



**Office of DEPUTY CONSERVATOR OF FORESTS**  
**SUKET FOREST DIVISION, SUNDERNAGAR DISTT. MANDI (H.P.)**  
**G- mail: dfsuket123@gmail.com Ph. No. 01907-267228**

No.RK/FCA./ 11621Dated./S/Nagar, the: 01-01-2026

From: D.C.F. Suket.

To: C.F. Mandi.

**Subject : Diversion of 10.6019 ha. of forest land in favour of HPPWD for construction of Dharli to Balag Road Km 0/00 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi, HP (Online –Proposal No. FP/HP/Road/49449/2020).**

Memo

Kindly refer to your office **letter No. 6964 dated 22/12/2025** on the above cited subject.

In this context, it is submitted that the user agency i.e. Executive Engineer HPPWD Division Sundernagar has re-listed the case on the PARIVESH 1.0 portal and the compliance report has been uploaded on online web portal. The point wise reply to the observations as already submitted vide this office memo no. 10762 dated 16.12.2025 is again submitted as below:-

Sr. No.	EDS/Observations	Reply of Observations
1.	The proposal involves violation as reported in para 11 of part II but violation report not found uploaded. It is requested to kindly submit the detailed violation report and action taken report.	<p>The user agency has submitted that a narrow pedestrian path under reference was originally constructed unintentionally by the local inhabitants prior to the year 1980 for which the necessary affidavits has already been submitted. The Dharli to Balag route has served as a traditional path for number of people and mules, providing essential access for the residents of Balag to Sundernagar, the primary nearby town offering critical facilities such as healthcare, markets, and educational services. This path was in existence before 1980 and has long been used by villagers for their moment.</p> <p>The path existed prior to 1980 and suffered weather-related damages. Therefore, to keep it accessible, villagers undertook gradual repairs and improvements after 1980 solely to ensure safe passage. These efforts were made without knowledge of FCA requirements or land classifications, serving only to preserve this essential route for the community's needs. To support the historical use, the necessity of this path, and unawareness of the legal status of the land, the affidavits from the locals affirming its long-standing presence and their dependence on it over the years were already conveyed vide this office letter No. 9366 dated 28.10.2024.</p>
2.	It is requested to clarify that whether the proposal is in the list of 2183 violation cases or not.	User agency has submitted that this road has not been reported as a violation under the Forest (Conservation) Act 1980 before the Hon'ble Hight Court in the list of 2183 cases. However, as submitted at sr. No. 1 The path existed prior to 1980 and suffered weather-related damages. Therefore, to keep it accessible, villagers undertook gradual repairs and improvements after 1980 solely to ensure safe passage. These efforts were made without knowledge of FCA requirements or land



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		<p>classifications, serving only to preserve this essential route for the community's needs</p>
<p>3.</p>	<p>State Government shall scrutinize the alternatives in more details and must give complete justification establishing its inescapability for locating the project in forest area. Further, explored alternatives showing details of tree enumeration, area etc. with reason of rejection/acceptance with KML may be provided.</p>	<p>The user agency i.e. HPPWD has duly examined all possible alternatives for the proposed project. After a comprehensive analysis, it has been found that there is no feasible non-forest land and operational available that can meet the technical, environmental, requirements of the project. The selection of the proposed site within forest land is thus inescapable due to the following reasons:</p> <p><b>Technical Suitability:</b> The forest land identified is the only location that meets the required technical specifications such as gradient, connectivity, alignment, etc.</p> <p><b>Alignment Public Utility Constraints:</b> The project is linear/non-linear in nature (as applicable) and must align with existing infrastructure or settlement, which necessitates passage through forest land.</p> <p><b>Non-availability of Non-Forest Land:</b> No suitable non-forest land available in the vicinity of the project area as verified by the revenue records and field visits.</p> <p><b>Minimum Forest Land Required:</b> The proposal has been designed in such a manner so as to minimize forest land requirement to the barest minimum.</p> <p><b>Alternatives Explored:</b> Alternative alignments/sites were explored and compared based on parameters such as number of trees affected, area involved, accessibility, and impact on environment. User agency has submitted that the details of these alternatives' enumeration, including area tree involved and reasons for rejection/acceptance have been uploaded in parivesh portal with the proposal along with the respective KML files for verification</p>
<p>4.</p>	<p>Since proposed diversion area is on steep slope and during excavation and rainy season, may cause landslide/soil erosion to the proposed area or the nearby landscape. Therefore, State Govt. may provide details of the mitigation measures to be adopted to arrest the accelerated soil erosion/land slide during/after execution of project. Additionally, the State Govt. may submit Soil and Moisture Conservation Plan as per para-1.22 (II) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, if applicable.</p>	<p>The User Agency acknowledges the concerns related to slope stability and soil erosion in the proposed diversion area. Suitable mitigation measures are being incorporated to prevent accelerated soil erosion and landslide both during and after project execution. The proposed measures include:</p> <p><b>1. Structural Measures</b></p> <p>Construction of retaining walls/breast walls and toe walls at vulnerable stretches to stabilize the slope. Adoption of bench cutting instead of vertical cutting to maintain a safe slope gradient. Provision of gabion structures, check dams, and contour barriers where necessary.</p> <p><b>2. Drainage and Runoff Management</b></p> <p>Formation of well-designed catch drains, side drains, and cross drains to channelize runoff safely. Construction of cut-off drains above excavation zones to prevent surface water inflow. Ensuring proper outfall points to avoid waterlogging and scouring.</p> <p><b>3. Bio-engineering Measures</b></p>



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		<p>Grass turfing, brush layering, hydro-seeding, and plantation of deep-rooted native shrubs and trees on exposed slopes. Adoption of vegetative barriers along the slope to minimize sheet erosion. Use of coir matting/jute netting for temporary surface stabilization during construction</p> <p><b>4. Construction phase Safeguards</b>  Minimizing open excavation during monsoon periods. Storage of excavated material only at designated safe locations with retaining measures. Regular monitoring of slope behavior by field engineers.</p> <p><b>5. Post construction Restoration</b>  Immediate biological restoration of disturbed areas. Long-term monitoring and maintenance of drainage structures and slope stabilization measures. Further, as required, the Soil and Moisture Conservation Plan (SMC Plan) is being prepared in accordance with Para- 1.22 (ii) of the Van (Sanrakshan Evam Samvardhan) Adhinyam, 1980, wherever applicable. The SMC Plan will include detailed site-specific measures, maps, cost estimates, and implementation timelines.</p> <p>The User Agency assures full compliance with all guidelines and will adopt all necessary measures to ensure environmental and slope stability throughout the project lifecycle. The Soil and Moisture Conservation Plan (SMC Plan) is attached herewith for ready reference.</p>
5.	CA area is proposed in DFL. As per Rule 13 (4) (a), a certificate on non-availability of suitable non-forest land for raising compensatory afforestation needs to be furnished by the State Government in the format specified under Schedule-III.	Necessary certificate attached.
6.	In view of the observations of the 74th REC dated 31.01.2025, the CA scheme needs to be revised by including soil depth, aspect, area dimensions and description, detailed site-specific soil and moisture Conservation measures, Individual species names, and photographic evidence of DFO site Inspection.	Revised CA Scheme is attached.
7.	Area mentioned in CA site suitability certificate is 10.2038 ha of CA Instead of 21.2038 ha. May request to upload the site suitability of complete CA area. It is requested to kindly submit the site inspection report of concerned DFO along with photograph of proposed CA area as the area appears on steep slope.	CA site suitability certificate is attached.
8	NPV sheet and penal NPV sheet calculated as per old rates 6,57,000/-. It is requested to upload NPV sheet as per new rates.	Revised NPV & penal NPV is attached.
9	0.809 ha area proposed for muck dumping. It is requested to explore non forest land for the purpose	User agency has submitted that the proposed dumping site cannot be shifted to non-forest land because no suitable non-forest land is available in the vicinity of the proposed road alignment. The terrain and land-use pattern of the surrounding area do not provide any feasible alternative dumping



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		<p>location outside the forest land.</p> <p>However, to ensure environmental safety and minimize adverse impacts, the User Agency commits that the dumping site will be properly developed, engineered, and stabilized, adopting the following measures:</p> <p><b>Construction of protection/retaining walls</b> around the dumping area to prevent spillage, sliding, or run-off of debris.</p> <p><b>Scientific leveling and compaction</b> of dumped material to avoid erosion and slope failure.</p> <p><b>Provision of drainage channels</b> to safely divert surface runoff and prevent waterlogging.</p> <p><b>Plantation of site-specific tall native plant</b> species on and around the dumping site to enhance slope stability and aid in long term ecological restoration.</p> <p><b>Regular monitoring</b> of the dumping site during and after construction.</p> <p>The User Agency assures that all dumping activities will be carried out strictly in environmental and accordance with engineering norms, ensuring minimal disturbance to the surrounding forest landscape</p>
10	It is requested to mark the dumping sites in KML file and also submit the list of trees in dumping area.	User agency has submitted that the dumping site have already been marked in the KML file and the same has been uploaded.
11	Muck dumping plan needs to be authenticated by DFO.	The muck dumping plan has been authenticated by the undersigned.
12	In complete cost benefit analysis found uploaded in part I with old NPV rates. It is requested to upload completely filled CB analysis as per new NPV rates.	User agency has submitted that the complete cost benefit analysis has been uploaded in Part-I as per the new NPV rates.
13	No. of trees to be affected are 658 in the proposal. It is requested to submit the list of trees that area actually required to be felled	The number of trees has now been reduced from 658 to 277 which is barest minimum and will be actually felled. <b>Detailed list attached.</b>
14	A large numbers of ecologically important tree species such Quercus leucotrichophora and Rhododendron arboreum are also likely to be affected. State Govt. is required to explore the possibility of saving these trees in the proposed project.	The number of trees has been reduced from 658 to 277 after re-alignment in some pockets. This has resultantly reduced the number of ecological important trees, Ban from 125Nos to 75Nos and Rhododendron from 31Nos to 17Nos which is minimal now.
15	Administrative plan, undertaking to pay addl. NPV and layout plan not found uploaded. It is requested to uploaded the same.	The user agency has submitted plan, the undertaking to pay the additional NPV and the layout plan have been uploaded.
16	Aerial distance certificate of proposed area from nearest protected area not found uploaded. It is requested to submit the same	The aerial distance corticate has already been upload under additional information.
17	No is mentioned in para 8 (iii) of part II. However, as per DSS analysis of proposed area, Wildlife Sanctuary Bandli is approx. 0.19 km away from the proposed site. It is requested to submit the comment of DFO.	The road is reported as the violated road which has now been roughly aligned from end to end. As the case is proceeded by the user agency, the necessary preventive measures in the wildlife management plans could be adopted for scientifically managing the flora and fauna in the region. In light of this case, and taking into account the developmental needs and demands of the local people, as well as the conservation of biodiversity, an appropriate plan for



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		wildlife protection can be formulated and implemented on the ground. Certificate of Divisional Forest Officer, WL Kullu already submitted.
18	As per DSS analysis of proposed area, little shift observed in the provided latitude-longitude. Further, dumping site latitude-longitude are missing from the DGPS map pdf uploaded at the sr. no. C(iv). It is requested to rectify the same.	The User agency has submitted that DGPS map has been rectified. Further the latitude-longitude of the dumping site has now been indicated in the DGPS map PDF.

This is for your kind information and further necessary action please.

Enclosed: As Above.

Signed by Rakesh Katoch

Date: 01-01-2026 16:45:01

Deputy Conservator of Forest,  
 Suket Forest Division,  
 Sundernagar.

Endst. No.RK/ 11622-23 Dated S/Nagar,the/ 01-01-2026

1. Copy is forwarded to Executive Engineer, Sundernagar Division, HPPWD Sundernagar in continuation to this office letter No. 11348 dated 29.12.2025 for kind information.
2. RFO Kangoo for information & further n/action. He may ensure that use of forest land may not be allowed to user agency till final approval granted by competent authority.

-sd./-

Deputy Conservator of Forest,  
 Suket Forest Division,  
 Sundernagar.



Office of  
**EXECUTIVE ENGINEER, SUNDER NAGAR DIVISION**  
Himachal Pradesh Public Works Department Sunder Nagar  
Ph. 01907-266245, Fax: 266845, E-mail [ee-sun-hp@nic.in](mailto:ee-sun-hp@nic.in)

No.PW-SNR-WA. R-27 (Dharli)/2025/-  
To

10341-43

Dated: - 12-12-2025

The Deputy Conservator of Forests,  
Suket Forest Division,  
Sunder Nagar Distt. Mandi (H.P)

Subject: -

Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road (Kms. 0/00 to 18/900), within the jurisdiction of Suket Forest Division, Distt. Mandi HP. (Online Proposal No. FP/HP/Road/19449/2020).

Reference: -

The Sub-Office, Shimla (Regional Office, Chandigarh) Ministry of environment, Forest, and Climate Change CGO Complex, Shivalik Khand, Longwood Shimla Online EDS dated 25.02.2025.

Sir,

The Point wise reply of observation pertaining to PWD as raised by The Sub-Office, Shimla (Regional Office, Chandigarh) Online EDS dated 25.02.2025 which the observation regarding point wise has been raised. The point wise reply of attended observations is as under: -

Sr. No.	Observation	Reply
1	The proposal involves violation as reported in para 11 of part II but violation report not found uploaded. It is requested to kindly submit the detailed violation report and action taken report.	It is respectfully submitted that the narrow pedestrian path under reference was originally formed unintentionally by the local inhabitants prior to the year 1980. This pathway served as the only available pedestrian access route for the villagers and had been used continuously for their daily conveyance needs for several decades. Over time, especially during the rainy season, the condition of the path deteriorated significantly, causing considerable hardship to the local community. In order to ensure safe and uninterrupted movement, the villagers, out of necessity and without any commercial or developmental intent, undertook minor widening and defacement of the existing path during the period 2009-2010. These actions were carried out solely to facilitate ease of movement and to maintain access for essential daily activities.

		<p><i>The User Agency affirms that the modifications were community-driven and not part of any planned project activity. Furthermore, the User Agency assures full cooperation and compliance with all regulatory requirements. The User Agency remains fully committed to complying with all provisions of the Forest (Conservation) Act, 1980, and all other applicable guidelines.</i></p>
2	<p>It is requested to clarify that whether the proposal is in the list of 2183 violation cases or not.</p>	<p>It is further submitted that this road has not been reported as a violation under the Forest (Conservation) Act, 1980 before the Hon'ble High Court in the list of 2183 cases submitted.</p>
3	<p>State Government shall scrutinize the alternatives in more details and must give complete justification establishing its inescapability for locating the project in forest area. Further, explored alternatives showing details of tree enumeration, area etc. with reason of rejection/acceptance with KML may be provided.</p>	<p>The HPPWD has duly examined all possible alternatives for the proposed project. After a comprehensive analysis, it has been found that there is no feasible non-forest land available that can meet the technical, environmental, and operational requirements of the project. The selection of the proposed site within forest land is thus inescapable due to the following reasons:</p> <ul style="list-style-type: none"> <li>• <b>Technical Suitability:</b> The forest land identified is the only location that meets the required technical specifications such as gradient, connectivity, alignment, etc.</li> <li>• <b>Public Utility / Alignment Constraints:</b> The project is linear/non-linear in nature (as applicable) and must align with existing infrastructure or settlement, which necessitates passage through forest land.</li> <li>• <b>Non-availability of Non-Forest Land:</b> No suitable non-forest land is available in the vicinity of the project area as verified by the revenue records and field visits.</li> <li>• <b>Minimum Forest Land Required:</b> The proposal has been designed in such a manner so as to minimize forest land requirement to the barest minimum.</li> <li>• <b>Alternatives Explored:</b> Alternative alignments/sites were explored and</li> </ul>

		<p>compared based on parameters such as number of trees affected, area involved, accessibility, and impact on environment. The details of these alternatives including tree enumeration, area involved and reasons for rejection/acceptance have been uploaded in parivesh portal with the proposal along with the respective KML files for verification.</p>
4	<p>Since proposed diversion area is on steep slope and during excavation and rainy season, may cause landslide/soil erosion to the proposed area or the nearby landscape. Therefore, State Govt. may provide details of the mitigation measures to be adopted to arrest the accelerated soil erosion/land slide during/after execution of project. Additionally, the State Govt. may submit Soil and Moisture Conservation Plan as per para-1.22 (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, if applicable.</p>	<p>The User Agency acknowledges the concerns related to slope stability and soil erosion in the proposed diversion area. Suitable mitigation measures are being incorporated to prevent accelerated soil erosion and landslide both during and after project execution. The proposed measures include:</p> <p><b>1. Structural Measures</b></p> <ul style="list-style-type: none"> <li>• Construction of retaining walls/breast walls and toe walls at vulnerable stretches to stabilize the slope.</li> <li>• Adoption of bench cutting instead of vertical cutting to maintain a safe slope gradient.</li> <li>• Provision of gabion structures, check dams, and contour barriers where necessary.</li> </ul> <p><b>2. Drainage and Runoff Management</b></p> <ul style="list-style-type: none"> <li>• Formation of well-designed catch drains, side drains, and cross drains to channelize runoff safely.</li> <li>• Construction of cut-off drains above excavation zones to prevent surface water inflow.</li> <li>• Ensuring proper outfall points to avoid waterlogging and scouring.</li> </ul> <p><b>3. Bio-engineering Measures</b></p> <ul style="list-style-type: none"> <li>• Grass turfing, brush layering, hydro-seeding, and plantation of deep-rooted native shrubs and trees on exposed slopes.</li> </ul>

		<ul style="list-style-type: none"> <li>• Adoption of vegetative barriers along the slope to minimize sheet erosion.</li> <li>• Use of coir matting / jute netting for temporary surface stabilization during construction.</li> </ul> <p><b>4. Construction-phase Safeguards</b></p> <ul style="list-style-type: none"> <li>• Minimizing open excavation during monsoon periods.</li> <li>• Storage of excavated material only at designated safe locations with retaining measures.</li> <li>• Regular monitoring of slope behavior by field engineers.</li> </ul> <p><b>5. Post-construction Restoration</b></p> <ul style="list-style-type: none"> <li>• Immediate biological restoration of disturbed areas.</li> <li>• Long-term monitoring and maintenance of drainage structures and slope stabilization measures.</li> </ul> <p>Further, as required, the Soil and Moisture Conservation Plan (SMC Plan) is being prepared in accordance with Para-1.22 (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, wherever applicable. The SMC Plan will include detailed site-specific measures, maps, cost estimates, and implementation timelines.</p> <p>The User Agency assures full compliance with all guidelines and will adopt all necessary measures to ensure environmental and slope stability throughout the project lifecycle. The Soil and Moisture Conservation Plan (SMC Plan) is attached herewith for ready reference.</p>
5	CA area is proposed in DFL. As per Rule 13 (4) (a), a certificate on non-availability of suitable non-forest land for raising compensatory afforestation needs to be furnished by the State Government in the format specified under Schedule-III.	<i>Point Pertains to Forest Department.</i>

