Chuku				0	0	90000	25000	
3	Nagan		Ha.	76750	0	0	90000	25000	
4	Urla		Ha.	76750	0	0	90000	25000	
	Gwali	Two Demonstration Plots for fruit bearing trees of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
5	Gwali	Two Demonstration plots for Bamboo Plantations of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
	Thorat	Two Demonstration Plots for fruit bearing trees of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
6	Thorat	Two Demonstration plots for Bamboo Plantations of 1 Ha. Each	Ha.	76750	2	153500	90000	25000	
7	Shilla Swarh		Ha.	76750	0	0	90000	25000	
		Total:	Ha.		12	921000	900000	250000	4800000

Beat Wise Infrastructure & Forest Protection Requirements of Urla Range of Joginder Forest Division.

Component	Beat	New Construction/ Repair of existing Infrastructure	Cost	Construction/ Repair of Bridle Paths/ Roads	Cost	Demarcation of Forests & construction of Boundary Pillars	Cost	Patrolling kits	Cost	Total	Total Cost
Infrastructure & Forest Protection			0		0		0	3	10000	30000	30000
	Khajri	Repair and Extension of Fgd. Hut	200000	C/o Bridle Path from Nauli to Chah Bhraru-4 KM	160000	Banog 15 Ha.	30000	1	10000	10000	400000
		Repair and Extension of B.O.Qrs. (3 in nos).	300000	C/o Bridle Path from Upper Khajri Sanerh Village to Rajhaun-4 KM	160000	Khajri 10 HA	20000	0		0	480000
		Repair & Maintenance of FRH Nohli	200000	C/o Bridle Path from Ranjaun Village to Kanya Mata Mandir-5 KM	200000	Lower Khajri 30 ha	60000	0		0	460000
	Chuku	Repair & Extension of Forest Guard Hut	200000	C/o Bridle Path from Thaut Gallu to Kadoond-8KM	320000	Salana-10 HA	20000	1	10000	10000	550000
				C/o Bridle Path from Gallu to Nagan 3 KM	120000	Gaghwana- 10 HA	20000	0		0	140000
	Nagan	Repair & Maintenance of Fgd. Hut	200000	C/o Bridle Path from Nagan to Ghatasni-5 KM	200000	..	0	1	10000	10000	410000
	Urla	Repair & Maintenance of Fgd. Hut.	200000	C/o Bridle Path from Urla to Dhar Kasain 8KM	320000		0	1	10000	10000	530000
		Repair and Maintenance of Range Office.	200000	C/o Bridle Path from Futaghal to Urla 4KM	160000	..	0	0		0	360000
							0	0		0	0
		C/o Conference Hall in Range Office	500000		0		0	0		0	500000

Component	Beat	New Construction/ Repair of existing Infrastructure	Cost	Construction/ Repair of Bridle Paths/ Roads	Cost	Demarcation of Forests & construction of Boundary Pillars	Cost	Patrolling kits	Cost	Total	Total Cost
		Repair & Maintenance of FRH Urla	200000		0		0	0		0	200000
	Gwali	Repair & Maintenance of Fgd. Hut	200000	C/o Bridle Path from Wali to Farah-7 KM	280000		0	1	10000	10000	490000
				C/o Bridle Path from Gwali to Gogardhar-8 KM	320000		0	0		0	320000
	Thorat	Repair & Maintenance of Fgd. Hut.	200000	C/o Bridle Path from Taryala to Bhaur Dhar 5KM.	200000	Punhara-10 Ha	0	1	10000	10000	410000
				C/o Bridle Path from Ghatasni to Lahyana- 5 KM	200000		0	0		0	200000
		Construction & Repair of Gard Hut.	500000	Construction of Foot Bridg on Janwan Nala- 8Mtr. Span.	320000		0	0		0	820000
	Shilaswarh	Repair & Maintenance of Fgd. Hut.	200000	C/o Bridle Path from Shillah Swarh to Fuladhar-8 KM	320000	Barahattu-200 HA	0	1	10000	10000	530000
			3300000		3280000	290	150000	10		100000	6830000
						Vehicle and fuel					2394967

Beat Wise Requirements of Urla Range of Jogindernagar Forest Division under Wild Life Management Component.									
Sr. No.	Component	Beat	Trapping Cameras	Cost	Binoculars	Cost	Veterinary Kits	Cost	Total
1	Wild Life Management	Khajri	0	0	0	0	1	5000	5000
2		Chuku	1	30800	0	0	1	5000	35800
3		Nagan	0	0	0	0	1	5000	5000
4		Urla	0	0	0	0	1	5000	5000
5		Gwali	0	0	0	0	1	5000	5000
6		Thorat	0	0	0	0	1	5000	5000
7		Shilla Swarh	0	0	0	0	1	5000	5000
8		Range Office (1 R.O. + 3 B.Os.)	0	0	2	60000	1	5000	65000
		Total:	1	30800	2	60000	8	40000	130800