6	In view of the observations of the 74th REC dated 31.01.2025, the CA scheme needs to be revised by including soil depth, aspect, area dimensions and description, detailed site-specific soil and moisture Conservation measures, individual species names, and photographi2/3025 evidence of DFO site Inspection.	<i>Point Pertains to Forest Department.</i>
7	Area mentioned in CA site suitability certificate is 10.2038 ha of CA instead of 21.2038 ha. May request to upload the site suitability of complete CA area. It is requested to kindly submit the site inspection report of concerned DFO along with photograph of proposed CA area as the area appears on steep slope.	<i>Point Pertains to Forest Department.</i>
8	NPV sheet and penal NPV sheet calculated as per old rates @ 6,57,000/-. It is requested to upload NPV sheet as per new rates.	<i>Point Pertains to Forest Department.</i>
9	0.809 ha area proposed for muck dumping. It is requested to explore non forest land for the purpose.	<p>It is respectfully submitted that the proposed dumping site cannot be shifted to non-forest land because no suitable non-forest land is available in the vicinity of the proposed road alignment. The terrain and land-use pattern of the surrounding area do not provide any feasible alternative dumping location outside the forest land.</p> <p>However, to ensure environmental safety and minimize adverse impacts, the User Agency commits that the dumping site will be properly developed, engineered, and stabilized, adopting the following measures:</p> <ul style="list-style-type: none"> <li>• Construction of protection/retaining walls around the dumping area to prevent spillage, sliding, or run-off of debris.</li> <li>• Scientific leveling and compaction of dumped material to avoid erosion and slope failure.</li> </ul>

		<ul style="list-style-type: none"> <li>• Provision of drainage channels to safely divert surface runoff and prevent waterlogging.</li> <li>• Plantation of site-specific tall native plant species on and around the dumping site to enhance slope stability and aid in long-term ecological restoration.</li> <li>• Regular monitoring of the dumping site during and after construction.</li> </ul> <p><i>The User Agency assures that all dumping activities will be carried out strictly in accordance with environmental and engineering norms, ensuring minimal disturbance to the surrounding forest landscape.</i></p>
10	It is requested to mark the dumping sites in KML file and also submit the list of trees in dumping area.	It is respectfully submitted that the dumping sites have already been marked in the KML file, and the same has been uploaded/submitted as required.
11	Muck dumping plan needs to be authenticated by DFO.	The muck dumping plan has been authenticated by the Divisional Forest Officer (DFO). The authenticated plan has been uploaded/submitted for the kind consideration of the Authority.
12	In complete cost benefit analysis found uploaded in part I with old NPV rates. It is requested to upload completely filled CB analysis as per new NPV rates.	The complete Cost-Benefit Analysis has been uploaded in Part-I as per the new NPV rates. The Cost-Benefit Analysis is also attached herewith for ready reference.
13	No. of trees to be affected are 658 in the proposal. It is requested to submit the list of trees that area actually required to be felled.	The number of trees affected in the proposed road alignment has been minimized by reducing the Right-of-Way in forest stretches and recommending retaining structures at necessary locations. These measures ensure that tree felling is restricted strictly to what is essential for the execution of the project.
14	A large numbers of ecologically important tree species such as Quercus leucotrichophora and Rhododendron arboreum are also likely to be affected. State Govt. if required to explore the possibility of saving these trees in the proposed project.	<i>Point Pertains to Forest Department.</i>
15	Administrative plan, undertaking to pay addl. NPV and layout plan not found	The Administrative Plan, the Undertaking to pay the additional NPV, and the Layout Plan

	uploaded. It is requested to uploaded the same.	have been, duly submitted/uploaded as required.
16	Aerial distance certificate of proposed area from nearest protected area not found uploaded. It is requested to submit the same.	The Aerial Distance Certificate has already been uploaded under Additional Information Details at S. No. 2, page 72.
17	No is mentioned in para 8 (iii) of part II. However, as per DSS analysis of proposed area, Wildlife Sanctuary Bandli is approx. 0.19 km away from the proposed site. It is requested to submit the comment of DFO	<i>Point Pertains to Forest Department.</i>
18	As per DSS analysis of proposed area, little shift observed in the provided latitude-longitude. Further, dumping site latitude-longitude are missing from the DGPS map pdf uploaded at the s. no. C(iv). It is requested to rectify the same.	The DGPS map has been rectified. Further, the latitude-longitude of the dumping site has now been indicated in the DGPS map PDF uploaded at S. No. C(iv). The DGPS map is also attached herewith for ready reference.


This is for your kind consideration and further submission to the higher authority for the approval of the same.

DA:- As above.

  
**Executive Engineer,  
Sunder Nagar Division,  
HP.PWD Sunder Nagar.**

Copy of the following for information:

1. The Assistant Engineer Dehar Sub- Division H.P.P.W.D. Dehar.
2. The FCA Consultants, Naresh Kumar R/O Nerchowok Dist. Mandi HP-175008.

  
**Executive Engineer,  
Sunder Nagar Division,  
HP.PWD Sunder Nagar.**

**GOVERNMENT OF HIMACHAL PRADESH**  
**PUBLIC WORKS DEPARTMENT**



Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Constructon of Dharli To Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P.

**SOIL MOISTURE CONSERVATION  
PLAN**

**EXECUTIVE ENGINEER, SUNDER NAGAR DIVISION**  
Himachal Pradesh Public Works Department Sunder Nagar  
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# REPORT ON

## SOIL CONSERVATION PLAN

### *1.0 INTRODUCTION:*

#### *THE STATE:*

#### *INTRODUCTION:*

Himachal Pradesh having world's mightiest mountain ranges is one of the hilly States situated in the Northern part of India. It is blessed with some of the most spectacular and beautiful landscapes. It came into being in November, 1966 after the re-organization of States. Earlier, it was part of the combined State of Panjab. The various hill towns in the State not only provide visitors reprieve from the heat of the plains, but offer beautiful scenic sites which are real treat to the eyes. Kullu and Kangra valleys offer natural beauty which is no less than Kashmir Valley. Valleys and streams, snow clad mountains and temperate forests offer tourists and sportsmen all they want. Earlier the economy of the State mostly depended on tourism and a large number of tourist sites had been developed by the State. However, after the re-organization, the State has made big strides in the field of industrialization also. The State has good deposits of minerals like gypsum, lime stone and slate etc. It has big reserve of minerals which can be used in various types of industries. Mining of minor minerals is also, therefore, an extensive industry in the State. Industries like Cement, Electronics, Fertilizers, Pharmaceuticals and Liquor can be found in good number at different places in the State. Hydel Power in the State has given a big boost to the Industries. A number of Industrial areas have been developed in the State, where all facilities are provided to the entrepreneurs. Parwanoo, Barotiwala, Baddi, Paonta Sahib and Raja Ka Bagare some of the important industrial areas developed by the State in the last two decades.

#### *MANDI DISTRICT:*

Not much is known about the early history prior to the formation of Suket in 765 AD. The area had been under the control of Ranas or Thakurs. The only place that has an early mention in literature is Rewalsar and it is mentioned in the Skanda Purana as a sacred place of pilgrimage. Karnpur, a small village is said to have been founded by Karan, a hero of the Mahabharata. A temple at Gumma points to the locality where the Pandavas sheltered themselves when the attempt to burn them down failed. Beyond this not much of the erstwhile state's existence can be found in classical literature. According to the Tibetan

tradition, Padam Sambhav (750-800 AD), the great Buddhist Patriarch, who was summoned by king Tisong-De-Tsen of Tibet for preaching Buddhism, hailed from Zahor, which represents the country round about Rewalsar. On the basis of this it is concluded that Mandi must have been a great place of Buddhist learning about this time.

The chiefs of Mandi and Suket are said to be from a common ancestor of the Chandravanshi line of Rajputs of Sena dynasty of Bengal and they claim their descent from the Pandavas of the Mahabharata. The ancestors of the line believed to have ruled for 1,700 years in Indraprastha(Delhi), until one Khemraj was driven out by his Wazir, Bisarp, who then took over the throne. Khemraj, having lost his kingdom, fled eastward and settled in Bengal. where 13 of his successors are said to have ruled for 350 years. From there they had to flee to Ropar in Punjab, but here also the king, Rup Sen, was killed and one of his sons, Bir Sen, fled to the hills and reached Suket. The State of Suket is said to have been founded by Bir Sen, an ancestor of the Sena Dynasty of Bengal.

The separation of Mandi from Suket took place about the year 1200 AD, Upto that time, it was the single state of Suket. The then reigning chief Sahu Sen had a quarrel with his younger brother Bahu Sen, who left Suket to seek his fortunes elsewhere. Bahu Sen after leaving Suket settled at Manglan in Kullu, where his descendants lived for 11 generations. Then then chief, Kranchan Sen was killed fighting against the Kullu Raja and his Rani, who was pregnant at that time, fled alone to her father who was the chief of Seokot, who had no son. Here she gave birth to a baby boy who was named Ban, the tree under which he was born. Ban had hardly crossed the age of 15 when he defeated the chief of Kilti who used to plunder travelers. On the death of the chief of Seokot, Ban succeeded to the chiefship of Seokot. He, after some time killed the Rana of Sakor and took possession of his lands, he then changed his residence to Bhiu, on the banks of Beas and a few miles from the present Mandi town. Mandi emerged a separate state in the beginning of the sixteenth century. Down the line of descendants of Ban came Ajbar Sen. nineteenth in descent from Bahu Sen, who founded Mandi Town in 1527 AD, the capital of the erstwhile state of Mandi and the headquarters of the now Mandi District.


Ajbar Sen was the first great ruler of Mandi. He was probably the first to assume the designation of Raja. He consolidated the territories that he had. inherited and added to them new ones that he wrested from the hands of his neighbors. He built a palace here and adorned it with four towers. He also built the temple of Bhut Nath and his Rani constructed that of Triloki Nath. Down the line of descendants was Raja Sidh Sen, who succeeded Raja Gur Sen in 1678 AD. Mandi had never been so powerful before his reign and after that never was. He captured great areas from the adjoining areas. it was during his reign that Guru Govind Singh, the tenth guru of the sikhs visited Mandi in the close of the 17th century. He had been imprisoned by Raja Singh, the chief of Kullu, from whom he had sought assistance against Mughal troops and his followers believe that Guruji escaped by using miraculous powers. Raja Sidh Sen, who is also considered to be a

possessor of great miraculous powers, entertained his with great hospitality. He built the great tank before the palace.

He also built the temples of "Sidh Ganesha" and "Trilokinath". The entire history of both the states of Mandi and Suket is littered with wars with among themselves and other adjoining states. These two states had always been rivals and generally enemies, but there was no great result of their warfare. The fertile valley of Balh was the common ground of desire and dispute. On 21st February 1846 the chiefs of Mandi and Suket visited Mr. Erskine, Superintendent of the Hill States for the British Government, owing their allegiance and securing their protection. on 9th march, 1846 a treaty was concluded between the British and Government and the Sikh Durbar whereby the whole of the Doab area between the Beas and the Sutlej was ceded to the British Government, and this included the states of Mandi and Suket also. On 1st November 1921, both the state of Mandi and Suket were transferred from the political control of Punjab Government to that of Government of India till 15th August 1947, India's Independence Day.

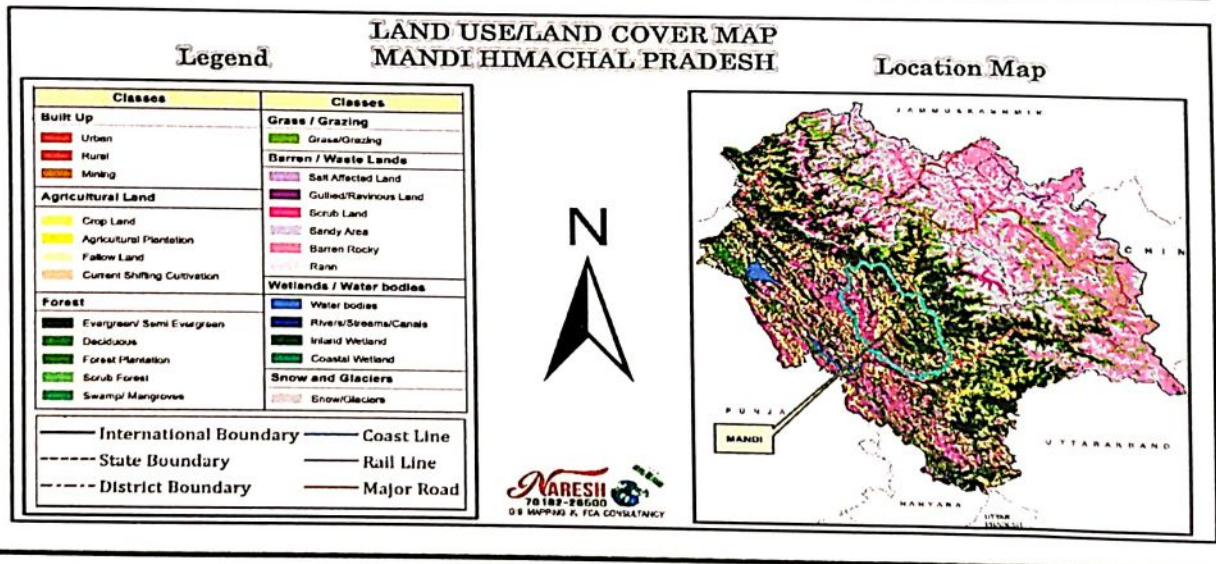
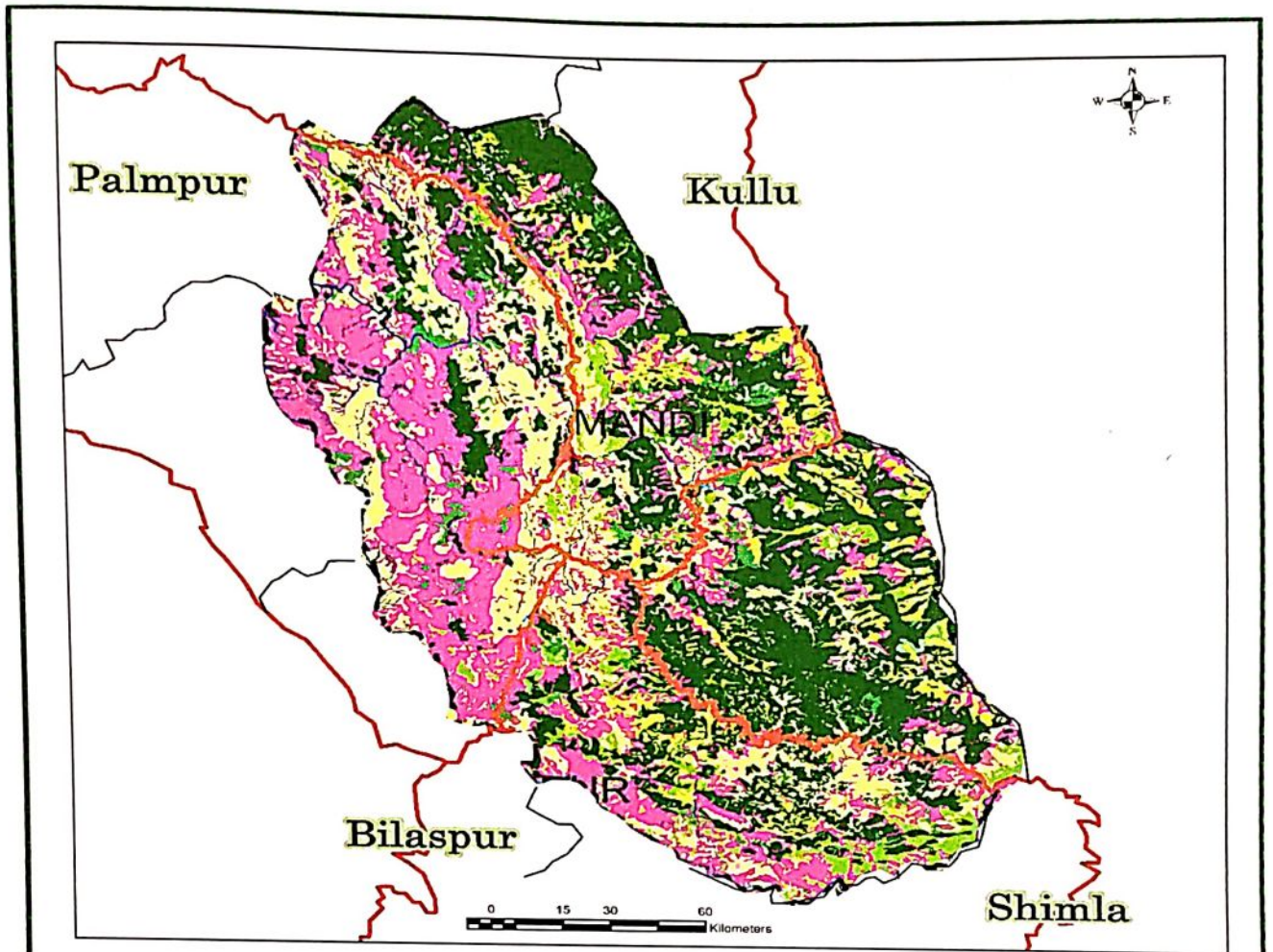
The present District of Mandi was formed with the merger of these two princely states Mandi and Suket on 15th April 1948, when the State of Himachal Pradesh came into existence. Ever since the formation of the district, it has not witnessed any changes in its jurisdiction.

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The Mandi District is located on the 19 Survey of India Toposheet  
(1:50,000) as given below in the figure.

# Land use pattern and Social aspect of the area:



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## Economy:

### General Information

Mandi is one of the fastest developing towns of Himachal Pradesh, located on cross junction of National Highway-20, 21 and 70. It acts as a gateway to Kullu, Lahaul, Leh Ladakh, area of Jammu & Kashmir. Being District headquarters, the entire District depends upon the city for trade & commerce. services and civil administration. The economy of the region is predominately agrarian as around 79% of the total population is dependent on agriculture and activities allied to it, for earning their livelihood.