YEAR WISE SUMMARY OF PROJECTIONS FOR LADBADHOL RANGE UNDER HEP THANAPLAUN CAT PLAN

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Afforestation & Habitat Management											
New Plantation											
Physical (Ha.)	0	10	10	10	10	0	0	0	0	0	40
Norm/Ha. (Rs.)	61450	61450	61450	61450	61450	61450	61450	61450	61450	61450	
Financial (Rs.)	0	614500	614500	614500	614500	0	0	0	0	0	2458000
1st Year Maintenance											
Physical (Ha.)	0	0	10	10	10	10	0	0	0	0	40
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	56500	56500	56500	56500	0	0	0	0	226000
2nd Year Maintenance											
Physical (Ha.)			0	10	10	10	10				40
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	38000	38000	38000	38000	0	0	0	152000
3rd Year Maintenance											
Physical (Ha.)				0	10	10	10	10			40
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	19500	19500	19500	19500	0	0	78000
4th Year Maintenance											
Physical (Ha.)	0				0	10	10	10	10		40
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	19500	19500	19500	19500	0	78000
5th Year Maintenance											
Physical (Ha.)						0	10	10	10	10	40
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	19500	19500	19500	19500	78000
Total New Plantation	0	614500	671000	709000	728500	133500	96500	58500	39000	19500	3070000
Enrichment Plantation											
Physical (Ha.)	0	5	0	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	55200	55200	55200	55200	55200	55200	55200	55200	55200	55200	
Financial (Rs.)	0	276000	0	0	0	0	0	0	0	0	276000
1st Year Maintenance											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Ha.)	0	0	5	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	5650	5650	5650	5650	5650	5650	5650	5650	5650	5650	
Financial (Rs.)	0	0	28250	0	0	0	0	0	0	0	28250
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800	
Financial (Rs.)	0	0	0	19000	0	0	0	0	0	0	19000
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	0	0	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	9750	0	0	0	0	0	9750
4th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	5	0	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	9750	0	0	0	0	9750
5th Year Maintenance											
Physical (Ha.)	0	0	0	0	0	0	5	0	0	0	5
Norm/Ha. (Rs.)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Financial (Rs.)	0	0	0	0	0	0	9750	0	0	0	9750
Total Enrichment Plantation	0	276000	28250	19000	9750	9750	9750	0	0	0	352500
Natural Regeneration											
Physical (Ha.)	0	5									5
Norm/Ha. (Rs.)	33150	33150	33150	33150	33150	33150	33150	33150	33150	33150	
Financial (Rs.)	0	165750	0	0	0	0	0	0	0	0	165750
1st Year Maintenance											
Physical (Ha.)		0	5								5
Norm/Ha. (Rs.)	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350	
Financial (Rs.)	0	0	6750	0	0	0	0	0	0	0	6750
2nd Year Maintenance											
Physical (Ha.)			0	5							5
Norm/Ha. (Rs.)	950	950	950	950	950	950	950	950	950	950	
Financial (Rs.)	0	0	0	4750	0	0	0	0	0	0	4750

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
3rd Year Maintenance											
Physical (Ha.)				0	5						5
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	2750	0	0	0	0	0	2750
4th Year Maintenance											
Physical (Ha.)					0	5					5
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	2750	0	0	0	0	2750
5th Year Maintenance											
Physical (Ha.)						0	5				5
Norm/Ha. (Rs.)	550	550	550	550	550	550	550	550	550	550	
Financial (Rs.)	0	0	0	0	0	0	2750	0	0	0	2750
Total Natural Regeneration	0	165750	6750	4750	2750	2750	2750	0	0	0	185500
NTPP											
Physical (Ha.)	0	5	0	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	128550	128550	128550	128550	128550	128550	128550	128550	128550	128550	
Financial (Rs.)	0	642750	0	0	0	0	0	0	0	0	642750
1st Year Maintenance											
Physical (Ha.)	0	0	5	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	3870	3870	3870	3870	3870	3870	3870	3870	3870	3870	
Financial (Rs.)	0	0	19350	0	0	0	0	0	0	0	19350
2nd Year Maintenance											
Physical (Ha.)	0	0	0	5	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	3088	3088	3088	3088	3088	3088	3088	3088	3088	3088	
Financial (Rs.)	0	0	0	15440	0	0	0	0	0	0	15440
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	5	0	0	0	0	0	5
Norm/Ha. (Rs.)	2317	2317	2317	2317	2317	2317	2317	2317	2317	2317	
Financial (Rs.)	0	0	0	0	11585	0	0	0	0	0	11585
Total NTPP	0	642750	19350	15440	11585	0	0	0	0	0	689125
Energy Planation											
Physical (Ha.)	0	6	6								12

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Norm/Ha. (Rs.)	56150	56150	56150	56150	56150	56150	56150	56150	56150	56150	
Financial (Rs.)	0	336900	336900	0	0	0	0	0	0	0	673800
Total Energy Plantation	0	336900	336900	0	0	0	0	0	0	0	673800
Pasture Development											
Physical (Ha.)	0	6	6	0	0	0	0	0	0	0	12
Norm/Ha. (Rs.)	16600	16600	16600	16600	16600	16600	16600	16600	16600	16600	
Financial (Rs.)	0	99600	99600	0	0	0	0	0	0	0	199200
1st Year Maintenance											
Physical (Ha.)	0	0	6	6	0	0	0				12
Norm/Ha. (Rs.)	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100	
Financial (Rs.)	0	0	12600	12600	0	0	0	0	0	0	25200
2nd Year Maintenance											
Physical (Ha.)	0	0	0	6	6	0	0	0	0	0	12
Norm/Ha. (Rs.)	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	
Financial (Rs.)	0	0	0	10620	10620	0	0	0	0	0	21240
3rd Year Maintenance											
Physical (Ha.)	0	0	0	0	6	6	0	0	0	0	12
Norm/Ha. (Rs.)	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	
Financial (Rs.)	0	0	0	0	7080	7080	0	0	0	0	14160
Total Pasture Development	0	99600	112200	23220	17700	7080	0	0	0	0	259800
Eradication of Noxious weeds											
Physical (Ha.)	10	10	0	0	0	0	0	0	0	0	20
Norm/Ha. (Rs.)	15050	15050	15050	15050	15050	15050	15050	15050	15050	15050	
Financial (Rs.)	150500	150500	0	0	0	0	0	0	0	0	301000
Total Eradication of Noxious weeds	150500	150500	0	0	0	0	0	0	0	0	301000
Total Plantation	150500	2286000	1174450	771410	770285	153080	109000	58500	39000	19500	5531725
Soil & Moisture Conservation											
Gabion Checkdams											
Small Size (1.5mx1.5m)											
Physical (Nos.)	15	15	15	15	0	0	0	0	0	0	60
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000
Financial (Rs.)	150000	150000	150000	150000	0	0	0	0	0	0	600000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Big Size (2mx2.5m)											
Physical (Nos.)	5	5	5	5	0	0	0	0	0	0	20
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	86150	86150	86150	86150	0	0	0	0	0	0	344600
Total Gabion Checkdams	236150	236150	236150	236150	0	0	0	0	0	0	944600
Gabion Retaining walls											
Big Size											
Physical (Nos.)	2	3	0	0	0	0	0	0	0	0	5
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	34460	51690	0	0	0	0	0	0	0	0	86150
Total Gabion Retaining walls	34460	51690	0	0	0	0	0	0	0	0	86150
Gabion Checkwalls											
Small Size											
Physical (Nos.)	14	13	14	14	0	0	0	0	0	0	55
Norm/Ha. (Rs.)	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	
Financial (Rs.)	140000	130000	140000	140000	0	0	0	0	0	0	550000
Big Size (2mx2.5m)											
Physical (Nos.)	3	4	4	4							15
Norm/Ha. (Rs.)	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	
Financial (Rs.)	51690	68920	68920	68920	0	0	0	0	0	0	258450
Total Gabion Checkwalls	191690	198920	208920	208920	0	0	0	0	0	0	808450
Gabion Spurs											
Small Size											
Physical (Nos.)	2	2	2		0	0	0	0	0	0	6
Norm/Ha. (Rs.)	48540	48540	48540	48540	48540	48540	48540	48540	48540	48540	
Financial (Rs.)	97080	97080	97080	0	0	0	0	0	0	0	291240
Total Gabion Spurs	97080	97080	97080	0	0	0	0	0	0	0	291240
Water Harvesting Structures											
Physical (Nos.)	2	0	0	0	0	0	0	0	0	0	2
Norm/Ha. (Rs.)	62150	62150	62150	62150	62150	62150	62150	62150	62150	62150	
Financial (Rs.)	124300	0	0	0	0	0	0	0	0	0	124300
Total Water Harvesting Structures	124300	0	0	0	0	0	0	0	0	0	124300
Water Holes for wild life											