### Climate:

Temperature Varies from 40° C in plains during summer -20° C in the Alpine Zone during winters. (b) Rainfall varies from 152 cms to 178 cms in outer Himalayas. Due to sufficient rainfall, unused land is covered with forests or forms rich grazing land. In the hills the forests are extensive and valuable. Deodhar, blue pine, silver fir, spruce, chil and various kinds of oak are plentiful. Below 4,000 feet the forests are not extensive, the only valuable ones consisting of chil, but there is considerable scrub jungle and the wide areas of grass covered slopes support the herds of cattle. As may be expected from the varied altitude, the climate shows large variations in the different parts of the district. It is pretty hot in the lower portion in the summer and the cold letter in the hills during the winter. And as such in every season, except the rainy season, there is some place in the season where the climate is inviting.

### Agriculture:

Agriculture and the rural economy of Himachal Pradesh, particularly in villages like Nihri, Dharli, Balag and Serkothi, are dominated by small and marginal farmers who depend on mixed farming systems suited to the hilly terrain. Most households cultivate cereals such as maize, wheat and barley on terraced fields, while some also grow vegetables or engage in horticulture where altitude and climate permit. Because landholdings are typically less than one hectare and irrigation is limited, farming alone seldom sustains a family, leading villagers to rely on livestock, seasonal labour, or small cottage-based activities to supplement income. The geography of these regions restricts large-scale agriculture but supports diversified practices, making animal husbandry, horticulture and allied activities important components of the local economy. Despite agriculture's declining contribution to the state GDP, it remains the backbone of livelihood in these villages, with government schemes and rural development programmes playing a crucial role in improving productivity, income stability and adoption of modern farming practices.

**Table-3:**

Sr No.	Category	Area in Sq.kms)	percentage
1	Area under forest, dense and open forest	2030	35.37
2	Culturable waste	268	4053
3	Not available for cultivation, barren and un-culturable land	155	2.70
4	Land put to Non Agricultural uses	752	13.10
5	Permanent pastures	876	15.26
6	Land under miscellaneous tree crops etc.	82	1.42
7	Other Cultivated waste	1576	27.46
8	Total Area	5739	100%

### Forest:

The range contains some good forests of chil pine. but the greater part of it consists of rich grass slopes. Its name is attributed to Sikander Lodhi, who, 375 years before the reign of Akbar, is supposed to have crossed it on his way to the conquest of Kangra. The range of altitudes in the district is high, with the highest point being around 13,000 feet on the Kullu border and the lowest point 1,800 feet near Sandhol where the Beas leaves the district. The only area which is similar to the plains is the Balh valley. Several of the valleys are open and are often irrigable from kuhls, or small water channels, and contain some of the most fertile land in the state. Due to the hilly terrain, some of the hills are so precipitous that cultivation in large scale is impossible. Due to sufficient rainfall, unused land is covered with forests or forms rich grazing land. In the hills the forests are extensive and valuable. Deodhar, blue pine, silver fir, spruce, chil and various kinds of oak are plentiful. Below 4,000 feet the forests are not extensive, forest cover area is about 178591 Hects.

### ***GEOGRAPHY OF THE DISTRICT***

**a. Location:** - The district is situated between 31-13-50 and 32-04-30 north latitude and 76-37-20 and 77-23-15 east longitude. It is bounded by Kangra on the north-west, Hamirpur & Bilaspur in the west, Arki tehsil of Solan district in the south, Shimla district in the south-west and Kullu district in the east.

**b. Rivers:** - The district has 2 main rivers viz. the Beas and the Satluj. The river Beas enters the district from close to Bajaura, at the boundary of Kullu and leaves the district at Sandhol. The Mandi town is also located on the banks of this river. For the greater part of its length, it runs between high banks and as it is of never great breadth, the current is swift, especially during the rains. Practically the whole

of the district drains into the Beas with only the south-east corner situated on the Satluj watershed. Within the district the principal tributaries of the Beas on the north bank are Uhl, Luni, Rana and Binu and on the south bank are the Hanse, Tirthan, Bakhli, Jiuni, Suketi, Ranodi, Son and Bakar.

### LOCATION:

Mandi district covers an area of 3950 sq kms and lies in the middle portion of H.P and is bounded in the north by district Kangra, Kullu in the West in the south are the districts of Shimla & Solan, Bilaspur in the south West and Hamirpur in the North West.

Major part of the district lies in the lesser Himalayan region, which presents the rugged mountainous terrain. The mountains are composed of crystalline, metamorphic unfossiliferous sedimentary rocks of oldest system. Mountains are developed in different stages. Initially a Geosyncline was formed which was gradually filled up with sediments, after this Geosynclinal deposits were subjected to folding and thrusting etc. Finally, the Geosynclinal sediments were pushed up gradually to form the mountains. In Mandi district between the steeply rising mountains are the valleys. Nihri, partly Kullu valley lies between the steeply rising mountains which remain mostly under snow for most part of the year. The valleys are the result of long erosion along the medial part of elevated tracts. These valleys are known as erosional valleys which have resulted because of glacial and stream erosion. Sutlej, Beas, Uhl and Suketi are the main rivers in the district.

### FLORA AND FAUNA

#### **a. Flora**

The Chills considered the prevailing conifer up to about 1950 meter when it gives place to the Deodar and the blue pines. In Mandi district the forest range between scrub, sal and bamboo forest of the low hills to the fir and alpine forests of the higher elevation. Lowest point of the southern boundary of the district is 427 meter above sea level and highest range of is at an elevation of 2658 meters in the north. The forests grown between these two extremes vary as the elevation itself. The area under consideration following are the most common trees

The most prominent varieties of trees found in the district are: Simbal (*Bombax malabaricum*) Mango (*Mangifera indica*) Tun (*Cedrela toana*) Several species of acacia and albizia Salambra (*Odina wodier*) Terminalia (*Engenia jambolana*) Bamboo The common fruit trees are banana, apple, ber, jamun, mango, mulberry, almond, peach etc Shrubs The topography, climate and nature of soil is mainly responsible for the growth of various types of trees and shrubs, which are important for making the environment of the area most suitable for the survival of living beings. The trees and shrubs grow according to the heights in higher elevations the following trees are mostly seen to grow.

**Local Name**

1. Bhujpatar
2. Kharsu
3. Ban
4. Brah
5. Tos
6. Dyar
7. Safeda
8. Pipal
9. Behul
10. Chil

**Botanical Name**


- Betula Utilis  
Quercus Semecarpifolia  
Quercus hicana  
Rhododendron Arborcum  
Abies Pindron  
Cedrus Deodara  
Eucalyptus Citriodorn  
Ficus Religiosa  
Grewia Oppositifolia  
Pirths Rox-Burghii Ber and other bushes

The most common shrub at the higher elevation is Barberis, indigopera and esmodium and following other shrubs are also found.

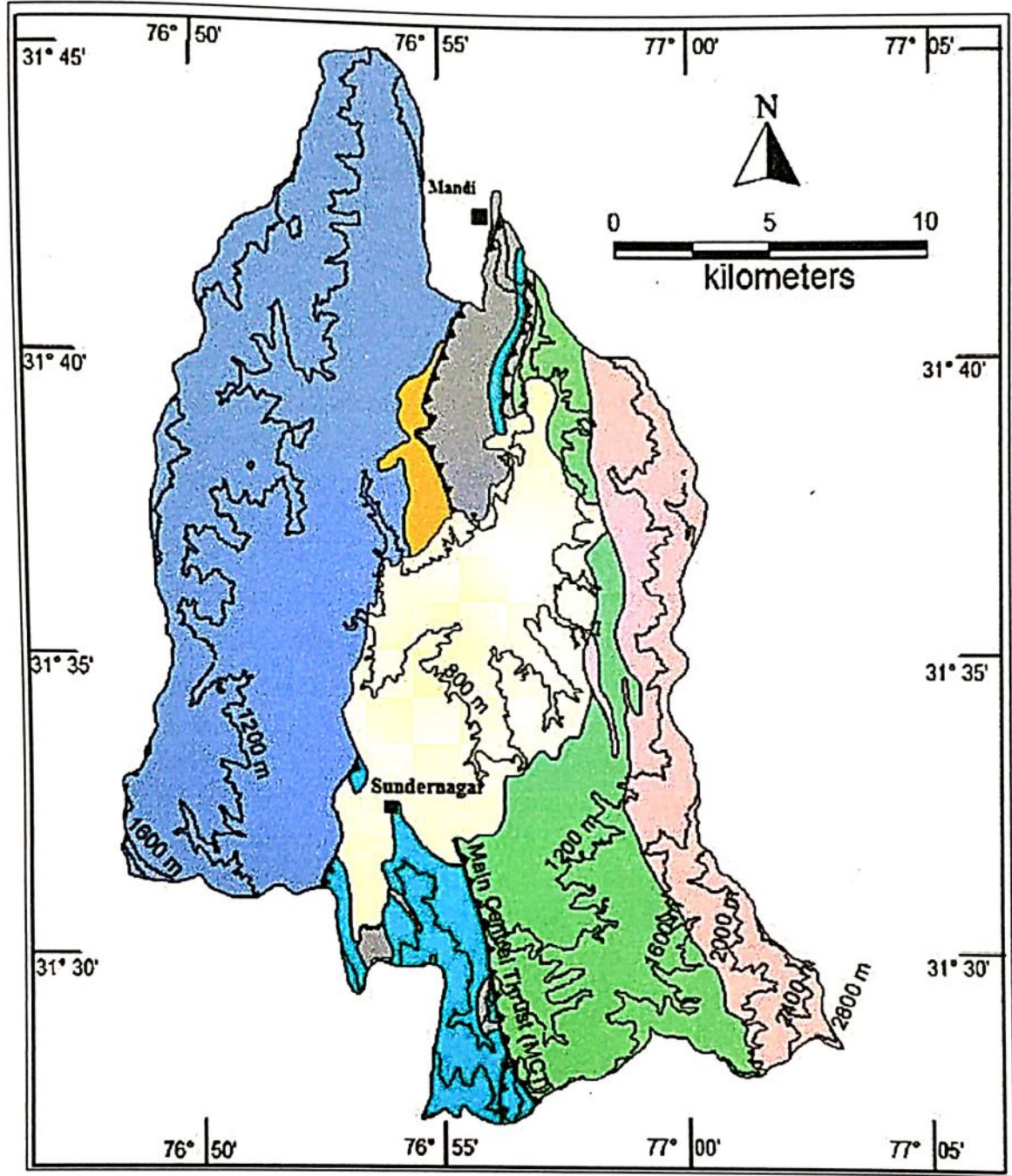
1. Vitex
2. Munj
3. Ber
4. Ipomea
5. Dodonea &
6. Bamboo.

The common fruit trees are banana, apple, ber, jamun, mango, pear, mulberry, apple, almond, cherry, peach etc.

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# Geological map of the Sunder Nagar, Mandi District, Himachal Pradesh



Alluvium/Valley Fills	Sundernagar Group
Siwalik Group	Intrusive Dhauladhar Granites
Subathu Group	Salkhala Group
Shali Group	Thrust
Contour (1200 m amsl)	



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## Project Description at Glance

### a. DESCRIPTION OF THE PROJECT ROAD:

Diversion of 10.6019 Ha. Forest land for The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. At present mule transport is only mode available for transporting the goods etc, the area is quit rich in the production of cash crops and agriculture production such as Maize potato rice & seasonal vegetable etc. The land is very fertile. But heavy cost of transportation for export of surplus production and different marketing position restrain people from taking farming in a whole hearted way as such their living standard is also poor.

The construction of this Road shall increase the economy of the area with the sufficient cheap and quick transportation of possible agriculture produce easy and extended marketing facilities more over availability of emergency medical help will also improve. With increased economic activity the overall living standard of the people shall also improve quickly. The proposed alignment for the said road has been carefully finalized after considering a total No. of three alternate alignments in all the cases a portion of the road shall pass through the forest area. The construction of the road involves negligible tree cutting and as such the loss of forest produce involved in it is very meagre in comparison to the benefits of the road. The proposed alignment does not form any part of national park, wild life sanctuary, Biosphere reserve, tiger reserve etc. The alignment is so located that is involves minimum forest land, minimum cutting is involved and maximum benefit to be beneficiaries due to this road. Due to construction of this road, there will be no erosion to be remaining soil / forest land.

1	Total Length	11.340
2	Location	Tehsil Sunder Nagar , Sub-Tehsil Nihri District Mandi
3	Terrain	Hilly
4	Name of the Protected Area within 10 km of protected zone( Buffer Zone)	Nil

*The area is covered in the Survey of India Topo Sheet No. 53A15 (R.F. 1:50,000) and is bounded by the co-ordinates shown in table below.*

## Site Coordinates

Sr.No.	Latitude	Longitude
1 Start Point	31.423094°	76.945126°
2	31.422137°	76.944155°
3	31.422078°	76.945458°
4	31.421634°	76.943916°
5	31.420049°	76.944099°
6	31.422071°	76.947088°
7	31.421104°	76.946085°
8	31.421896°	76.947616°
9	31.420403°	76.947686°
10	31.417722°	76.950345°
11	31.416048°	76.950156°
12	31.418059°	76.950393°
13	31.420103°	76.950259°
14	31.418941°	76.955504°
15	31.418188°	76.956478°
16	31.418648°	76.951455°
17	31.415183°	76.956021°
18	31.412843°	76.960397°
19	31.411713°	76.958442°
20	31.411030°	76.959899°
21	31.406567°	76.958761°
22	31.407532°	76.961212°
23	31.404430°	76.960831°
24	31.406175°	76.964857°
25	31.405889°	76.966255°
26	31.401120°	76.969107°
27	31.397716°	76.971360°
28	31.400195°	76.966534°
29	31.402941°	76.963721°
30	31.403815°	76.959002°
31	31.404926°	76.955894°
32	31.402102°	76.962323°
33	31.402582°	76.957765°
34	31.399950°	76.961008°
35	31.395554°	76.961267°
36	31.397492°	76.964329°
37	31.393884°	76.960016°
38	31.391484°	76.964816°
39	31.388403°	76.967866°
40	31.385505°	76.969629°
41	31.383624°	76.971708°
End Point 42	31.381357°	76.973449°

## Project Location (District Mandi Patch)

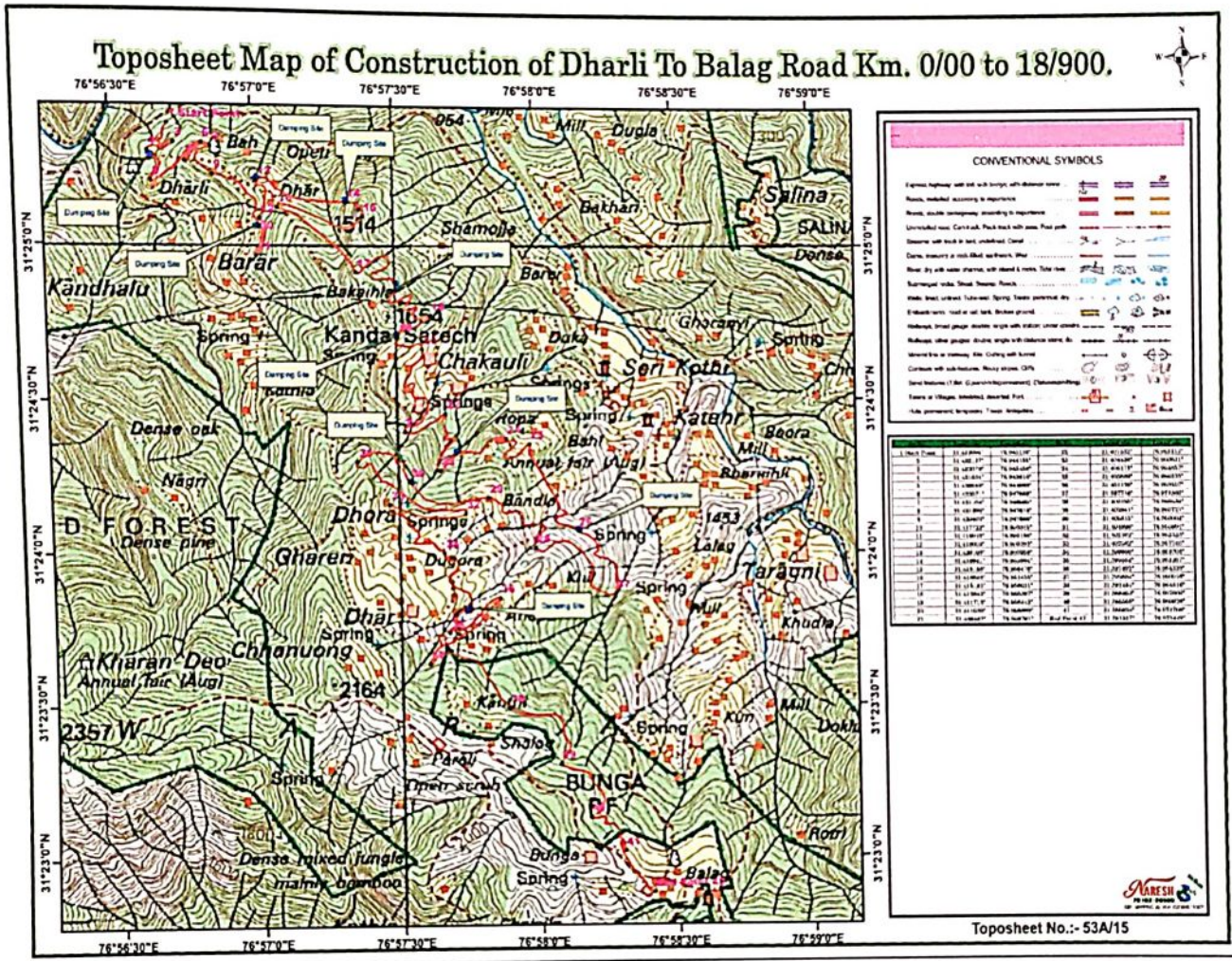
Sr.No	Aspect	Description
1.	Project	Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Constructon of Dharli To Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P.
2.	Location	53A/15
(i)	State	Himachal Pradesh
(ii)	District	MANDI
(iii)	Tehsil	Sunder Nagar
(iv)	Villages	Dharli, Ropa Bandla, Salag, DPF Bunga, Balag
3.	Nearest Location	31.423094°, 76.945126°
(i)	Nearest Town	Nihri, Slapper, Sunder Nagar
(ii)	District Headquarters	Mandi

### 1.1 General

Diversion of 10.6019 Ha. Forest land for The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical college Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. All three roads maintained above are connecting different area and the left out villages are to be connected by the proposed road. The Public Works Department Sunder Nagar division has been to be submitted for Stage-I approval under FCA 1980. Now for Stage-I Approval Soil Conservation Plan (SMC) is to be submitted. The proposed Road passes through Two Ranges (Kangu & Jhungi) of Forest Divisions Suket.

The location map of road passing through area of Suket Division, Range Kangu & Jhungi is given in Figure 1.1.

**FIGURE 1.1 LOCATION MAP**



**2.0 CLIMATE & RAINFALL**

The climate of the district varies from semi-tropical to semi-arctic. Winter varies from December to February and summer extends from March to June while July to September is rainy months. The maximum rainfall in the district occurs between July to September. The rainfall in the district during 2012 was 1106 mm. Snowfall is received in the higher reaches. The minimum and maximum temperature at Saloni in 2011 was 1.1°C and 32.9°C in January and May respectively.

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 Sundernagar Division  
 HPPWD, Sundernagar

### 3.0 GEOMORPHOLOGY & SOIL TYPES

Mandi district presents an intricate mosaic of mountain ranges, hills and valleys. It is primarily a hilly district with altitudes ranging from 550 m near Sandhol where the Beas river leaves the district, to about 3960 m amal near Kullu border. There is a general increase in elevation from west to east and from south to north. Master slope is southwesterly. The south western part consists of Siwalik ranges having scarped slopes. There are few small intermountain valleys; prominent among them is the Sunder Nagar valley, located in the lesser Himalayan ranges, having an average altitude of about 790 m amsl and have a general slope towards NNE. The valley floor is undulating and is marked by low hillocks and terraces fringing the hills and intervening low alluvial plain. The Beas and Satluj rivers form the major drainage system in the district. The river Beas and its tributaries, drain about 70% of the district area in the northern part, whereas the area in the south is drained by the river Satluj. Byas khad and its tributaries, chiefly drain Sunder Nagar valley. The Satluj khad maintains a perennial flow, because of effluent seepage from groundwater. There are three important lakes in the district, namely Rewalsar, Prasher and Kamrunag. Two types of soils are mainly observed in the district viz. Sub-Mountainous Soil occurring in Sunder Nagar, Nihri and Karsog blocks and Mountainous Soil occurring in remaining eight blocks of the district.

The sub-mountainous soil is high in organic carbon, low in available phosphorous and medium in potash, whereas the mountainous soil is brown in colour, medium in available nitrogen & potash and deficient in available phosphorous. The soil reaction is slightly acidic to neutral and texture in general varies from loam to sandy loam, except in low valley areas being heavy Textured.

### 4.0 GROUND WATER SCENARIO

#### 4.1 Hydrogeology

The rock formations occupying the district range from pre-Cambrian to Quaternary period. The generalized geological succession in the district is given below.

Age	Formation	Lithology
Quaternary	Alluvium; Terrace & Fluvial deposits	Alluvium, clay, sands, gravels, pebbles, boulders and cobbles
Lower Pleistocene to Middle Miocene	Siwalik Group	Clay, siltstones, sandstones, and boulder beds

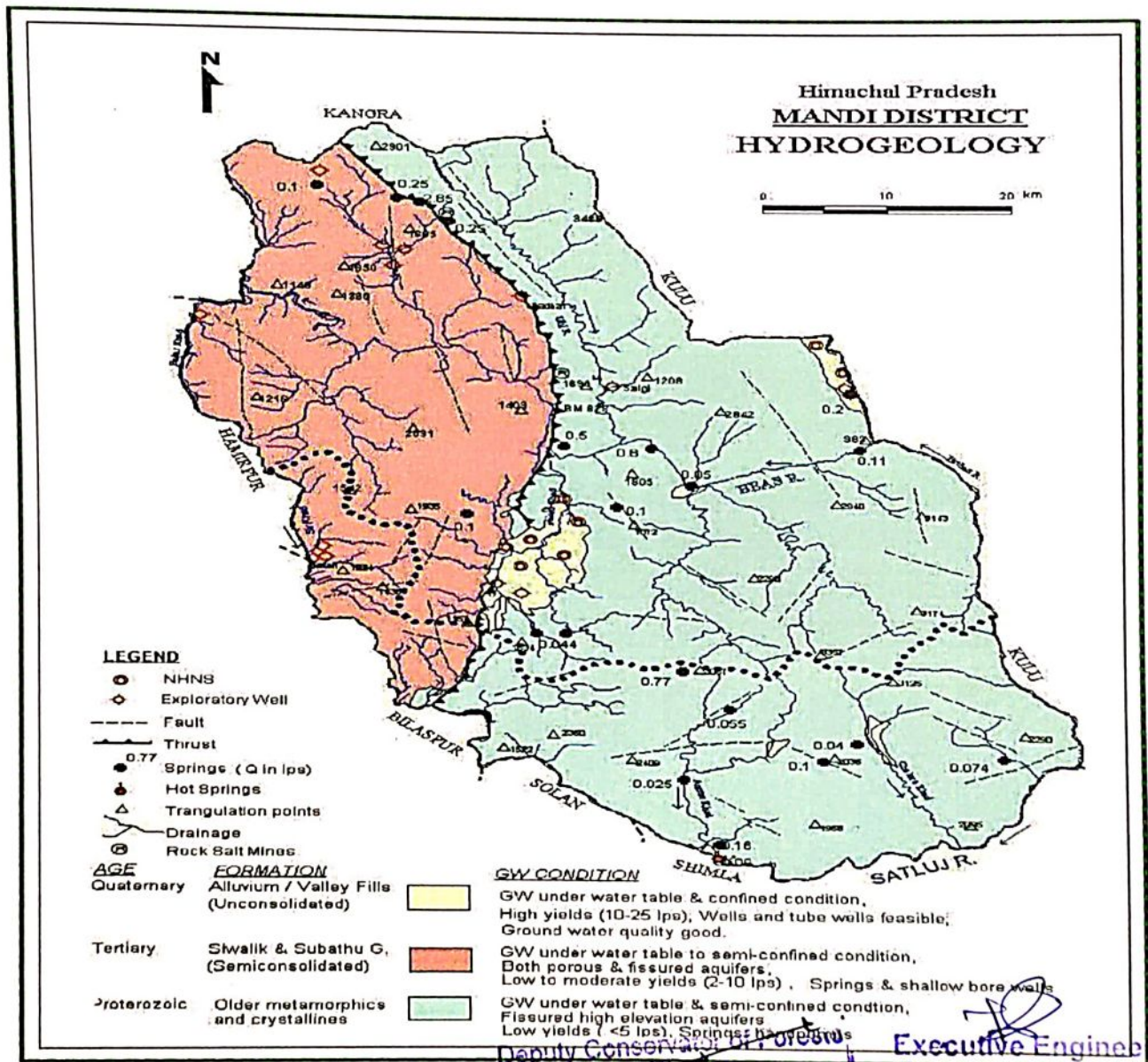
Oligocene to Lower Miocene	Dharamsala/Kasauli Formation (Sabathu Group)	Grey/green sandstones, splintery shale, clay etc.
Permian	Basic Volcanic intrusives	
Proterozoic	Shimla Group	Phyllites, Quartzites, limestone, shale and dolomite
	Shali/Sundernagar/Kullu Formation	Phyllites, Quartzites, dolomite conglomerate and limestone
	Jutogh Group	Quartzites, Schists and phyllites
		Dalhousie/Kullu granites and gneisses

Hard formations, form hilly and mountainous terrain and mainly comprises of igneous and metamorphic rocks, belonging to the Jutogh, Shali/Largi and Shimla group and occupy the major part of the area in the northern, central and eastern part. Granites and gneisses are intruded in the meta-sediments of Shali/Largi and Shimla group. In the western and southern parts sediments comprising of sandstone, shale, siltstone, conglomerate etc of Dharamshala/Sabathu group and Siwalik group of Tertiary age are observed. Alluvium, terrace deposits, fluvial deposits of Quaternary period occur in the intermontane valleys, viz., Balh valley, Sarkaghat valley etc., and constitute an important unit from ground water point of view.

Hydrogeologically, the district is divided into two distinct and well defined units viz. porous formations constituted by unconsolidated sediments and the fissured formations or hard rock formation constituted mainly by semi-consolidated to consolidated rocks.

The fissured formations include the semi-consolidated to consolidated (hard) rocks exposed in the district and are of sedimentary, metamorphic and igneous origin. These form low and high hill ranges throughout the district. Fractured and jointed sandstone, siltstone forms low potential aquifers in the area. In general, weathered and fractured hard rocks are favorable for groundwater aquifer. Fracture zones and contact zones form the important aquifers in the topographic low areas, with poor to moderate yields. These fracture or fault zones form potential ground

water zones. Ground water in these hilly areas oozes in the form of seepages, springs and utilized for domestic and other uses. At places, shallow boreholes fitted with hand pumps have been constructed to develop ground water. The yield of the bore wells constructed along the fault/fracture/contact zones varies from less than 1 to 30 m<sup>2</sup> hour. Weathered mantle in low topographic areas, also form poor aquifers. Borewells are constructed in oozing out spring/seepage zones for collecting water to fulfill the domestic water needs.



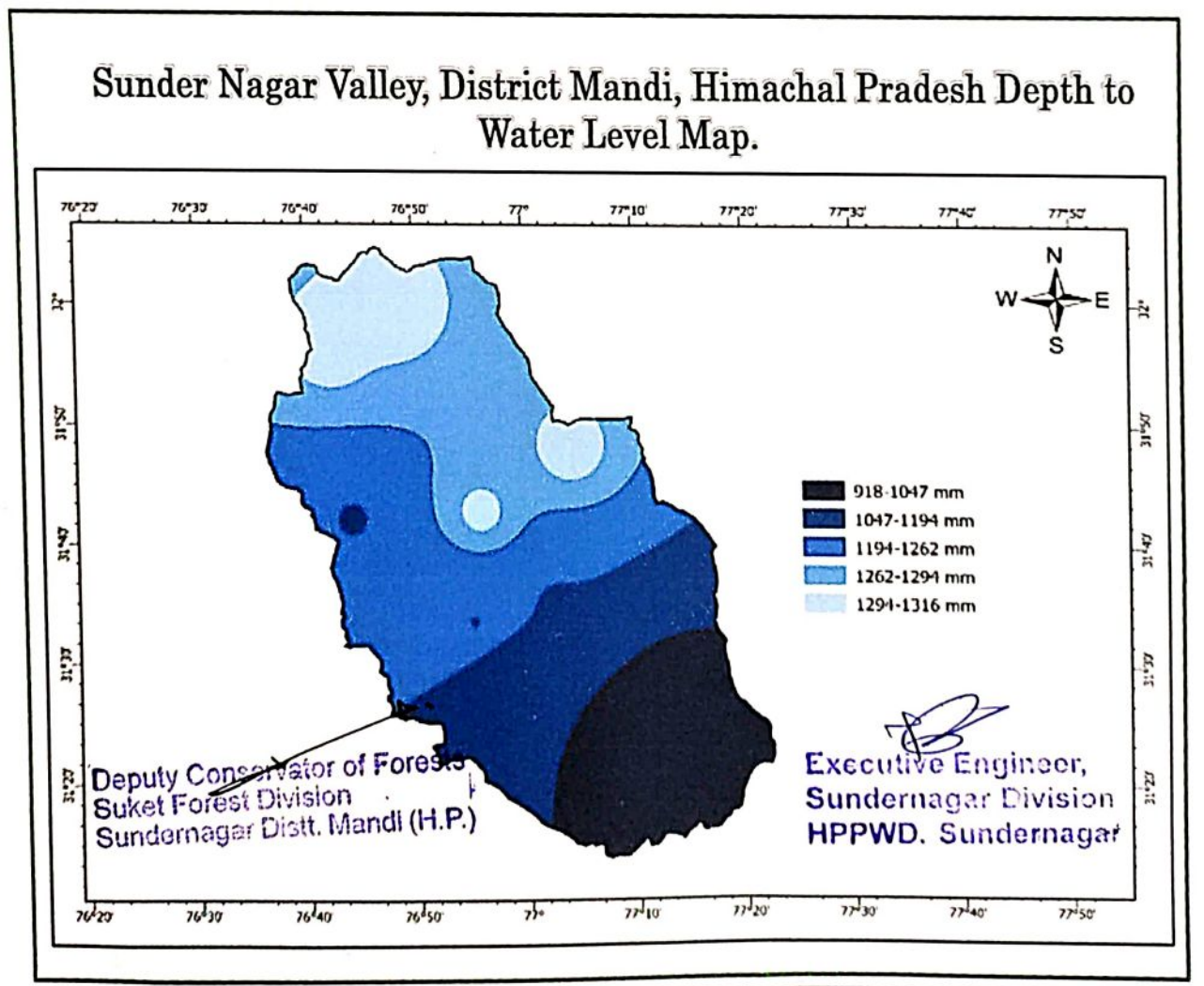
Deputy Conservator of Forests  
 Suket Forest Division  
 Sundernagar Distt. Mandi (H.P.)

Executive Engineer,  
 Sundernagar Division  
 HPPWD, Sundernagar

The unconsolidated sediments comprising fluvial, channel deposits, valley fills and terrace deposits and alluvial fan constitute the porous aquifers in the district. These sediments consist of sand, gravels, cobbles, pebbles and boulders interlayered with clay valley and isolated small pockets in the district, these unconsolidated sediments forming aquifer are observed. In Sunder valley, ground water occurs under phreatic to confined conditions. Dug wells form major source of

water for domestic and irrigation water supply. The depth of the wells ranges from 8 m to 26 m bgl, where depth to water level ranges from near surface 0.86m bgl to 9.92m bgl. In low plains, water levels are shallow and less than 5m and become deeper in terraces and fringe areas. Large number of tube wells, ranging in depth from 38.25 m to 140.98m have been drilled/constructed by tapping granular horizons, where water level ranges from artesian/free flow to about 19.35m bgl. The yield of the wells ranges from 15 to 999.24 lpm for economic drawdown. Free flowing conditions are observed in low-lying areas of Byas, Satluj khad in southwestern part of Balag valley.

In Balag valley, CGWB monitors 9 hydrograph stations for groundwater regime monitoring under its National Network. The water levels are monitored four times and ground water quality once during pre-monsoon period every year. During the pre-monsoon (May 2012), depth to water level ranged between 0.86 to 9.92 mbgl. Similarly, during the post-monsoon (November 2012), depth to water level ranged between 0.37 to 5.83m bgl. Depth to water level map of pre-monsoon 2012, is given in Figure - 4.



## 4.2 Ground Water Resources

Rainfall is the major source of groundwater recharge, apart from the influent seepage from the rivers, irrigated fields and inflow from upland areas, whereas discharge from ground water mainly takes place through wells and tube wells; effluent seepages of ground water in the form of springs and base flow in streams etc.

Ground water resources and irrigation potential for Dharli & Balag valley in Mandi district have been computed as per the GEC-97 methodology. The resources for the year 2011, are as follows: -

1.	Area (Dharli & Balag valley) considered for GW Assessment	9500Ha.
2.	Net Ground Water Available	5942.33 ham
3.	Annual Ground Water Draft	912.77 ham
4.	Stage of Ground Water Development	15.36%

The stage of ground water development in Balh valley in Mandi district is 15.36% and falls under "Safe" category. There is thus, a scope for further ground water development.

## 4.3 Ground Water Quality

CGWB monitors the ground water quality of shallow aquifers through 9 National Hydrograph Stations, located mostly in Dharli & Balag valley and southernmost extension of Kullu valley falling in district Mandi. As per ground water samples collected in May 2012, the range of chemical parameters in Dharli & Balag valley is summarized below.

S No	Parameters		Range	
			Min	Max
1.	pH		7.38	7.89
2.	EC	uS/cm	180	1320
3.	HCO <sub>3</sub>	(mg/l)	67	214
4.	CL	(mg/l)	4	255
5.	NO <sub>3</sub>	(mg/l)	0.90	98
6.	F	(mg/l)	0.00	0.30
7.	Ca	(mg/l)	14	66
8.	Mg	(mg/l)	6	54
9.	Na	(mg/l)	11	102
10.	K	(mg/l)	2.20	16
11.	TH as CaCO <sub>3</sub>	(mg/l)	108	792

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- Study of construction of check dam, retention/Breast walls to arrest sliding down of the
- excavated material along the contour.
- Additional measures to avoid the soil Erosion.

## 1.2 Location of the Project:

Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road (Km 0/00 to 18/900, within the jurisdictions of Suket Forest Division H.P Comprising total area of 10.6019 Hectare of Forest Land has been Proposed by Himachal Pradesh Public Works Department, Sunder Nagar Division. The Location of the project is The area is covered in the Survey of India Toposheet No.53A/15 (R.F. 1: 50,000)) and is bound by

### Latitude: Longitude:

Sr.No.	Latitude	Longitude
1 Start Point	31.423094°	76.945126°
2	31.422137°	76.944155°
3	31.422078°	76.945458°
4	31.421634°	76.943916°
5	31.420049°	76.944099°
6	31.422071°	76.947088°
7	31.421104°	76.946085°
8	31.421896°	76.947616°
9	31.420403°	76.947686°
10	31.417722°	76.950345°
11	31.416048°	76.950156°
12	31.418059°	76.950393°
13	31.420103°	76.950259°
14	31.418941°	76.955504°
15	31.418188°	76.956478°
16	31.418648°	76.951455°
17	31.415183°	76.956021°
18	31.412843°	76.960397°
19	31.411713°	76.958442°
20	31.411030°	76.959899°
21	31.406567°	76.958761°
22	31.407532°	76.961212°
23	31.404430°	76.960831°
24	31.406175°	76.964857°
25	31.405889°	76.966255°
26	31.401120°	76.969107°
27	31.397716°	76.971360°
28	31.400195°	76.966534°
29	31.402941°	76.963721°
30	31.403815°	76.959002°

31	31.404926°	76.955894°
32	31.402102°	76.962323°
33	31.402582°	76.957765°
34	31.399950°	76.961008°
35	31.395554°	76.961267°
36	31.397492°	76.964329°
37	31.393884°	76.960016°
38	31.391484°	76.964816°
39	31.388403°	76.967866°
40	31.385505°	76.969629°
41	31.383624°	76.971708°
End Point 42	31.381357°	76.973449°

### 1.3 Location of Study Area:

#### INTRODUCTION TO DIVISION/RANGEWISE LOCATION SPECIFIC SMC PLAN:

It is important that a “*SOIL AND MOISTURE CONSERVATION PLAN*” should provide site specific prescription be the activities to be undertaken under each heading of the SMC Plan components.