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Physical (Nos.)	1	0	0								1
Norm/Ha. (Rs.)	856920	856920	856920	856920	856920	856920	856920	856920	856920	856920	
Financial (Rs.)	856920	0	0	0	0	0	0	0	0	0	856920
Total Water Holes for wild life	856920	0	0	0	0	0	0	0	0	0	856920
Gulli Plugging/Dry stone checkdams											
Small Size											
Physical (Nos.)	3	3	2	2	0	0	0	0	0	0	10
Norm/Ha. (Rs.)	4710	4710	4710	4710							
Financial (Rs.)	14130	14130	9420	9420	0	0	0	0	0	0	47100
Total Gulli Plugging/Dry stone checkdams	14130	14130	9420	9420	0	0	0	0	0	0	47100
Total Soil & Moisture Conservation	1554730	597970	551570	454490	0	0	0	0	0	0	3158760
Payment For Environment Services											
Power saving implements/Solar Lights	0	30000	30000	0	0	0	0	0	0	0	60000
Community Storage Tanks	0	300000	0	0	0	0	0	0	0	0	300000
Village Pond	70000	70000	0	0	0	0	0	0	0	0	140000
Crematorium	0	0	0	300000	0	0	0	0	0	0	300000
Reward Money	50000	52837	0	0	0	0	0	0	0	0	102837
Total PES	120000	452837	30000	300000	0	0	0	0	0	0	902837
Reserch Training & Capacity Building											
Laying of Demonstration Plots for Fruits/ Bamboo Plantations	0	0	76750	0	0	0	0	0	0	0	76750
Exposure visits for Forest Staff	0	0	0	90000	0	0	0	0	0	0	90000
Capacity building for Nursery	770000	0	0	0	0	0	0	0	0	0	770000
Training in handling Wild Life	0	0	25000	0	0	0	0	0	0	0	25000
Training in Modern Nursery	0	0	20000	0	0	0	0	0	0	0	20000
Total TR & C	770000	0	121750	90000	0	0	0	0	0	0	981750
Infrastructure & Forest Protection											
Construction of New Infrastructure Iije Fgd. Hut, B.O. Qtr. Gange Hut Community Hall, Conference Room and Repair of old Infrastructure etc.	400000	400000	500000	500000	0	0	0	0	0	0	1800000
Bridle Paths/Approach Road/Forest /Road/ Mule Track /Foot Bridges/ Boundary Wall etc.	0	0	160000	0	0	0	0	0	0	0	160000
Patrolling Kits	0	0	0	30000	0	0	0	0	0	0	30000

Name of Activity	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	Total
Total Infrastructure & Forest Protection	400000	400000	660000	530000	0	0	0	0	0	0	1990000
Wild life Habitat Management											
Binoculars	30000	0	0	0	0	0	0	0	0	0	30000
Veterinary Kit at Range & Beat Level	0	10000	0	0	0	0	0	0	0	0	10000
GPS	0	0	0	90000	0	0	0	0	0	0	90000
Total Wild life Habitat Management	30000	10000	0	90000	0	0	0	0	0	0	130000
Monitoring & Evaluation	0	0	0	0	0	771438	0	0	0	0	771438
Contingencies	200000	300000	400000	369482	0	0	0	0	0	0	1269482
Grand Total	3225230	4046807	2937770	2605381.8	770285	924518	109000	58500	39000	19500	14735992

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN.

Ladbhadol Range

Sr. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy	Fin.
	1. AFFORESTATION				
1	New Plantation	Ha.	76750	40	3,070,000
2	Enrichment	Ha.	70500	5	352,500
3	Natural Regeneration	Ha.	37100	5	185,500
4	NTFP	Ha.	137825	5	689,125
5	Energy Plantation	Ha.	56150	12	673,800
6	Pasture Development	Ha.	21650	12	259,800
7	Eradication of Noxious weeds	Ha.	15050	20	301,000
	Total			99	5,531,725
	AFFORESTATION	Total:			5,531,725
	2. SOIL & MOISTURE CONSERVATION				
1	Gabion Checkdams	Nos.	10000/17230	80	944,600
2	Gabion Retainingwalls	Nos.	10000/17230	5	86,150
3	Gabion Checkwalls	Nos.	10000/17230	70	808,450
4	Gabion Spurs	Nos.	48540	6	291,240
5	Water Harvesting Structures	Nos.	62150	2	124,300
6	Water Holes for wild life	Nos.	856920	1	856,920
7	Gulli Plugging/ Dry stoneCheckdams	Nos.	4710	10	47,100
8	Brushwood Checkdams	Nos.	78		
9	Trenching	Nos.	15.3	-	-
10	Bio Engineering	Ha.	111700	-	-
	SOIL & MOISTURE CONSERVATION	Total:	0	-	3,158,760
	3. PAYMENT FOR ENVIRONMENT SERVICES				
1	Power saving implements/ Solar Lights	Nos.	30000	2	60,000
2	Community Storage Tanks	Nos.	300000	1	300,000
3	Village Ponds	Nos.	35000	4	140,000
4	Crematorium	Nos.	300000	1	300,000
5	Reward Money	LUMP SUM			102,837
6	Community Power tiller		1100000		
		Total:		-	902,837
	4. REEARCH, TRAINING & CAPACITY BUILDING				
1	Laying of Demonstration Plots for Bamboo Plantations	Ha.	76750	1.0	76,750
2	Eradication of Lantana and other Invasive species	Ha.	8000	20	
3	Nursery	Nos.	1220000/ 770000/ 550000/	1	770,000