#### Objective of Study

1. The broad objectives for preparation of Soil and Moisture Conservation are outlined as under;
2. Checking soil erosion and land degradation by taking up adequate and effective soil conservation measures, both engineering as well as biological, in erosion prone areas (mainly under very severe and severe erosion intensity categories)
- 3.ii) Rehabilitation of degraded forest areas through afforestation and facilitation natural regeneration 3
- 4.ii) Rehabilitation of degraded slopes and landslide areas.
5. “*SOIL AND MOISTURE CONSERVATION PLAN*” is the optimal use of Soil and water resources within a given geographical area so as to enable sustainable production. It implies changes in land use, vegetative cover, and ocher structural and non-structural action that are taken in SMC. The overall objectives of “*SOIL AND MOISTURE CONSERVATION PLAN*” are to;
  - a. increase infiltration into soil
  - b. Control excessive run off
  - c. Manage & utilize run off for useful purpose
  - d. Shrub Plantation

e. Grazing and Development: -

f. Grazing land development can be undertaken for treatment under silvo-pastoral model. Areas should be closed and staggered trenching should be dug over the area to be treated. Trenches should be dug per hectare. Improved variety of grass should be sown on the berm of the tranches. In the space between the reaches, fodder tree species should be raised. Suggested species for grazing land development are and rrogons quarrosus (Khas-Khas), apluda mutica, arthraxon prionodes, Brachiaria mutica, Cenchrus ciliaris, Cenchrusciliarischlorisgayana (Rhodes grass) Cyndondactylon Desmostachya bipinnata, Digitaria decumbens (Pagnola grass) etc.

**Engineering measures: -**

i) Moisture Retention measures.

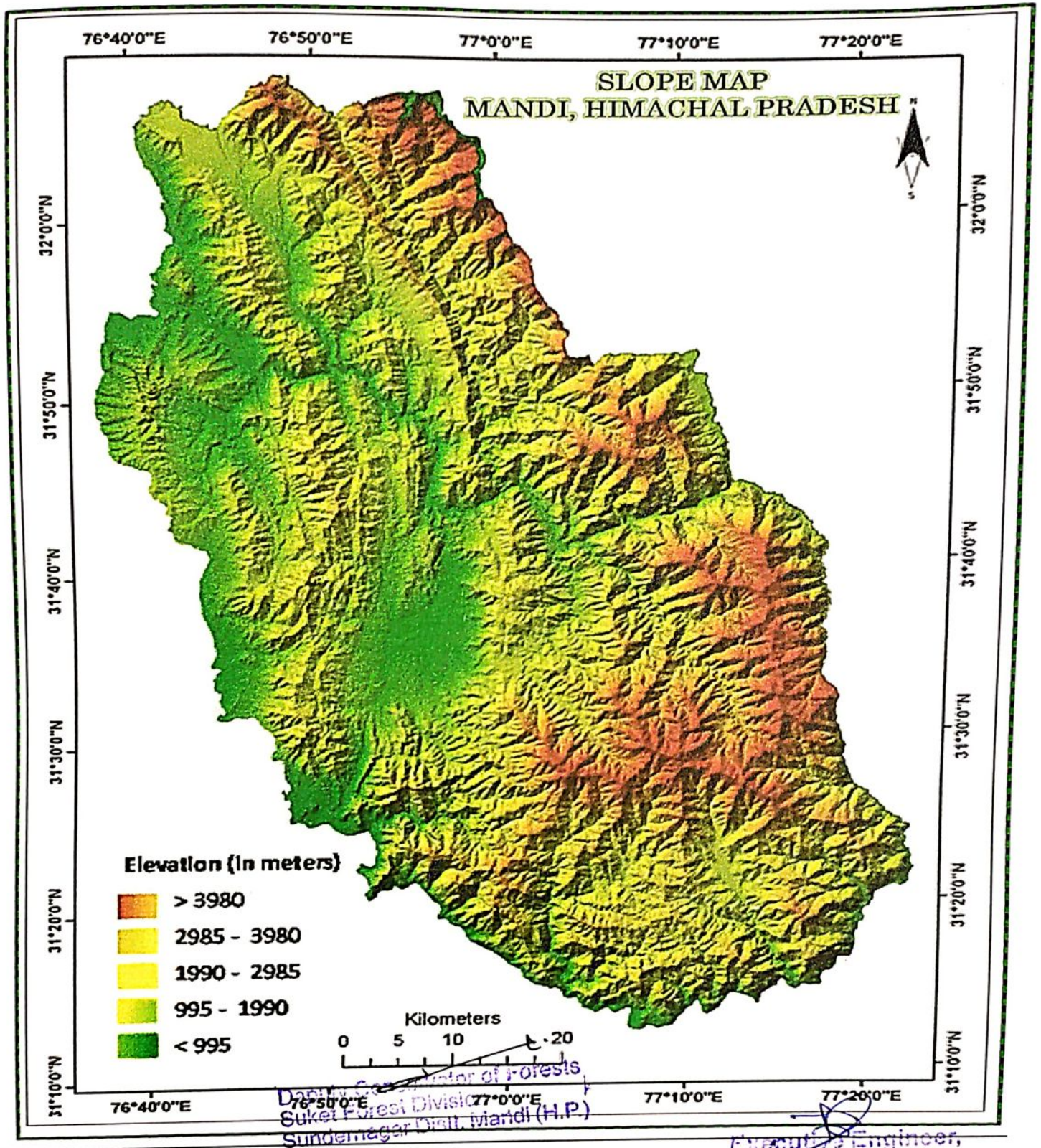
ii) Drainage Line Treatment Stabilization of landslide/landslips Slope.

iii) The slope has a great influence on the soil and water loss from the area and thereby influences the land use capability. The slope determines the erosion susceptibility of the soil depending on its nature. This helps in classifying various lands in suitable capability classes which enables us to formulate suitable conservation measures for the prevention of soil erosion. The degree slope was divided into different slops classes as per rat and Land Use Survey of India (SLUSI) The areas falling under various standard slope categories in the catchment area have been tabulated below in Table The slope map is enclosed in Figure. As seen from the table and map, maximum of the slope falls under 2.4660 to 622 mtr slope range The degree of slope is explained in the below mention map.

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# SLOPE MAP



## 1.4 Need for Soil Conservation Plan:

Soil Conservation Plan is normally applicable for Hydroelectric and Irrigation Projects where impounding of water is proposed by construction of Barrage, Dam etc. This project is Road Project and the part of project falling Under Bahtiyat Range does not fall near to any major river.

## 1.5 Objective of SC Plan:

The objective of SC Plan is to rejuvenate various potential and degraded ecosystems in the Mine area. The opencast Road activities disturb large tracts of land and produced greatly increased down stream sediment load.

The objective of this report is to present the outline of Road surface erosion problem, method of modeling sediment yield, measures to be taken for reducing or controlling sediment discharges. The action plans is to be prepared for this purpose with the following objectives.

- Conservation of soil cover and to arrest the soil erosion, flood and siltation of the Project area and its tributaries if any.
- Soil conservation through biological & engineering measures to reduce sediment load in river and tributaries, thus improving quality of water.
- Increase vegetative cover and water retaining properties.

## SOIL CONSERVATION PLAN

### Mitigative Measures

Mitigative measures to minimize soil erosion can be undertaken by two plan

- 1) Biological Conservation Plan,
- 2) Engineering Conservation Plan

### 5.1 Biological Conservation Plan:

#### 5.1.1 Approach Plan

The following biological conservation plan can be adopted to mitigate soil erosion.

- Proper Dumping of Muck Generated. Dumping of soil and clayey material should be done away from the working area that is on farther end of the dump so that formation of weak planes is avoided.
- Afforestation by planting trees will help a lot in improving stability of dumps by preventing erosion.
- Provision of jute mesh for facilitating grass or vegetative growth on slopes, Provision of good soil mixed with manure and subsequent irrigation for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species
- The degraded area can be reclaimed and rehabilitated with local species of plantation in a phased manner,
- Plantation should be carried out on waste dumps;
- The haulage roads should be flanked by trees on either side; and

- A belt of trees with thick canopy should be created along the mine boundary to intercept dust, gaseous pollutants and noise.

## 60 COST ESTIMATE

Cost of Mitigative Measures to arrest Soil Erosion & Top Soil Management Plan in respect of both Biological and Engineering plans are as proposed.

### Cost estimate for Engineering Plan:

#### 6.1 Total cost of Mitigative Measures for Soil Conservation:

The area of Diversion falling under Suket Division, Jhungi and Kangu Range is 10.6019 Hectare of forest land in favour of HPPWD for the construction of Dharli to Balag road (Km 0/00 to 18/900), within the jurisdictions of Suket Forest Division H.P. The area falling under the project is prone to Landslides and the sites to treated is mentioned in the list attached below with various SMC related activities proposed,

Hence as decided by the recent Guidelines of MoEFCC dated 07-06-2022, sum of Rs. 1,75,000/ will be deposited as per the cost of SMC accordingly to the % age of the Forest Land Diverted.

### REFERENCE AND DATA SOURCE

- GOVERNMENT OF INDIA MINISTRY OF WATER RESOURCES, CENTRAL GROUND WATER BOARD, GROUND WATER INFORMATION BOOKLET, MANDI DISTRICT, HIMACHAL PRADESH.
- Survey of India.

Sr No	Name of block	Name of beat	Detail of work proposed	Name of area	Unit	Phy.	Amount	GPS		Re
								Lat.	Long	
1	Batwara	Gehru	Retaining Wall	Dharli	No.	1	250000	31.42189 6°	76.94761 6°	
2	Batwara	Gehru	Retaining Wall	Ropo Bandla	No.	1	200000	31.41604 8°	76.95015 6°	
3	Batwara	Dhawal	Culvert	Ropo Bandla	No.	1	150000	31.40903 4°	76.95874 0°	
4	Batwara	Dhawal	Culvert	Salag	No.	1	105000	31.40441 7°	76.96090 2°	
5	Trachh	Balag	Culvert	DPF Bunga	No.	1	110000	31.40020 8°	76.96657 2°	
6	Trachh	Balag	Culvert	Balag	No.	1	250000	31.39386 9°	76.96001 5°	

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## **1. Introduction:**

The proposed road will connect Dharli, Chakauli, Ropa Bandla, Dhora, Dhar, Salag, DPF Bunga, Balag villages /habitation and it will serve approx. 3108 populations. It will connect left out area, which is deprived with road facility. The road is urgently required as people of these villages are facing great hardships to reach the nearby town Slapper. After construction of this road they will connect directly with Hospital Sunder Nagar, Medical Hospital Ner chowk, Market center Sunder Nagar and Nerchowk. All three roads maintained above are connecting different area and the left out villages are to be connected by the proposed road. The proposed road will facilitate the moment of people and it will also help to upgrade the living standard of the people of the area. Due to the proposed development, some of the existing trees are to be felled. To offset this impact, compensatory afforestation programme through tree plantation, median plantation, horticulture and landscaping strategy is proposed,

## **2. OBJECTIVE**

The main objectives are as follows:

- Reducing the impacts of air pollution
- Natural noise barrier
- Arrest of land erosion
- Prevention of vehicle glare from vehicles coming from opposite direction
- Enhancement of aesthetic view of the corridors
- climatic amelioration
- Defining of ROW especially at sharp curves during night

Roadside vegetation is any vegetation growing along the roads. Planting trees, shrubs and grasses along the road can create a productive asset and can alleviate the negative effects of roads on the local environment. Negative effects include erosion, loss of fertile soils, gully formation that undermines road foundations, heavy dust, and more. In particular, dust lifted by vehicles, especially along unpaved roads, has a direct effect on the health of people and livestock living near the roads and on crop production.

## **3. SPECIES SELECTION**

Grasses, shrubs and trees are the main species that are readily available in India. Wherever possible, the use of non-native species should be avoided since they can out compete and displace native plants leading to loss of native biodiversity. To maximize the chances of success of survival of species, selection of species shall be done according to environmental conditions of the project site. Care should also be taken to select species with root systems that match the nature of the soil movement at the project site. Homogenous avenues of trees should be selected for long stretches as it provides

aesthetic qualities in the landscaping. One should also consider the economic and other social benefits while selecting the species for plantation. During the selection of species, preference should be given towards rapid growing, pollution tolerant and pest & disease resistant species. Shrub species, which are dwarf and pollution ant, are to be planted in the median to prevent the glare of traffic moving in opposite direction. Flowering, ornamentals plants and climbers can also be planted in urban areas to provide beauty. For this purpose, the species may be decided by interaction with local forest authority and local populace. Few species are recommended in the table below.

**Table 1: Species Recommended**

Scientific name	Common Name	Quality/Specification
Ailanthus excelsa	Maharukh/Adu Neem	Pollution Sink, Noise Barrier
Alstonia scholaris	Saptaparni	Pollution Sink, Aesthetic Value, Medicinal Value
Azadirachta indica	Neem	Noise barrier, Pollution sink, Economic & Medicinal Value
Bombax ceiba	Semal	Aesthetic Value, Economic Value
Butea monosperma	Dhak	Aesthetic value, Pollution sink
Calistemon viminalis	Bottle Brush	Aesthetic value, Pollution sink
Cassia fistula	Amaltas	Landscaping, Flowering plant, Pollution sink, Medicinal Value
Dulbergia sissoo	Sheesham	Economic Value, Pollution Sink
Ficus bengalensis	Bargad	Noise barrier, Pollution sink, Medicinal Value & Religious value
Ficus religiosa	Peepal	Noise barrier, Pollution sink, Religious values
Mellu uzeduruch	Bakain	Noise Barrier, Pollution Sink, Economic and Medicinal value
Moringa oleiferu	Sahajana	Economic Value, Medicinal value
Pongumia pinnata	Karanj	Economic Value, Medicinal value
Syzygium cumini	Jamun	Pollution sink, Economic Value

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#### 4. Plantation Model:

Since the proposed road is new construction to motorable with paved shoulder configuration, and the area being hilly, no avenue plantation has been proposed. But still plantation according to IRC:SP:21-2009 norms on suitable area will be done.

Table 2: Area identified for landscaping & tree plantation

Sr.NO	Type of plantation	Location(Km)	Remarks
1	Shrubs	In median except structures	Ornamental type plantation shall be provided
2	Landscaping	All service areas interchanges O&M centers	Ornamental type plantation shall be provided
3	Plantations	Available open land along Row	About 1100 nos, of trees to be planted preferably indigenous species like Jamun, Neem, Habul, Peepal, Shisham etc.

#### RECOMMENDATIONS

Due care should be taken to ensure that a greenbelt is developed around the plant. All areas devoid of Vegetation and having low density should be systematically and scientifically afforested. Greenbelt will be a set of rows of trees planted such a way that they form an effective barrier between the plant and the surroundings. The persistence of plantation plan is to contribute to the following factors:

- To attenuate noise levels generated from the plant.
- To improve the aesthetics of the plant area:
- To trap the vehicular emissions and fugitive dust emissions;
- To maintain ecological homeostasis;
- To prevent soil erosion and to protect the natural vegetation;

- To utilize the treated effluents.

The plantation species should be considered based on the following:

- Adapted to the Geo-climatic conditions of the area;
- Mix of round, spreading, oblong and conical canopies,
- Different heights ranging from 4 m to 20 m.
- Tolerance to specific conditions or alternatively wide adaptability to Eco physiological conditions;
- Rapid growth;
- Capacity to endure water stress and climate extremes after initial establishment;
- Differences in height and growth habits;
- Pleasing appearances;
- Providing shade.

#### 5. Cost Estimate:

##### Cost of Plantation for different heads including Maintenance

Heads	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year	Total Cost (Lakhs)
Cast of Saplings	52212	35266	17862	17862	17862	141064
SMC work Plantation cost	40000	40000	40000	40000	40000	200000
Survey Demarcation & Fencing Tree Guard	34991	34991	34991	34991	34991	174956
Plantation	51571	51571	51571	51571	51571	257855
Misc	13100	13100	13100	13100	13100	65500
Contingency	11257	11257	11257	11257	11257	56285
Total Cost (Lakhs)	203131	186185	168781	168781	168781	895660

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# ***COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION***

Nature of Project: - Construction of Dharli to Balag Road Km. 0/00 To 18/900 in the state of Himachal Pradesh.

File No.: - FP/HP/ROAD/49449/2020


Date of Proposal: - 05/09/2020

Purpose: -This cost benefit Analysis is being undertaking for Proposed Diversion of Forest Land Being affected due to Construction of Dharli to Balag Road Km. 0/00 To 18/900 in the state of Himachal Pradesh.in the state of Himachal Pradesh.

## **Guidelines for concluding cost-benefit analysis for projects Involving Forest diversion**

- (i) While considering proposal for diversion of forest land for non-forestry use, it is essential that ecological and environmental losses and eco-economic distress caused to the people who are displaced are weighted against economic and social gains.
- (ii) Whenever the forest land is involved in the development projects, the cost of ecosystem services and fragmentation of habitat of wildlife and economic distress caused to people dependent on forests and the cost of settlement of people dependent on forest should also be added as the cost of forest diversion in addition to the standard project cost which would have been incurred by the user agencies without involvement of forest land while conducting the cost benefit analysis of the project. Similarly, the benefits from the project accruing due to diversion of forest land and used in the project should also be accounted for in the benefits component in addition to the standard benefits of the project which would have been accrued without involvement of forest land while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iii) the cost of compensatory afforestation and its maintenance in future and soil & moisture conservation at present discounted value and future benefits from such compensatory forestation accruing over next 50 years monetized and discounted to the present value should be included as cost- and benefits respectively of compensatory afforestation while conducting the cost benefit analysis and determining the benefit and cost ratio (BC ratio).
- (iv) Table-A lists the details the types of projects involving forest land for which cost benefit analysis will be required Table-B lists the parameters according to which the cost aspect of forest land diverted for the development projects will be determined, while Table-C lists the parameters for assessing the benefits accruing to the project using of forest land.
- (v) A cost-benefit analysis as above should accompany the proposals sent to the Central Government for forest clearance under the Forest Conservation Act.

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# COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-A: Cases under which a cost-benefit analysis for forest diversion are required

No.	Nature of Proposal	Applicable/ Not Applicable	Remarks
1	All categories of proposals involving forest land up to 20 hectares in plains and up to 5 hectare in hills.	Not applicable	These proposals may be considered on a case to case basis and value judgment.
2	Proposal for defense installation purposes and oil prospecting (prospecting only)	Not applicable	
3	Habitation, establishment of industrial units, tourist lodges complex and other building construction.	Not applicable	
4	All other proposals involving forestland more than 20 hectares in plains and more than 5 hectares in hills including roads, transmission lines, minor, medium and major irrigation projects, hydro projects, mining activity, railway lines, location specific installations centers, TV towers etc.	Applicable	These are cases where a cost-benefit analysis is necessary to determine when diverting the forest land to non-forest use in the overall public interest.

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## COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-B: Estimation of cost of forest diversion

No.	Parameters		Remarks
1	Ecosystem services losses due to proposed forest diversion.	9.9732 ha. of forest land to be diverted. NPV cost of the forest area $9.9732 \times 1005210 = \text{Rs. } 10657136/-$ for 50 years. NPV obtained from HP Forest Department website given as per Supreme Court order dated 06.01.2022 value used for Class V dense forest.	Economic value of loss of ecosystem services due to diversion of forests shall be the net present value (NPV) of the forest land being diverted as prescribed by the Central Government (MoEF& CC).
2	Loss of animal husbandry productivity, including loss of fodder.	1065713/- (10 % of NPV is more than loss of animal husbandry productivity, including loss of fodder.	The loss of animal husbandry productivity, including loss of fodder has been calculated.
3	Cost of human resettlement	Since there will be no residential village area getting affected, there will be no cost of human resettlement.	Nil
4	Loss of public facilities and administrative infrastructure (Roads, Building, Schools, Dispensaries, Electric lines, Railways etc.) on forest land, which would require forest land if these facilities were diverted due to this project	Since no public facilities and administrative infrastructure (Roads, Building, Schools, Dispensaries, Electric Lines, Railways etc.) on forest land being diverted due to the project, there will be no such loss.	No loss will be sustained during the construction this road.
5	Environment losses erosion effect on hydrological cycle, wildlife, habitation, micro climatic rattooing of ecological balances.	3197141/- (30% of environmental Costs (NPV)= 10657136/-)	30% of environment costs (NPV) due to loss of forests or circle rate of adjoining area in the district should be added as a cost component as possession value of forest land whichever is maximum.

6	Suffering of austeas.	Nil	No, any local public are suffering from the construction of the road.
7	Habitat Fragmentation Cost.	5328568/- (50% of environmental Costs (NPV)= 10657136/-	While the relationship between fragmentation and forest goods and services is complex for the sake of simplicity the cost due to Fragmentation has been pegged at 50% of NPV applicable as a thumb rule.
8	Compensatory afforestation and soil & moisture conservation cost.	4423172 CA Plantation +175000 soil & moisture conservation cost. Total=4598172/-	The actual cost of compensatory afforestation and for its maintenance in future at present discounted value has been calculated as per the norms approved by the Pr. CCF(HoFF) HP Shimla.

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# COST BENEFIT ANALYSIS GUIDELINES FOR FOREST LAND DIVERSION

Table-C: Existing guidelines for estimating benefits of forest-diversion in CBA

No.	Parameters		Remarks
1	Increase in productivity attribute to the specific project	Directly the project will have the potential for temporary employment generation for local people for 1 year generating 59780 Mandays during construction almost Rs 269.01 lacs.	To be quantified and expressed in monetary terms
2	Benefits to economy due to the specific project	Salient benefits of the project are minimum Guaranteed amount of Rs 691.97 lacs. Total 1488 nos. of local people to be benefited from the construction of project and 30 percent local people getting employment.	The project will field significant economic benefit to the state. Construction of road will lead to much better connectivity, which will play significant role in improving the socio-economic condition of the people of the state in any folds.
3	No. of population benefited due to specific project.	The construction of this project will provide fast economical and environment friendly transportation of local fruits, crops and vegetables as such the local habitants will be benefited indirectly (Shopkeepers, hoteliers, taxi, potters etc.). Total pilgrims/tourists visit in a year is app 1.5 lakhs. The total of population concerned Panchayat is 1488. On an average each person earns minimum of Rs 500.00 per day. 30% of total population is 580 x 500 x one year (365 days) =1058 lakh annually.	As per detailed project Report

4	<p>Economic benefits due to of direct and indirect employment due to the Specific project.</p>	<p><b>Economic Benefit due to direct employment:</b></p> <p>During construction period of 24 months, approximate 59,780 mandays of temporary employment will be generated by the construction which in monetary terms calculates at the present wage rate to Rs. 59,780 x = Rs. 269.01 Lacs.</p> <p><b>Economic Benefit due to indirect employment:</b></p> <p>The total quantified indirect benefit to a local population will be Rs 269.01 lacs annually. This benefit will also increase @ 8 to 10% each year for 100 years.</p>	<p>As per detailed project Report.</p>
5	<p>Economic benefits due to compensatory afforestation</p>	<p><b>Economic benefit due to Compensatory Afforestation:</b> As per MoEFCC guidelines these benefits are the benefits are the form such CA accruing over next 50 years monetized and discounted to the present value should be included as benefits of CA. For benefits of CA guidelines of Ministry for NPV Sim estimation have been consulted and these benefits have been calculated on two heads namely benefits to CA and benefits due to carbon storage by the afforestation done on CA land. The results are as under:</p>	<p>Benefit from such compensatory Afforestation accruing over next 50 years monetized and discounted to the present value should be included as benefits of CA.</p>

	<p>1. <i>Economic benefit due to CA</i> = <math>21.2038 \times 176009 = 3732059/-</math></p> <p>2. <i>Economic benefit due to Carbon storage due to CA in Rs lakhs</i> = <math>21.2038 \times 13947 = 295729/-</math></p> <p><b>Total-(1+2) = 4027788/-</b></p>	
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<p>Total Loss = Rs. <math>10657136 + 1065713 + 3197141 + 5328568 + 4423172 = 24671730/-</math></p>	<p>Total Gain/Benefit from project Rs. <math>26901000 + 4027788 = 30928788/-</math></p>
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Cost Benefit Ratio:- Environment loss/benefit from the project =  $\frac{24671730}{30928788} = 0.79 < 1$ , so project is found viable based on given/above described criteria.

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**Note-1: Net Present value (NPV) of environment and ecosystem services loss:**

The concept of Net Present value of the forest land diverted is a scientific method of calculating the environmental cost and other losses caused due to diversion of forest land for non-forestry purposes. The NPV represents the net value of various ecosystem services and other environmental services in monetary terms which the forest would have provided if the forest would not have been diverted.

**Note-2: Possession value of forest land diverted:**

The forest land diverted for the project such as irrigation, hydropower, railways, roads, wind, and transmission lines and mining etc are unlikely to be returned and remains in possession of the user agencies. Therefore 30% of the net present value (NPV) of forest land diverted or market rate of adjoining area in the district should be added as a cost component as "possession value of forest land" in addition to the environmental costs due to loss of forests.

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Plan of Diversion of 10.6019 ha. of forest land in favour of HPPWD for the Construction of Dharli to Balag road (Kms. 0/00 to 18/900).

76°57'0"E

76°57'30"E

76°58'0"E

31°25'30"N

31°25'0"N

31°24'30"N

31°24'0"N

31°23'30"N

31°23'0"N



Balag

Dharli

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- Forest Land
- Non-Forest Land
- Dumping Site
- Existing Road

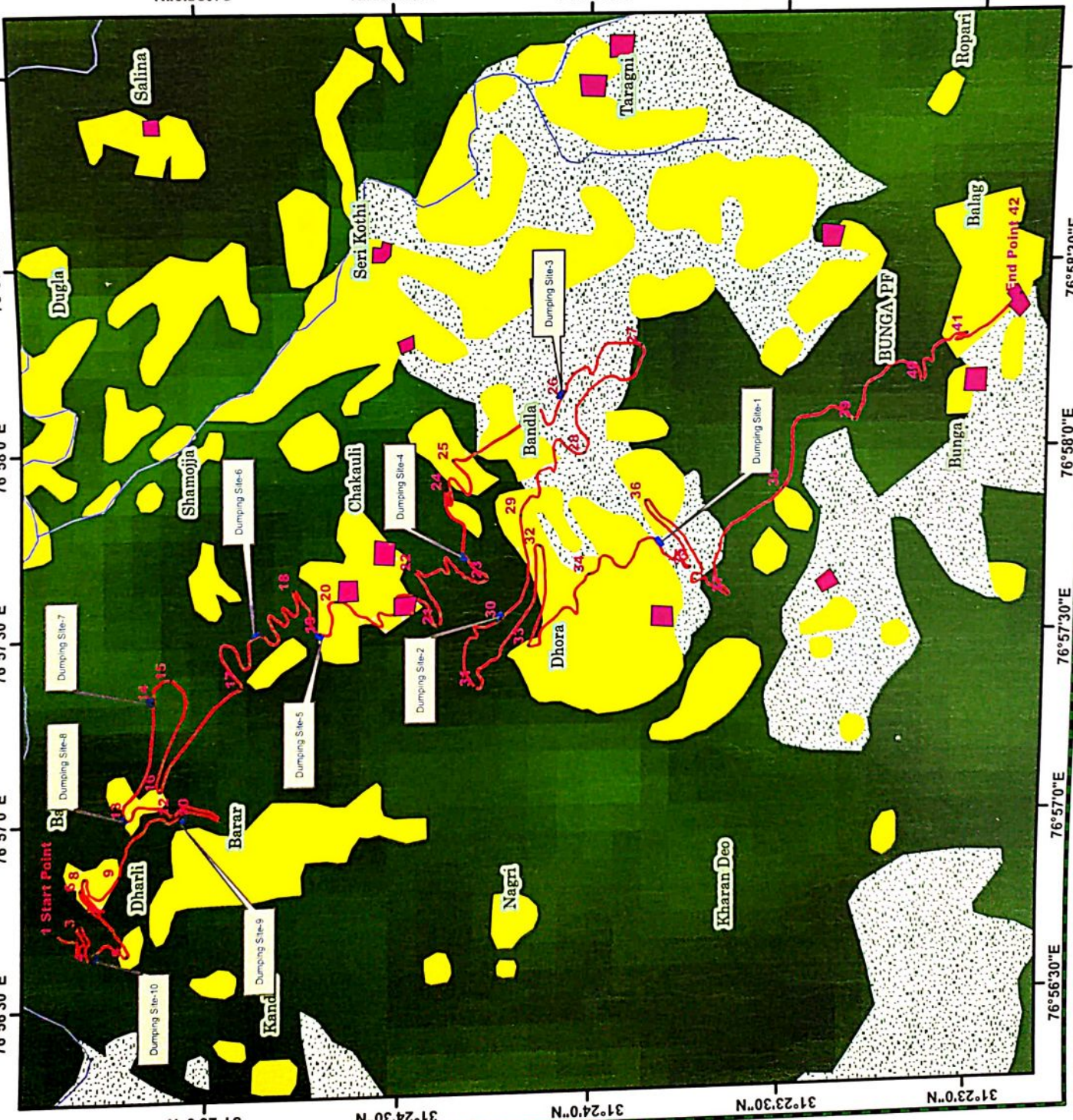
NARESH  
20182-26568  
GIS MAPPING & PCA CONSULTANCY

76°57'0"E

76°57'30"E

76°58'0"E

# DGPS Map of Construction of Dharli To Balag Road Km. 0/00 to 18/900.



**Legend**

- Forest Land
- Cultivated land
- Settlement
- Nalah
- Scrub Land

## GPS of Proposed Road

Sl. No.	Latitude	Longitude
1	31.422594*	76.941819*
2	31.422137*	76.941515*
3	31.422137*	76.941456*
4	31.422137*	76.941918*
5	31.422014*	76.941096*
6	31.422071*	76.941096*
7	31.423104*	76.944608*
8	31.423104*	76.944608*
9	31.422403*	76.947046*
10	31.417728*	76.950345*
11	31.419048*	76.950158*
12	31.416059*	76.950393*
13	31.420103*	76.950259*
14	31.419841*	76.950504*
15	31.419841*	76.95478*
16	31.419841*	76.951155*
17	31.412443*	76.950221*
18	31.412443*	76.95047*
19	31.411113*	76.949524*
20	31.405657*	76.948781*
21	31.405657*	76.948781*
22	31.407532*	76.960131*
23	31.404430*	76.960393*
24	31.406170*	76.964657*
25	31.406849*	76.96626*
26	31.401120*	76.969107*
27	31.397716*	76.971396*
28	31.400165*	76.966534*
29	31.402941*	76.963721*
30	31.403941*	76.965977*
31	31.403941*	76.965984*
32	31.402102*	76.962323*
33	31.402552*	76.967765*
34	31.399950*	76.961009*
35	31.399554*	76.961297*
36	31.397492*	76.964329*
37	31.393594*	76.960019*
38	31.391464*	76.964819*
39	31.389403*	76.967669*
40	31.389403*	76.96929*
41	31.381317*	76.971709*
42	31.381317*	76.973449*

## GPS of Proposed Dumping Sites

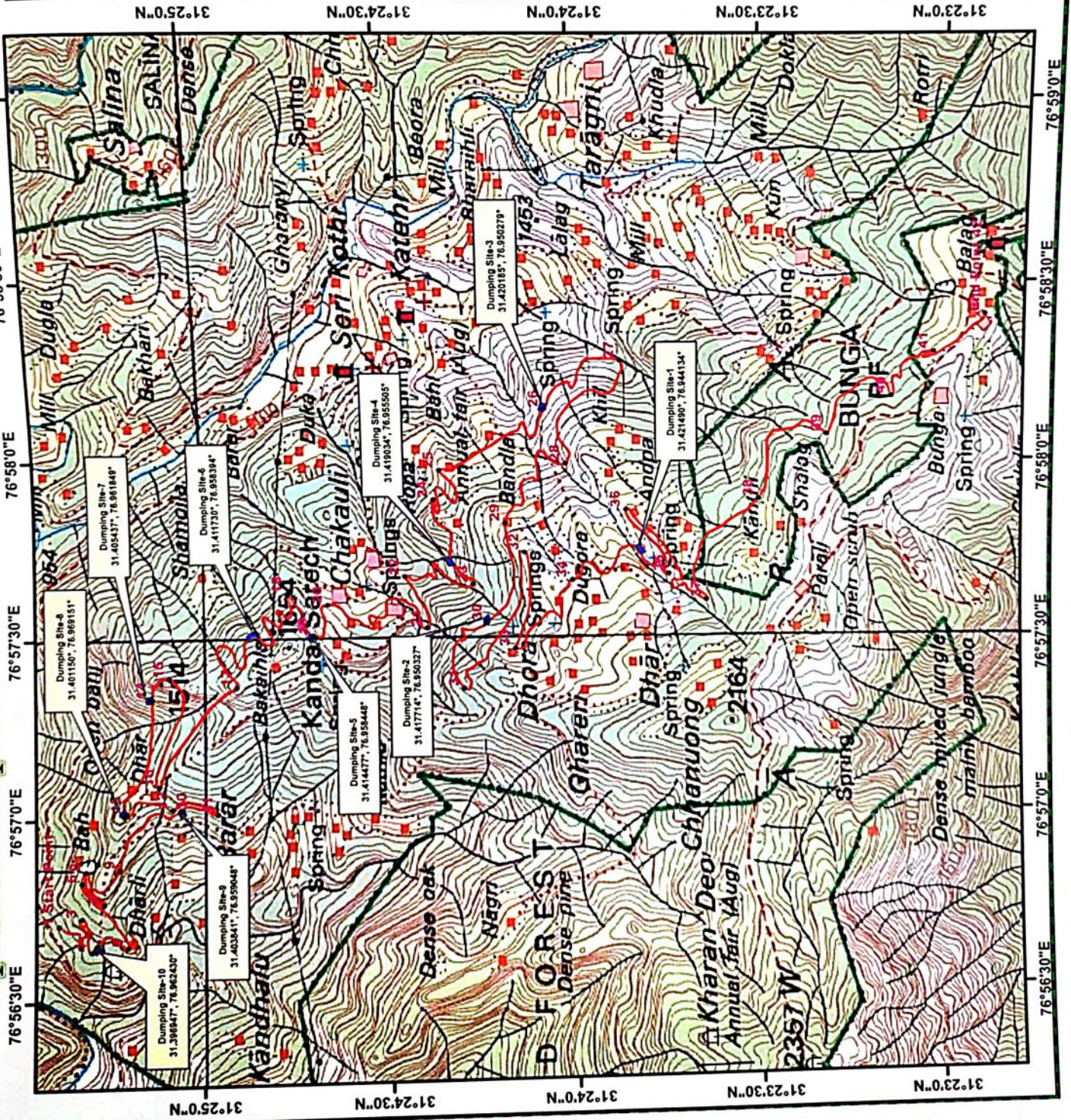
Sl. No.	Latitude	Longitude
1	31.421490*	76.944134*
2	31.417714*	76.950327*
3	31.420185*	76.950279*
4	31.419034*	76.956505*
5	31.414477*	76.958448*
6	31.411730*	76.9668394*
7	31.406437*	76.961849*
8	31.401160*	76.969151*
9	31.403841*	76.959048*
10	31.396847*	76.962430*

Deputy Conservator of Forests  
Sukdev Forest Division  
Sunder Nagar Forest Division (H.P.)  
Sunder Nagar

*[Signature]*  
Executive Engineer,  
Sunder Nagar Division  
HPPWD Sunder Nagar



# Toposheet Map of Construction of Dharli To Balag Road Km. 0/00 to 18/900.



## CONVENTIONAL SYMBOLS

- Express highway: with toll; with bridge; with distance stone
- Roads, metalled: according to importance
- Roads, double cartway: according to importance
- Unmetalled road: Cart-track, Pack-track with pass, Foot-path
- Stream: with track in bed, unlined; Canal
- Dam, masonry or rock-filled; earthwork; Weir
- River: dry with water channel; with island & rocks; Tidal river
- Submerged rocks; Shoal; Swamp; Reeds
- Wells: lined; unlined; Tube-well; Spring; Tanks; perennial; dry
- Embankments: road or rail; tank; Broken ground
- Railways: broad gauge; double; single with station; under constn.
- Mineral line or tramway: Kin. Cutting with tunnel
- Contours with sub-features: Rocky slopes; Cliffs
- Sand features (1/8at. (2)sand-hills(permanent). (3)unes(shifting)
- Towns or Villages: inhabited; deserted; Fort.
- Huts: permanent; temporary; Tower; Antiquities

Station Point	76°56'30"E	76°57'0"E	76°57'30"E	76°58'0"E	76°58'30"E	76°59'0"E
1	31.407532*	76.96158*	22	31.407532*	76.96158*	22
2	31.423294*	76.94318*	23	31.404430*	76.960431*	
3	31.423137*	76.944458*	24	31.406175*	76.964457*	
4	31.427131*	76.944301*	25	31.405889*	76.966255*	
5	31.428458*	76.944099*	26	31.401180*	76.969107*	
6	31.429271*	76.944788*	27	31.403771*	76.971190*	
7	31.431104*	76.944746*	28	31.400195*	76.966534*	
8	31.432196*	76.947616*	29	31.403815*	76.965721*	
9	31.432043*	76.947616*	30	31.403815*	76.965721*	
10	31.431722*	76.950345*	31	31.403815*	76.965721*	
11	31.431603*	76.950345*	32	31.403815*	76.965721*	
12	31.431603*	76.950345*	33	31.403815*	76.965721*	
13	31.431603*	76.950345*	34	31.403815*	76.965721*	
14	31.431603*	76.950345*	35	31.403815*	76.965721*	
15	31.431603*	76.950345*	36	31.403815*	76.965721*	
16	31.431603*	76.950345*	37	31.403815*	76.965721*	
17	31.431603*	76.950345*	38	31.403815*	76.965721*	
18	31.431603*	76.950345*	39	31.403815*	76.965721*	
19	31.431603*	76.950345*	40	31.403815*	76.965721*	
20	31.431603*	76.950345*	41	31.403815*	76.965721*	
21	31.406567*	76.958761*	End Point 42	31.391357*	76.973419*	

Deputy Conservator of Forest,  
Suket Forest Division  
At Sunder Nagar.