Sr. No.	Component	Unit	Unit Cost Rs.	Total Cost	
				Phy	Fin.
4	Exposure visits for Forest Staff	Lump sum	12000000		90,000
5	Handling of Wild Life	Lump sum			25,000
6	Nursery Modernisation Training	Lump sum			20,000
		Total:			981,750
	5 & 6. INFRASTRUCTURE AND FOREST PROTECTION				
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	As per detail list by Range staff		-	1,800,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	Lump Sum		-	160,000
3	Patrolling Kits	Nos.	10000	3	30,000
4	Demarcation of forests & Cons.of boundry pillers				
		Total:	0	-	1,990,000
	7. WILD LIFE MANAGEMENT				
1	Binoculars	Nos.	30000	1	30,000
2	Veterinary	Nos.	5000	2	10,000
3	Trapping Cameras	Nos.	30800	-	-
4	GPS		30000	3	90,000
5	Tranquilizer Gun	Nos.	250000	1	
		Total:	0	-	130,000
	Total CAT Plan		0	-	12,695,072
	8.MONITORING & EVALUATION	5%		-	771,413
	9. Contingencies	10%		-	1,269,507
	Total CAT Planfor Financial Projections			-	14,735,992

Beat Wise Requirements of Ladhbadhol Range (Aal Beat) under Afforestation Component.							
Sl. No.	Sub-Component	Beat	Area Name	Unit	Unit Cost	Qty.	Cost
1	New Plantation	Aal	Anlog	Ha	76750	20	1535000
			Dramman2	Ha	76750	20	1535000
			Total:		0	40	3070000
2	Enrichment	Aal	Kotla	Ha	70500	5	352500
3	Natural Regeneration/ Closures	Aal	Ballu	Ha	37100	5	185500
4	NTPF	Aal	Pabo	Ha	137825	5	689125
5	Energy Plantation	Aal	Aal, Char chikka	Ha	56150	12	673800
6	Pasture Development	Aal	Karlön, Paabo	Ha	21650	12	259800
			Total:			79	2160725
7	Eradication of Noxious Weeds	Aal	DPF Dramman II	Ha	15050	20	301000
8	Nursery (New)	Beat	Beat Level Khara Nursery	0.2 Ha.	770000	1	770000
						Total	9371725

II. Soil & Moisture Conservation Measures							
Gabion Checkdams	Aal	Dramman 1	No	1.5 x 1.5m	10000	15	150000
				2x2.5m	17230	5	86150
		Dramman 2	No.	1.5 x 1.5m	10000	15	150000
				2x2.5m	17230	5	86150
		Pabo	No	1.5 x 1.5m	10000	15	150000
				2x2.5m	17230	5	86150
		DPF Amloj	No	1.5 x 1.5m	10000	15	150000
				2x2.5m	17230	5	86150
			Total:		0	80	944600
Gabion Checkwalls	Aal	Dramman I	No	1.5 x 1.5m	10000	20	200000
				2x2.5m	17230	5	86150
		Dramman 2	No	1.5 x 1.5m	10000	20	200000
				2x2.5m	17230	5	86150
		Kotla DPF	No.	1.5 x 1.5m	10000	15	150000
			No	2x2.5m	17230	5	86150
			Total:			70	808450
Gulli Plugging/ Drystone checkdams	Aal	Dramman 1 and 2	No.	..	4710	10	47100
Gabion Retaining Walls	Aal	Dramman 1 and 2	Nos.	2x2.5m	17230	5	86150
spurs	Aal	Dramman 1 and 2	Nos.	10 Mtrs. Each	48540	6	291240
Water Harvesting Structures	Aal	Dramman 1 and 2	Nos.	..	62150	2	124300
Waterholes	Aal		Nos.		856920	1	856920
			Total:			1	856920
			G. Total:				3158760

Beat Wise REQUIREMENTS OF LADHBADHOL RANGE OF JOGINDERNAGAR FOREST DIVISION UNDER PES COMPONENT.																	
Beat	Community Storage Tanks				Village Ponds				Crematorium			Solar Lights			Village reward		
	Location	Qty.	Unit Cost	Cost	Area	Qty.	Unit Cost	Cost	Area	Qty	Unit cost	Cost	Qty	Unit Cost	Cost	Cost	Cost
Aal	Kotla	1	300000	300000	Karlon	1	35000	35000	Chaos	1	300000	300000	2	30000	60000	Lump Sum	102837
					Machaan	1	35000	35000									
					Aal	1	35000	35000									
					Pabo	1	35000	35000									
Total				300000				140000				300000			60000		102837

Beat Wise Requirements of Ladbadhhol Range of Joginder Nagar Forest Division under Research, Training & Capacity Building.

Sr. No.	Beat	Bamboo demonstration plot				Exposure Visit	Training in handling Wild animals	Nursery Modernization Training	Total
			Area (ha).	Unit Cost	Total				
1	Aal	DPF Kotla	1	76750	76750	90000	25000	20000	211750

Beat Wise Infrastructure requirements of Ladbadhhol Forest Range of Jogindernagar Forest Division.

Beat	HPFD Infrastructure	Bldg.	Cost (Rs.)	Total	Bridle Paths & Approach Roads	Cost	Patrolling Kits	Cost	Total	Cameras	Cost	Total	Grand Total cost
Aal	FGH at Aal		900000		from Pabo to Neri	160000	3	10000	30000		6000	0	2080000
	BO Quarter at Langna		900000	1800000									

Beat Wise Requirements of Ladbadhhol Range of Jogindernagar Forest Division under Wild Life Management

Beat	Binoculars	Unit cost	Amount	Trapping Cameras	Unit cost	Amount	Vet. Kits	Unit Cost	Amount	Tranquilizer Gun	Cost Unit	Amount	GPS	Cost	Total	Total Cost:
Aal	1	30000	30000	0	30800	0	2	5000	10000	0	0	0	3	30000	90000	130000

SUMMARY OF PROJECTIONS UNDER HEP THANAPLAUN CAT PLAN.

Sl. No	Component	Unit	Unit Cost Rs.	Dhrampur Range		Urla Range		Jogindernagar Range		Ladhbhadhol Range		Total JnagarDivn.		Mandi Range		Drung Range		Kotli Range		Total Mandi Division		Grand Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
1.	AFFORESTATION (25%)																						
1	New Plantation	Ha.	76750	65	4,988,750	50	3,837,500	45	3,453,750	40	3070000	200	15,350,000	70	5,372,500	63	4,835,250	-	-	133	10,207,750	333	25,557,750
2	Enrichment	Ha.	70500	73	5,146,500	55	3,877,500	75	5,287,500	5	352,500	208	14,664,000	175	12,337,500	5	352,500	38	2,679,000	218	15,369,000	426	30,033,000
3	Natural Regeneration	Ha.	37100	65	2,411,500	105	3,895,500	95	3,524,500	5	185,500	270	10,017,000	165	6,121,500	55	2,040,500	88	3,264,800	308	11,426,800	578	21,443,800
4	NTFP	Ha.	137825	29	3,996,925	30	4,134,750	40	5,513,000	5	689,125	104	14,333,800	-	-	-	-	10	1,378,250	10	1,378,250	114	15,712,050
5	Energy Plantation	Ha.	56150	47	2,639,050	40	2,246,000	120	6,738,000	12	673,800	219	12,296,850	77	4,323,550	51	2,863,650			128	7,187,200	347	19,484,050
6	Pasture Development	Ha.	21650	47	1,017,550	70	1,515,500	120	2,598,000	12	259,800	249	5,390,850	77	1,667,050	49	1,060,850			126	2,727,900	375	8,118,750
7	Eradication of Noxious weeds	Ha.	15050	125	1,881,250	130	1,956,500	789	11,874,450	20	301,000	1,064	16,013,200	475	7,148,750	110	1,655,500			585	8,804,250	1,649	24,817,450
	Total			451	22,081,525	480	21,463,250	1,284	38,989,200	99	5,531,725		88,065,700	1,039	36,970,850	333	12,808,250	136	7,322,050	1,508	57,101,150	3,822	145,166,850
	AFORESTATION	Total:			22,081,525		21,463,250		38,989,200		5,531,725	-	88,065,700		36,970,850		12,808,250		7,322,050	-	57,101,150	-	145,166,850
2.	SOIL &MOISTURE CONSERVATION (25%)-																						
1	Gabion Checkdams	Nos.																					
a.	Size: 1.5Mx1.5M		10000	214	2,140,000	258	2,580,000	889	8,890,000	60	600,000	1,421	14,210,000	936	9,360,000	214	2,140,000	106	1,060,000	1,256	12,560,000	2,677	26,770,000
b.	Size:2Mx2.5M		17230	74	1,275,020	81	1,395,630	336	5,789,280	20	344,600	511	8,804,530	407	7,012,610	83	1,430,090	48	827,040	538	9,269,740	1,049	18,074,270
	Total:		10000/17230	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	Gabion Retainingwalls																						