Executive Engineer,  
Sunder Nagar Division  
HPPWD Sunder Nagar



Toposheet No.:- 53A/15

## Suket Forest Division

**NET PREST VALUE FOR THE DIVERSION OF 10.6019 ha of Forest Land for the construction of Dharli to Balag Road Km 0/0 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi (H.P.) FP/HP/ROAD/49449/2020**

Sr No.	Name of Scheme	Forest Land proposed to be diverted (in ha )	Eco-Value class and Density	Rate of NPV revised by MoFF & CC orders date 06.01.2022	Amount involved
1	Diversion of 10.6019 ha of Forest Land for the construction of Dharli to Balag Road Km 0/0 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi (H.P.) FP/HP/ROAD/49449/2020	10.6019	Eco-Value Class-V Density= 0.10 Open Forest	1005210	10657136

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)  
Sundernagar Distt. Mandi (H.P.)

**SCHEDULE-III**  
**CERTIFICATE OF NON-AVAILABILITY OF LAND FOR COMPENSATORY**  
**AFFORESTATION IN THE STATE/UNION TERRITORY TO BE ISSUED BY THE**  
**STATE GOVERNMENT//UNION TERRITORY ADMINISTRATION[Soo rulo 13(4)]**

No...10378.....Datod... 19-09-2024.....

I, Ritika, Director Land Records, Government of Himachal Pradesh (Notified Nodal Officer to Issue such Certificate on behalf of the Hon'ble Chief Secretary Himachal Pradesh Vide Notification No.Rov- D (G)6 -1/2020- looso Datod 26/07/2024), do hereby certify that :-

- iii. Relevant records pertaining to non-forest land, revenue lands, *zudpi junglo, chhote jhar ka junglo, bado jhar ka junglo, junglo jhari land, civil-soyam* lands and all other such categories of forest lands (except the forest land under the management and administrative control of the Forest Department) on which the provisions of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 are applicable, available in each District of Himachal Pradesh have been examined; and
- iv. I have also conducted such further enquiry as is required to satisfy myself for issue of this certificate.

On the basis of examination of relevant records and such further enquiry, as was required for issue of this Certificate, I do hereby certify that non-forest land, revenue lands, *zudpi junglo, chhote jhar ka junglo, bade jhar ka junglo, jungle-jhari land, civil-soyam* lands and all other such categories of forest lands (except the forest land under management and administrative control of the Forest Department) on which the provisions of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 are applicable, which as per the extent guidelines of the Central Government may be utilized for *creation of compensatory afforestation in lieu of forest land diverted for non-forest purpose*, is not available in the entire Himachal Pradesh.

Issued under my hand and seal on this 19<sup>th</sup>, September, day of 2024



(Ritika) IAS  
Director Land Record  
Himachal Pradesh

**Signature & Official Seal**

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)

**Full Title of the Project:** Diversion of 10.6019 ha. of forest land in favour of HPPWD for construction of Dharli to Balag Road Km 0/00 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi, HP

**File No. :** (Online-Proposal No. FP/HP/Road/49449/2020).

**Date of Proposal:** \_\_\_\_\_

**CHECK LIST SERIAL NUMBER: 20**

**LAND SUITABILITY (CA) CERTIFICATE BY THE DFO**

This is to certify that 21.2038 hac land bearing Survey No. 53A/15 in DPF Lapper , Serikothi Beat, Batwara Block, Kangoo Forest Range falling under the jurisdiction of Suket Forest Division identified for Compensatory Afforestation is suitable for plantation from management point of view and is free from all sorts of encumbrances and encroachments.

**Place:** Sundernagar  
**Date:** 16/12/2025

(Deputy Conservator of Forests)  
Suket Forest Division  
Sundernagar. Deputy Conservator of Forests  
Office Seal Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)

## CHECK LIST SERIAL NO. 17

## SITE SPECIFIC CA SCHEME FOR COMPENSATORY AFFORESTATION

Case for Compensatory Afforestation and its maintenance for 10 years to be carried out in lieu of DIVERSION OF 10.6019 ha of Forest land for the construction of Dharli to Balag Road Km 0/0 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi (H.P.)  
H.P./ROAD/49449/2020

Detail of degraded forest/Non forest land						DPF
District						Mandi.
Tehsil						Nihri
Name of Division						Suket
Area to be afforested						21.2038
Sr. No.	Name of Forest Range	Block/Beet	CA Patch-I	GPS Location	Total CA for Afforestation	Survey sheet No.
1	Kangoo	Batwara/Serikothi	DPF Lapper	N 31.399201 E 76.988515	21.2038	53A/15
			21.2038			

Description of area	
(i) Brief description	DPF Lapper 21.2038ha. area has been selected for compensatory afforestation in Serikothi Beat of Batwara Block of Kangoo Range under Suket Forest Division. The selected area is Demarcated protected Forest land having scattered vegetation which is suitable for the compensatory afforestation.
(ii) Area Dimensions	The KML file file areas DPF Lapper 21.2038 ha has been uploaded in Part-II
(iii) Whether the site selected for CA is land bank or not	-
(iv) If the CA site is other than land bank, reason be given	-
(v) In case of non forest area indentified for CA than what is the	Sandy loam
(vi) Soil Type	Hilly
(vii) Topography a) Hilly/Universal/Plain	Medium
(viii) b) Slope; steep/Medium/ Gentle	Bushes, Grasses
(ix) Whether the area is bearing any root stock of vegetation	South Western
(x) Aspect	Daru, Jamun, Ritha, Kachnar, & OBL
(xi) Spps to be planted	Attached.
3	Plantation Model:- Copy of approved Compensatory
4	Schedule of Plantation Programme

Detail of year wise break up of requirement of funds is as under:-

Compensatory afforestation (1100 plants/Ha.) with RCC Fence Post and 4-strand Barbed wire fencing						
Sr. No.	Particulars of works/Years	Plants/ha.	Approved Rate (Rs.)	10% hike every year of approved rated (in Rs.)	Total Amount after 10 % hike/ha.	G Total Amount
1	A-i) Survey, Demarcation, Fencing & Planting including cost of plants in Zero Year	1100 plants/ha	132298.7	13229.87	145528.57	3085758.693
2	1st Year	21.2038 ha.	12100	2420	14520	307879.176
3	2nd Year	21.2038 ha.	8200	2460	10660	226032.508
4	3rd Year	21.2038 ha.	4200	1680	5880	124678.344
5	4th Year	21.2038 ha.	4200	2100	6300	133583.94
6	5th Year	21.2038 ha.	4200	2520	6720	142489.536
7	6th Year	21.2038 ha.	4200	2940	7140	151395.132
8	7th Year	21.2038 ha.	4200	3360	7560	160300.728
9	8th Year	21.2038 ha.	4200	3780	7980	169206.324
10	9th Year	21.2038 ha.	4200	4200	8400	178111.92
11	10th Year	21.2038 ha.	4200	4620	8820	187017.516
G. Total -A						4866453.817
<b>A</b>						
Maintenance of Plantation						
Sr. No.	Maintenance	Area in Ha	Number of Plants for maint	Cost of OBL Plants	Total Cost of Plant (F)	
a	1st Year Maintenance (30% of total plants planted in 1st Year)	21.2038	6997	29	202913	
b	2nd Year Maintenance (20% of total no. of plants)	21.2038	4665	31	144615	
c	3rd Year Maintenance to 10 Year (10% of total number of plants in zero year) (Taking hike in plant cost in all years in 8 years)	21.2038	18659	70	1306130	
G.Total -B						1653658
<b>B</b>						
13	Carriage of Plants by Mechanical Means over a distance of 40 Km including loading/unloading (During zero year)	23324 plants	L/s Rates	30 Trips	L/s Rs 1500/Trip	45000
G.Total -C						45000
<b>C</b>						

							Amount			
14	Soil & Moisture Conservation Works			Norm			1	250000	250000	
D			5	50000						
a	Crate wire check dam	No.		30000			1	300000	300000	
b	Dry stone check dam	No.	10	30000						
c	Staggered contour trenches.							27495.00	582998	
	Preparation of trenches	ha.	21.2038	18330	9165					
d	Preparation of fire line around the p. are 2.50 m wide in its periphery 2435 m length	sqm	6087.5					40	243500	
									@5 per sqm + subsequent hikes in upcoming years	
e	Maintenance of Fire line in upcoming years	Sqm	6087.5					5.2	284895	
									@0.65 per sqm + subsequent hikes in upcoming years	
f	Fire prevention measures like cutting of grass if not collected by the locals and removing every inflammable material from the area to prevent the fire incident	Every year till maintenance work of the area		Taking also the surrounding area to the selected CA site about 20 ha				1471.6	529776	
									@183.95 per ha. + subsequent hikes in upcoming years	
g	Watering of plants during lean season to ensure survival of plants	L/s Cost of maint. Years							Taking tanker charges L/s for upcoming years taking 80000 per year cost including labour cost.	
									720000	
h	Cost of vermi compost, Carriage and application in pit including new and maint pits	Kg	10742	15				9.765	161130	
D								G. Total -D	3072299	
E								Grand Total A+B+C+D	9637411	
F								Contingence 5% over the C.A. Scheme	481871	
								Total (A+B+C+D+E+F)	10119282	
G								Departmental charges @ 17.5%	1770874	
								Total amount (A+B+C+D+E+F+G)	11890156	
								Total Amount of CA Scheme	11890156	

**One Crore Eighteen Lakh Ninty Thousand One Hundred Fifty Six Only**

**Technical Detail:-**

**Technical detail of compensatory afforestation is as under:-**


		Remarks
a.	General detail	The area shall be closed to improve the vegetation cover in the locality to enhance the moisture and
b.	Spacement	3mx3m
c.	Size for Tall Plant	Minimum height 1.20 m, Collar Dia. Minimum 1.5 cm of 2.5 years age raised in P.Bag
	Size for Normal Plant	Minimum height 90 cm of 1.5 years raised in P.Bag
d.	Species	
	Plants	Shisham, Amla, Kachnar, Beul, Harad, Bheda, Jamun, Aam, Drek, Kafal, Chuli, Simbal, Daroo.
	Bio-Engineering species	Vitex, Agave, Duranta, Vetevaria etc
e.	Plantation method	Pit digging.
f.	Soil & moisture conservation works;	Work shall be carried out as proposed.
g.	Protection	Fencing & people participation.
h.	Proposed Monitoring Mechanism	As per guidelines and monitoring system of the department.
i.	Any other information	Nil.

Deputy Commissioner of Forests  
 Suket Forest Division  
 Sundernagar Distt. Mandi (H.P.)

## Suket Forest Division

**NET PREST VALUE FOR THE DIVERSION OF 10.6019 ha of Forest Land for the construction of Dharli to Balag Road Km 0/0 to 18/900 within the jurisdiction of Suket Forest Division Distt. Mandi (H.P.) FP/HP/ROAD/49449/2020**

Sr No.	Name of Scheme	Forest Land proposed to be diverted (in ha )	Eco-Value class and Density	Rate of NPV	Amount
1	Penal NPV of 0.6840 ha. for ECO class V	0.684	Eco-Value Class-V Density= 0.10 Open Forest	1005210	687563.64
2	Note: Whereas as per direction issued by the Govt. to be calculated as forest land per hectare for each year of violation from the date of acutal diversio nas reported by the reinpecting officer with maximum up to five (5) time NPV plaus 12% simple interest till the deposits is made. (A)	0.684	5 Years	1005210	3437818.2
3	12% Simple interest on Rs 3437818 for 3 years (B)				1237614.552
4	A+B				4675432.752
5	In case public utility project of the Govt the penalty shall be 20% of the penalty proposed in the above para				935086.5504
<b>Total Penal NPV</b>					<b>935087</b>

  
**Deputy Conservator of Forests**  
**Suket Forest Division**  
**Sundernagar Distt. Mandi (H.P.)**  
**Sundernagar Distt. Mandi (H.I)**

Classification

SPP	V	IV	III	IIA	IIB	Total
Bar	38	8	6	1	2	55
Volume	3.80	2.24	5.04	1.76	5.08	17.92
Yal	—	2	—	—	—	2
Yal	—	0.420	—	—	—	0.420
B/L	13	11	3	2	1	30
Yal	1.82	3.08	2.52	3.40	2.540	13.36
Total	51	21	9	3	3	87
Yal	5.62	5.74	7.56	5.16	7.62	31.7

Total = 87 Nos trees & 31.7 Volume

G. J. and P. D.

[Signature]

Deputy Commissioner of Forests,  
Suket Forest Division,  
Sundernagar Distt. Mandi (H.P.)

Forest Block

Range Forest Officer,  
Forest Range Mandi  
Mandi (H.P.)

Inventory list of trees occurring in alignment Road  
 Jag to Dharli in Balij beat AD 199 Bunga detail as under.

No.	Spp	Dia	Class	Vol	Remarks	No.	Spp	Dia	Class	Vol	Remarks
1	Bam	11-12	VTH	0.100	G/standing	27	Toral	13-14	VTH	0.140	B/L
2	Bam	28-29	IVTH	0.280	G/S	28	Burash	12-13	VTH	0.140	B/L
3	Burash	11-12	VTH	0.140	B/L	29	Bam	11-12	VTH	0.100	G/S
4	Kail	27-28	IVTH	0.210	G/S	30	Burash	26-27	IVTH	0.280	B/L
5	Toral	12-13	VTH	0.140	B/L	31	Burash	22-23	IVTH	0.280	B/L
6	TR	11-12	VTH	0.140	B/L	32	Bam	12-13	VTH	0.100	G/S
7	Bam	11-12	VTH	0.100	G/S	33	Burash	18-19	VTH	0.140	B/L
8	Bam	12-13	VTH	0.100	G/S	34	Bam	11-12	VTH	0.100	G/S
9	Segal	11-12	VTH	0.140	B/L	35	Bam	11-12	VTH	0.100	G/S
10	Bam	11-12	VTH	0.100	G/S	36	Burash	24-25	IVTH	0.280	B/L
11	TR	11-12	VTH	0.100	G/S	37	Burash	11-12	VTH	0.140	B/L
12	Bam	11-12	VTH	0.100	G/S	38	Bam	12-13	VTH	0.100	G/S
13	Bam	11-12	VTH	0.100	G/S	39	Burash	11-12	VTH	0.140	B/L
14	Bam	12-13	VTH	0.100	G/S	40	Burash	11-12	VTH	0.140	B/L
15	Bam	12-13	VTH	0.100	G/S	41	Bam	15-16	VTH	0.100	G/S
16	Kail	28-29	IVTH	0.210	G/S	42	Burash	55-56	IIIB	2.540	B/L
17	Bam	24-25	IVTH	0.280	G/S	43	Teun	21-22	IVTH	0.280	B/L
18	Toral	26-27	IV	0.280	B/L	44	Teun	33-34	III	0.840	B/L
19	Bam	11-12	VTH	0.100	G/S	45	Teun	46-47	IIA	1.700	B/L
20	Bam	12-13	VTH	0.100	G/S	46	Burash	27-28	IVTH	0.280	B/L
21	Bam	11-12	VTH	0.100	G/S	47	Burash	23-24	IVTH	0.280	B/L
22	Bam	11-12	VTH	0.100	G/S	48	Bam	27-28	IVTH	0.280	G/S
23	Bam	11-12	VTH	0.100	G/S	49	Bam	33-34	III	0.840	G/S
24	Bam	11-12	VTH	0.100	G/S	50	Burash	16-17	VTH	0.140	B/L
25	Bam	17-18	VTH	0.100	G/S	51	Teun	26-27	IVTH	0.280	B/L
26	Bam	17-18	VTH	0.100	G/S	52	Bam	11-12	VTH	0.100	G/S

ABSTRACT

S.No	Spp	Classification					Total
		V	IV	III	IIA	IIIB	
1	Bam	24	3	1	—	—	28
	Vol	2.40	0.84	0.84	—	—	4.08
	Kail		2	—	—	—	2
	Vol		0.420	—	—	—	0.420
3	B/L	11	8	1	1	1	22
	Vol	1.54	2.24	0.84	1.70	2.54	8.86

Deputy Comdr of Forests  
 Suket Forest Division  
 Sundernager Distt. Mandi (H.P.)

Range Forest Officer  
 Forest Range Dhung  
 Mandi (H.P.)

D. K. Singh

P. K. Singh  
 Forest Officer

SPP.	Diā	Class	Vol.	Remarks	Sr.No.	SPP.	Diā	Class	Vol.	Remarks
Burash	16-17	VTH	0.240	B/L	71	Ban	24-25	IVTH	0.280	G/S
Trabal	17-18	VTH	0.140	B/L	72	Ban	31-32	III	0.840	G/S
Ban	11-12	VTH	0.100	G/S	73	Ban	25-26	IVTH	0.280	G/S
Ban	32-33	III	0.840	G/S	74	Ban	32-39	III	0.840	G/S
Ban	52-53	IIB	2.540	G/S	75	Ban	12-13	VTH	0.100	G/S
Ban	14-15	VTH	0.100	G/S	76	Ban	16-17	VTH	0.100	G/S
Ban	23-24	IVTH	0.280	G/S	77	Segal	22-23	IVTH	0.280	B/L
Ban	32-33	III	0.840	G/S	78	Trabal	24-25	IVTH	0.280	B/L
Trabal	32-33	III	0.840	B/L	79	Ban	17-18	VTH	0.100	G/S
Trabal	32-33	III	0.840	B/L	80	Ban	18-19	VTH	0.100	G/S
Trabal	27-28	IVTH	0.280	B/L	81	Ban	28-29	IVTH	0.280	G/S
Ban	42-43	IIA	1.766	G/S	82	Ban	33-34	III	0.840	G/S
Ban	16-17	VTH	0.100	G/S	83	Ban	12-13	VTH	0.100	G/S
Ban	11-12	VTH	0.100	G/S	84	Ban	11-12	VTH	0.100	G/S
Chopdu	44-45	IIA	1.700	B/L	85	Ban	11-12	VTH	0.100	G/S
Ban	16-17	VTH	0.100	G/S	86	Ban	11-12	VTH	0.100	G/S
Ban	26-27	IVTH	0.280	G/S	87	Ban	12-13	VTH	0.100	G/S
Ban	58-59	IIB	2.540	G/S						

### ABSTRACT Classification

Sr.No	SPP	V	IV	III	IIA	IIB	Total
1	Ban	14	5	5	1	2	27
	Vol	1.40	1.40	4.20	1.76	5.08	13.84
2	B/L	2	3	2	1	-	8
	Vol	0.28	0.84	1.68	1.76	-	4.50

Shan 190

Beeth black

Range Forest Office  
Forest Range Shung  
Mandi (H.)