Sl. No	Component	Unit	Unit Cost Rs.	Dhrampur Range		Urla Range		Jogindernagar Range		Ladhabadhol Range		Total JnagarDivn.		Mandi Range		Drung Range		Kotli Range		Total Mandi Division		Grand Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
a.	Size: 1.5Mx1.5M		10000	22	220,000	89	890,000	491	4,910,000	-	-	602	6,020,000	71	710,000	42	420,000	15	150,000	128	1,280,000	730	7,300,000
b.	Size:2Mx2.5M		17230	3	51,690	5	86,150	428	7,374,440	5	86,150	441	7,598,430	29	499,670	36	620,280	4	68,920	69	1,188,870	510	8,787,300
	Total:			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Gabion Checkwalls	Nos.																					
a.	Size: 1.5Mx1.5M		10000	-	-	58	580,000	-	-	55	550,000	113	1,130,000	-	-	-	-	-	-	-	-	113	1,130,000
b.	Size:2Mx2.5M		17230	-	-	5	86,150	-	-	15	258,450	20	344,600	-	-	-	-	-	-	-	-	20	344,600
	Total:			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Gabion Spurs	Nos.	48540	16	776,640	30	1,456,200	106	5,048,160	6	291,240	158	7,572,240	98	4,756,920			24	1,164,960	122	5,921,880	280	13,494,120
5	Water Harvesting Structures	Nos.	62150	7	435,050	5	310,750	7	435,050	2	124,300	21	1,305,150	24	1,491,600	13	807,950	5	310,750	42	2,610,300	63	3,915,450
6	Water Holes for wild life	Nos.	856920	8	6,855,360	7	5,998,440	10	8,569,200	1	856,920	26	22,279,920	17	14,567,640	6	5,141,520	4	3,427,680	27	23,136,840	53	45,416,760
7	Observation Post							1	1,100,000			1	1,100,000	1	1,100,000					1	1,100,000	2	2,200,000
8	Gulli Plugging/ Dry stoneCheckdams	Nos.	4710	-	-	-	-	-	-	10	47,100	10	47,100							-	-	10	47,100
9	Brushwood Checkdams	Nos.	78	135	10,530	-	-	-	-	-	-	135	10,530					285	22,230	285	22,230	420	32,760
10	Trenching	Nos.	15.3	-	-	3,100	47,430	3,085	47,201	-	-	6,185	94,631	1,900	29,070			1,750	26,775	3,650	55,845	9,835	150,476
11	Bio Engineering	Ha.	111700	8	893,600	6	670,200	-	-	-	-	14	1,563,800					7	781,900	7	781,900	21	2,345,700
	SOIL &MOISTURE CONSERVATION	Total:	0	-	12,657,890	-	14,100,950	-	42,163,331	-	3,158,760	-	72,080,931	-	39,527,510	-	10,559,840	-	7,840,255	-	57,927,605	-	130,008,536
3.	PAYMENT FOR ENVIRONMENT SERVICES																						
1	Power saving implements/ Solar Lights	Nos.	30000	16	480,000	10	300,000	30	900,000	2	60,000	58	1,740,000	34	1,020,000	30	900,000	24	720,000	88	2,640,000	146	4,380,000
2	Community	Nos.	300000																				

Sl. No	Component	Unit	Unit Cost Rs.	Dhrampur Range		Urla Range		Jogindernagar Range		Ladhbadhhol Range		Total JnagarDivn.		Mandi Range		Drung Range		Kotli Range		Total Mandi Division		Grand Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	Storage Tanks			16	4,800,000	6	1,800,000	8	2,400,000	1	300,000	31	9,300,000	1	300,000	5	1,500,000	7	2,100,000	13	3,900,000	44	13,200,000
3	Village Ponds	Nos.	35000	24	840,000	18	630,000	80	2,800,000	4	140,000	126	4,410,000	8	280,000	19	665,000	7	245,000	34	1,190,000	160	5,600,000
4	Crematorium	Nos.	300000	-	-	1	300,000	3	900,000	1	300,000	5	1,500,000	8	2,400,000	7	2,100,000	-	-	15	4,500,000	20	6,000,000
5	Reward Money	HH*413		-	2,634,114	0	945,357	-	6,389,523	-	102,837	-	10,071,831	-	6,504,337		249,865		250,000	-	7,004,202	-	17,076,033
6	Community Power tiller		1100000	-	-	-	2,200,000					-	2,200,000						2,200,000	-	2,200,000	-	4,400,000
																				-	-		-
	Total PES	Total:		-	8,754,114	35	6,175,357	121	13,389,523	-	902,837	156	29,221,831	-	10,504,337	-	5,414,865	-	5,515,000	-	21,434,202	156	50,656,033
4.	RESEARCH, TRAINING & CAPACITY BUILDING																						
1	Laying of Demonstration Plots for Fruit / Bamboo Plantations	Ha.	76750	8.0	614,000.0	12.0	921,000	6.0	460,500.0	1.0	76,750	27	2,072,250	8.0	614,000	4.5	345,375.0	3.5	268,625	16	1,228,000	43	3,300,250
2	Exposure visits for Forest Staff	Lump sum			720,000		900,000		1,080,000		90,000	-	2,790,000		1,440,000		810,000		1,260,000	-	3,510,000	-	6,300,000
3	Capacity building for Nursery	Nos.	1220000/770000/550000/	-	3,110,000	-	3,210,000	4	3,890,000		770,000	4	10,980,000		4,530,000		750,000		2,790,000	-	8,070,000	4	19,050,000
4	Manpower support						4,800,000					-	4,800,000								-		4,800,000
5	Training in handling Wild Life	Lump sum			200,000		250,000		300,000		25,000	-	775,000		400,000		225,000		350,000	-	975,000	-	1,750,000
6	Training in Modern Nursery	Lump sum							200,000		20,000	-	220,000				1,000,000			-	1,000,000	-	1,220,000

Sl. No	Component	Unit	Unit Cost Rs.	Dhrampur Range		Urla Range		Jogindernagar Range		Ladhabadhol Range		Total JnagarDivn.		Mandi Range		Drung Range		Kotli Range		Total Mandi Division		Grand Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	TOTAL RT & C	Total:			4,644,000		10,081,000		5,930,500		981,750		21,637,250		6,984,000		3,130,375		4,668,625		14,783,000		36,420,250
5 & 6.	INFRASTRUCTURE AND FOREST PROTECTION																						
1	Construction of New Infrastructure like Fgd. Hut, B.O. Qr. , Gang Hut, Community Hall, Conference Room and Repair of old Infrastructure etc.	..	Refer list of work	-	4,900,000	-	3,300,000		3,000,000		1,800,000	-	13,000,000		13,450,000		5,030,000		6,800,000	-	25,280,000	-	38,280,000
2	Bridle Paths/ Approach Roads/ Forest Road/ Mule Track/ Foot Bridges/ Boundary Walls etc.	..	Lump Sum	-	1,540,000	-	3,280,000		8,220,000		160,000	-	13,200,000		1,450,000		510,000		520,000	-	2,480,000	-	15,680,000
3	Patrolling Kits	Nos.	10000	8	80,000	10	100,000	15	150,000	3	30,000	36	360,000	21	210,000	11	110,000	11	110,000	43	430,000	79	790,000
4	Laptop at range HQ	1	40000									-	-							-	-		-
5	Demarcation of forests & Cons.of boundry pillars			-	-		150,000	-	2,610,000	-	-	-	2,760,000				7,804,967			-	7,804,967	-	10,564,967
6	Building infrastructure for RWLR&RC												-		15,570,400						15,570,400		15,570,400
7	Vehicles & POL	Cost Norm			2,394,967		2,394,967				-	-	4,789,934		2,394,967		2,394,967	-	2,394,967	-	7,184,901	-	11,974,835
		Total:	0	-	8,914,967	-	9,224,967	-	13,980,000	-	1,990,000	-	34,109,934	-	33,075,367	-	15,849,934	-	9,824,967	-	58,750,268	-	92,860,202

Sl. No	Component	Unit	Unit Cost Rs.	Dhrampur Range		Urla Range		Jogindernagar Range		Ladhabadhol Range		Total JnagarDivn.		Mandi Range		Drung Range		Kotli Range		Total Mandi Division		Grand Total	
				Phy.	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy	Fin.	Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
	7. WILD LIFE HABITAT MANAGEMEMENT																						
1	Rewalsar WL R & R C														27841976						27,841,976		27,841,976
2	Binoculars	Nos.	30000	2	60,000	2	60,000	14	420,000	1	30,000	19	570,000	4	120,000	12	360,000	4	120,000	20	600,000	39	1,170,000
3	Veterinary Kit at Range & beat Level	Nos.	5000	12	60,000	8	40,000	14	70,000	2	10,000	36	180,000	19	95,000	12	60,000	12	60,000	43	215,000	79	395,000
4	Cameras	Nos.	5000	-	-	-	-	-	-			-	-							-	-	-	-
5	Trapping Cameras	Nos.	30800	4	123,200	1	30,800	12	369,600	-	-	17	523,600	9	277,200	12	369,600	4	123,200	25	770,000	42	1,293,600
6	GPS	Nos.	30000							3	90,000	3	90,000							-	-	3	90,000
7	Tranquilizer Gun	Nos.	250000				-			-	-	-	-	1	250,000	-	-	-	-	1	250,000	1	250,000
		Total:	0	-	243,200	-	130,800	-	859,600	-	130,000	-	1,363,600	-	28,584,176	-	789,600	-	303,200	-	29,676,976	-	31,040,576
	Total CAT Plan		0	-	57295696	-	61176324	-	115312154	-	12695072	-	246479245	-	155646240	-	48552864	-	35474097	-	239673201	-	486152446
	8.MONITORING & EVALUATION	5%			3,001,444	-	3,195,475	-	5,902,267	-	771,413	-	12,870,598	-	7,918,970	-	2,564,301	-	1,910,365	-	12,393,636	-	25,264,234
	9. Contingencies	10%			5,729,570	-	6,117,632	-	11,531,215	-	1,269,507	-	24,647,925	-	15,564,624	-	4,855,286	-	3,547,410	-	23,967,320	-	48,615,245
	Total CAT Planfor Financial Projections				66026709	-	70,489,431	-	132745636	-	14735992	-	283997768	-	179129834	-	55972452	-	40931872	-	276034157	-	560031925