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)

GENERAL ABSTRACT											
Sr. No.	Name of Forest	Name of Species (Local)	Botanical Name	Classification					Total	Rate Per Cum	Amount
				V	IV	III	II-A				
				0-60	60-90	91-120	121-150				
1	N.D. 303	Ban	Quercus	Nos.	8	9	2	1	20		
			Leucotrichophora	Vol.	0.8	2.52	1.68	1.766	6.766	54185	366615.71
2	Dharli	Bhadrohal	Machilus thunbergil	Nos.	0	0	1	2	3		
				Vol.	0	0	0.84	3.4	4.24	54185	229744.4
3	Brad	Chil	Pinus roxburghii	Nos.	15	41	10	3	69		
				Vol.	0.75	4.51	2.8	2.19	10.25	61170	626992.5
4	&O.D.3	Chuli	Prunus Armeniaca	Nos.	1	1	0	1	3		
				Vol.	0.14	0.28	0	1.7	2.12	54185	114872.2
5	01	Kachnaar	Vahuinia Variegata	Nos.	2	2	0	0	4		
				Vol.	0.28	0.56	0	0	0.84	54185	45515.4
6	Gehru	Kamal	Mallatus	Nos.	5	5	2	0	12		
			Phillippensis	Vol.	0.7	1.4	1.68	0	3.78	54185	204819.3
7		Parera	Erythrina Parera	Nos.	0	1	0	0	1		
				Vol.	0	0.28	0	0	0.28	54185	15171.8
8		Salambda	Lannea	Nos.	0	6	0	0	6		
			Coromandelica	Vol.	0	1.68	0	0	1.68	54185	91030.8
9		Pula	Pula Croatia	Nos.	0	2	0	0	2		
				Vol.	0	0.56	0	0	0.56	54185	30343.6
10		Shama	Vateria indica	Nos.	7	46	13	0	66		
				Vol.	0.98	12.88	10.92	0	24.78	54185	1342704.3
11		shegal	Pyrus pashia	Nos.	0	1	0	0	1		
				Vol.	0	0.28	0	0	0.28	54185	15171.8
		Deodar	Cedrus deodara	Nos.	1	1	1	0	3		
				Vol.	0.056	0.196	0.756	0	1.008	112644	113545.152
		Total		Nos.	39	115	29	7	190		
				Vol.	3.706	25.146	18.676	9.056	56.584		3196526.96
									Add 18% G.S.T.	575374.853	
									G.Total	3771901.82	

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)

(A-1-2-3)  
B.O. Subramani

Range Forest Officer  
Kangoo Forest Range

**Enumeration List of trees coming in the re-alignment of Dharli to Balag road in Serikothi Beat, Dharli block of Kangoo forest range During the Year 2025-26**

Sr. no	Name of forest	Name of Species	Botanical name	Girth in Cm	Class	Remarks
1	N.D 303 Dharli Brad	Pula	Pula Croatia	80	IV	Green standing
2		Pula	Pula Croatia	70	IV	Green standing
3		Shama	Vateria indica	70	IV	Green standing
4		Shama	Vateria indica	72	IV	Green standing
5		Shama	Vateria indica	53	V	Green standing
6		Parera	Erythrina Parera	80	IV	Green standing
7		Shama	Vateria indica	60	V	Green standing
8		salambra	Lannea Coromandelica	67	IV	Green standing
9		Shama	Vateria indica	95	III	Green standing
10		Shama	Vateria indica	81	IV	Green standing
11		Shama	Vateria indica	86	IV	Green standing
12		Shama	Vateria indica	63	IV	Green standing
13		Shama	Vateria indica	72	IV	Green standing
14		Shama	Vateria indica	73	IV	Green standing
15		Shama	Vateria indica	100	III	Green standing
16		salambra	Lannea Coromandelica	80	IV	Green standing
17		Kambhal	Mallatus Phillippensis	30	V	Green standing
18		Shama	Vateria indica	97	III	Green standing
19		Shama	Vateria indica	76	IV	Green standing
20		Shama	Vateria indica	77	IV	Green standing
21		Shama	Vateria indica	78	IV	Green standing
22		Shama	Vateria indica	108	III	Green standing
23		Kambhal	Mallatus Phillippensis	100	III	Green standing
24		Shama	Vateria indica	78	IV	Green standing
25		Shama	Vateria indica	84	IV	Green standing
26		Kambhal	Vateria indica	76	IV	Green standing
27		Kambhal	Mallatus Phillippensis	62	IV	Green standing
28		Shama	Vateria indica	69	IV	Green standing
29		Shama	Vateria indica	63	IV	Green standing
30		Shama	Vateria indica	68	IV	Green standing
31		Shama	Vateria indica	62	IV	Green standing
32		Shama	Vateria indica	65	IV	Green standing
33		Shama	Vateria indica	70	IV	Green standing
34		Shama	Vateria indica	57	V	Green standing
35		Kambhal	Mallatus Phillippensis	56	V	Green standing
36		Shama	Vateria indica	66	IV	Green standing
37		Kambhal	Mallatus Phillippensis	62	IV	Green standing
38		Shama	Vateria indica	70	IV	Green standing
39		Shama	Vateria indica	58	V	Green standing
40		Shama	Vateria indica	56	V	Green standing
41		Shama	Vateria indica	78	IV	Green standing
42		Shama	Vateria indica	98	III	Green standing
43		Shama	Vateria indica	100	III	Green standing
44		Shama	Vateria indica	98	III	Green standing
45		Shama	Vateria indica	80	IV	Green standing
46		Shama	Vateria indica	68	IV	Green standing

*Jai Singh Kumar Fjd  
i/c Serikothi  
Beat*

*B.O. Baturam*

Deputy Conservator of Forests  
Suket Forest Division  
Sundarnagar Distt. Mandi (H.P.)

N.D

303

Dharli

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Shama	Vateria indica	95	III	Green standing
Shama	Vateria indica	60	V	Green standing
Shama	Vateria indica	78	IV	Green standing
Shama	Vateria indica	65	IV	Green standing
Shama	Vateria indica	65	IV	Green standing
Kambhal	Mallatus Phillippensis	92	III	Green standing
Shama	Vateria indica	120	III	Green standing
Shama	Vateria indica	90	IV	Green standing
Kambhal	Mallatus Phillippensis	100	III	Green standing
Kambhal	Mallatus Phillippensis	60	V	Green standing
Shama	Vateria indica	63	IV	Green standing
Shama	Vateria indica	80	IV	Green standing
Shama	Vateria indica	85	IV	Green standing
Shama	Vateria indica	100	III	Green standing
Shama	Vateria indica	84	IV	Green standing
Shama	Vateria indica	74	IV	Green standing
Shama	Vateria indica	76	IV	Green standing
Shama	Vateria indica	100	III	Green standing
Shama	Vateria indica	82	IV	Green standing
Kambhal	Mallatus Phillippensis	52	V	Green standing
Shama	Vateria indica	65	IV	Green standing
Shama	Vateria indica	76	IV	Green standing
Shama	Vateria indica	68	IV	Green standing
Shama	Vateria indica	88	IV	Green standing
Shama	Vateria indica	78	IV	Green standing
Shama	Vateria indica	87	IV	Green standing
Shama	Vateria indica	115	III	Green standing
Shama	Vateria indica	80	IV	Green standing
Shama	Vateria indica	65	IV	Green standing
Shama	Vateria indica	90	IV	Green standing
Shama	Vateria indica	80	IV	Green standing
Shama	Vateria indica	70	IV	Green standing
Shama	Vateria indica	84	IV	Green standing
Shama	Vateria indica	82	IV	Green standing
Shama	Vateria indica	53	V	Green standing
Chuli	Prunus armeniaca	60	V	Green standing
salambra	Lannea Coromandelica	85	IV	Green standing
Chuli	Prunus armeniaca	130	IIA	Green standing
Chuli	Prunus armeniaca	90	IV	Green standing
salambra	Lannea Coromandelica	88	IV	Green standing
salambra	Lannea Coromandelica	75	IV	Green standing
salambra	Lannea Coromandelica	90	IV	Green standing
Chil	Pinus roxburghli	55	V	Green standing
Chil	Pinus roxburghli	66	IV	Green standing
Chil	Pinus roxburghli	55	V	Green standing
Chil	Pinus roxburghli	72	IV	Green standing
Chil	Pinus roxburghli	72	IV	Green standing
Chil	Pinus roxburghli	65	IV	Green standing
Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	65	IV	Green standing

Jai Singh Kumar  
1/2 Seli Kothi  
Brad

B. D. Bahuman

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (M.D.)

N.D  
303  
Dharli  
Brad.

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Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	58	V	Green standing
Chil	Pinus roxburghli	98	III	Green standing
Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	66	IV	Green standing
Chil	Pinus roxburghli	86	IV	Green standing
Chil	Pinus roxburghli	68	IV	Green standing
Chil	Pinus roxburghli	85	IV	Green standing
Chil	Pinus roxburghli	68	IV	Green standing
Chil	Pinus roxburghli	72	IV	Green standing
Chil	Pinus roxburghli	64	IV	Green standing
Chil	Pinus roxburghli	75	IV	Green standing
Chil	Pinus roxburghli	55	V	Green standing
Chil	Pinus roxburghli	80	IV	Green standing
Chil	Pinus roxburghli	85	IV	Green standing
Chil	Pinus roxburghli	55	V	Green standing
Chil	Pinus roxburghli	65	IV	Green standing
Chil	Pinus roxburghli	60	V	Green standing
kachnar	Vahuinia Variegata	80	IV	Green standing
Kambhal	Mallatus Phillippensis	52	V	Green standing
shegal	Pyrus pashia	65	IV	Green standing
Kambhal	Mallatus Phillippensis	70	IV	Green standing
Bhadrohal	Machilus thunbergil	150	IIA	Green standing
Bhadrohal	Machilus thunbergil	108	III	Green standing
Bhadrohal	Machilus thunbergil	126	IIA	Green standing
Chil	Pinus roxburghli	125	IIA	Green standing
Chil	Pinus roxburghli	95	III	Green standing
Chil	Pinus roxburghli	98	III	Green standing
Chil	Pinus roxburghli	90	IV	Green standing
Chil	Pinus roxburghli	61	IV	Green standing
Chil	Pinus roxburghli	70	IV	Green standing
Chil	Pinus roxburghli	85	IV	Green standing
Chil	Pinus roxburghli	85	IV	Green standing
Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	75	IV	Green standing
Chil	Pinus roxburghli	75	IV	Green standing
Chil	Pinus roxburghli	110	III	Green standing
Chil	Pinus roxburghli	78	IV	Green standing
Chil	Pinus roxburghli	75	IV	Green standing
Chil	Pinus roxburghli	80	IV	Green standing
Chil	Pinus roxburghli	85	IV	Green standing
Chil	Pinus roxburghli	62	IV	Green standing
Chil	Pinus roxburghli	105	III	Green standing
Chil	Pinus roxburghli	70	IV	Green standing
Chil	Pinus roxburghli	90	IV	Green standing
kachnar	Vahuinia Variegata	60	V	Green standing
Ban	Dendrocalamus strictus	65	IV	Green standing
Ban	Dendrocalamus strictus	70	IV	Green standing
Chil	Pinus roxburghli	110	III	Green standing

Jairesh Kumar  
1/2 Savi Kothi Beaf

(Aradhya)  
B.O. Badwanan

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar (M.P.)

N.D  
303  
Dharli  
Bhad

Chil	Pinus roxburghli	60	V	Green standing
Chil	Pinus roxburghli	130	IIA	Green standing
Chil	Pinus roxburghli	125	IIA	Green standing
kachnar	Vahuinia Variegata	75	IV	Green standing
kachnar	Vahuinia Variegata	60	V	Green standing

Jainish Kumar Pgd  
1/2 Serikothi Beat

Ah-dhy  
B.O. Baturam

(B)

Deputy Conservator of Forests  
Suket Forest Division  
Sundarnagar Dist. Mandi (H)

GENERAL ABSTRACT

Name of forest	Name of Species (Local)	Botanical Name	Classification					Rate Per Cum	Amount
			V	IV	III	II-A	Total		
			0-60	60-90	91-120	121-150	Total		
N.D. 303 Dharli Brad	Ban	Dendrocalamus strictus	Nos.	0	2	0	0	2	
			Vol.	0	0.56	0	0	0.56	54185
	Bhadrohal	Machilus thunbergii	Nos.	0	0	1	2	3	
			Vol.	0	0	0.84	3.4	4.24	54185
	Chil	Pinus roxburghii	Nos.	12	30	6	3	51	
			Vol.	0.6	3.3	1.68	2.19	7.77	61170
	Chuli	Prunus Armeniaca	Nos.	1	1	0	1	3	
			Vol.	0.14	0.28	0	1.7	2.12	54185
	Kachnaar	Vahuinia Variegata	Nos.	2	2	0	0	4	
			Vol.	0.28	0.56	0	0	0.84	54185
	Kamal	Mallatus Phillippensis	Nos.	5	5	2	0	12	
			Vol.	0.7	1.4	1.68	0	3.78	54185
	Parera	Erythrina Parera	Nos.	0	1	0	0	1	
			Vol.	0	0.28	0	0	0.28	54185
	Salambda	Lansea Coromandelica	Nos.	0	6	0	0	6	
			Vol.	0	1.68	0	0	1.68	54185
	Pula	Pula Croatia	Nos.	0	2	0	0	2	
			Vol.	0	0.56	0	0	0.56	54185
	Shama	Vateria indica	Nos.	7	46	13	0	66	
Vol.			0.98	12.88	10.92	0	24.78	54185	134270.4
shegal	Pyrus pashia	Nos.	0	1	0	0	1		
		Vol.	0	0.28	0	0	0.28	54185	15171.8
	Total	Nos.	27	96	22	6	151		
		Vol.	2.7	21.78	15.12	7.29	46.89		
							Add 18% G.S.T.	467101.5	
							G.Total	3062110	

Lavish Kumar Fzd  
1/c Seer Kotli  
Bent

(A) B.O. Butwana

B

Deputy Conservator of Forests  
Suket Forest Division  
Sundarnagar Dist. Mandi (H.P.)

Generation List of trees coming in the re-alignment of Dharli to Balag road in Gehru Beat, Batwara Kangoo forest range During the Year 2025-26

no	Name of forest	Name of Spec	Botanical name	Girth in Cm	Class	Remarks
1	DPF Gehru	Ban	Dendrocalamus strictus	44	V	Green standing
2		Ban	Dendrocalamus strictus	42	V	Green standing
3		Ban	Dendrocalamus strictus	90	III	Green standing
4		Ban	Dendrocalamus strictus	150	IIA	Green standing
5		Ban	Dendrocalamus strictus	75	IV	Green standing
6		Deodar	Cedrus deodara	90	IV	Green standing
7		Deodar	Cedrus deodara	107	III	Green standing
8		Deodar	Cedrus deodara	50	V	Green standing
9		Chil	Pinus roxburghii	80	IV	Green standing
10		Chil	Pinus roxburghii	70	IV	Green standing
11		Chil	Pinus roxburghii	85	IV	Green standing
12		Chil	Pinus roxburghii	60	V	Green standing
13		Chil	Pinus roxburghii	100	III	Green standing
14		Chil	Pinus roxburghii	65	IV	Green standing
15		Chil	Pinus roxburghii	70	IV	Green standing
16		Chil	Pinus roxburghii	85	IV	Green standing
17		Chil	Pinus roxburghii	85	IV	Green standing
18		Chil	Pinus roxburghii	61	IV	Green standing
19		Chil	Pinus roxburghii	60	V	Green standing
20		Chil	Pinus roxburghii	75	IV	Green standing
21		Chil	Pinus roxburghii	60	V	Green standing
22		Chil	Pinus roxburghii	85	IV	Green standing
23		Chil	Pinus roxburghii	110	III	Green standing
24		Chil	Pinus roxburghii	110	III	Green standing
25		Chil	Pinus roxburghii	80	IV	Green standing
26		Chil	Pinus roxburghii	110	III	Green standing
27		Ban	Dendrocalamus strictus	62	IV	Green standing
28		Ban	Dendrocalamus strictus	92	III	Green standing
29		Ban	Dendrocalamus strictus	45	V	Green standing
30		Ban	Dendrocalamus strictus	70	IV	Green standing
31		Ban	Dendrocalamus strictus	70	IV	Green standing
32		Ban	Dendrocalamus strictus	40	V	Green standing
33		Ban	Dendrocalamus strictus	50	V	Green standing
34		Ban	Dendrocalamus strictus	90	IV	Green standing
35		Ban	Dendrocalamus strictus	40	V	Green standing
36		Ban	Dendrocalamus strictus	80	IV	Green standing
37		Ban	Dendrocalamus strictus	40	V	Green standing
38		Ban	Dendrocalamus strictus	90	IV	Green standing
39		Ban	Dendrocalamus strictus	60	V	Green standing

*D. C. G. Batwara*

*B. D. Batwara*

*3*

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)

-7-

GENERAL ABSTRACT										
Sr. No.	Name of Forest	Name of Species (Local)	Botanical Name	Classification						
				V	IV	III	II-A	Total	Rate Per Cum	Amount
				0-60	60-90	91-120	121-150			
1	DPF Gehru	Ban	Dendrocalamus strictus	Nos.	8	7	2	1	18	
				Vol.	0.8	1.96	1.68	1.766	6.206	54185
2		Chil	Pinus roxburghii	Nos.	3	11	4	0	18	
				Vol.	0.15	1.21	1.12	0	2.48	61170
3		Deodar	Cedrus deodara	Nos.	1	1	1	0	3	
				Vol.	0.056	0.196	0.756	0	1.008	112644
G. Total				Nos.	12	19	7	1	39	
				Vol.	1.006	3.366	3.556	1.766	9.694	
									Add 18% G.S.T.	108273.40
									G.Total	709792.26

*[Handwritten signature]*

*[Handwritten signature]*  
B.O. Butwani

*[Handwritten mark]*

Deputy Conservator of Forests  
Suket Forest Division  
Sundernagar Distt. Mandi (H.P.)