

Office Address

Srinagar Office : Forest Complex, Shiekh Bagh, Phone: 0194-2483937
Lal Chowk, Sgr-190001
Jammu Office : Forest Resource Mgmt. Centre, Phone: 0191-3511909
Narwal Jammu-180006



URL Address: www.jkforest.gov.in

E-mail: pccfjkforest@gmail.com



Jammu & Kashmir Forest Department
Office of the Pr. Chief Conservator of Forests & HoFF
Government of Jammu & Kashmir



Principal Secretary to Government
Department of Forests, Environment & Ecology
Civil Secretariat
Jammu/Kashmir

No. PCCF/FCA/3386/ 4789-92

Dated 29-11-2024

Sub: Proposal for seeking prior approval of the Central Government under Section 2(i) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 in favour of NHPC URI-I Stage-II, Baramulla Jammu and Kashmir for non-forestry use of 17.00 Ha of forest land for underground work of URI-I Stage II HE Project, District Baramulla UT of Jammu and Kashmir (Online proposal No. FP/JK/Hyd/144277/2021) regarding.

Ref: Ministry of Environment, Forest and Climate Change's communication dated 1805-2024.

Sir,

This is with reference to the above communication of the Ministry of Environment, Forest and Climate Change, Government of India, on the subject. The point wise reply to the observations is given as under:-

| Sr.No. | Content of EDS | Reply |
|--------|--|--|
| i. | The proposal shall be deferred till the State Government obtain the Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum river Basin, as per para 9.3 of chapter 9 of the consolidated guidelines issued by the Ministry on 29-12-2023. | As intimated by user agency, Uri-I Stage II HE project is the second stage of already commissioned URI-I Power Station of 480 MW on river Jhelum in Baramulla district of UT of J&K. Department of Science & Technology Govt. of India, New Delhi accorded environment clearance to URI (Stage-I) n 27-06-1980 and MoEF granted forest clearance on 21-05-1986. This project is planned as per provisions kept in the DPR of Uri-I Power Station. The provision for second stage has been kept in the design of surface water conveyance system of Uri-I Power Station. Accordingly, the |

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| | | Barrage, Head regulator, desilting basins, open channel and Boniyar Nallah intake structure shall be utilized by the project i.e. Uri-I Stage II HE project. Further, Uri-I Stage-II HE project shall utilize water available in the existing reservoir of URI I Power Station and there shall be no change in submergence area due to the proposed project and also there will be no change in the current natural water course of the river. The user agency intimated that Uri-I Stage-II HEP is the second stage of already commissioned Uri Power Station (480 MW) which is a run of the river project on river Jhelum using the same dam and same reservoir of Uri-I Power Station. The reply furnished by the user agency is attached as Annexure-I. |
| ii. | Site suitability certificate for CA and by the DFO concerned shall be submitted | Uploaded by DFO |
| iii. | Comments of the Chief Wildlife Warden, Jammu and Kashmir Government for the land proposed for diversion along with conservation measures, if required, may be submitted since there is presence of Black Bear on it, as per Part-II of the proposal. | The reply has been uploaded by user agency. |

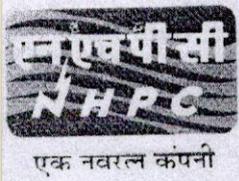
Accordingly, it is requested to kindly accord necessary Stage-I approval for the instant proposal please.

Yours faithfully

(Dr. K. Anandh) IFS
Chief Conservator of Forests,
Nodal Officer (FCA)

Copy to:

1. P.S. to Secretary, MoEF&CC for kind information of the Secretary, MoEF&CC New Delhi.
2. Sr. PS to Pr.CCF & HoFF for kind information of the Pr.CCF & HoFF
3. PS to IG, Forest, MoEF&CC for kind information of the IG, Forest, MoEF&CC



एन एच पी सी लिमिटेड
(भारत सरकार का एक नवरत्न उद्यम)
NHPC Limited
(A Government of India Navratna Enterprise)



उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.)
Uri Power Station, Gingle, Baramulla
UT of Jammu & Kashmir
Phone: 01956-253211

No. NH/UPS/GM-61/FC/2024/112

Dated: 30.10.2024

Chief Conservator of Forests,
Nodal Officer (FCA)
Govt. of Jammu & Kashmir
Forest Resource Management Centre.
Narwal, Jammu – 180 006
E-mail: ccffcajkl@gmail.com

Forest Proposal No: FP/JK/HYD/144277/2021

Sub: Diversion of 17 ha of Forest land for Uri I Stage II HE Project under NHPC Uri-I Stage-II Division J.V, District Baramulla, UT of Jammu & Kashmir – EDS reg.

Sir,

Please refer to your office letter no. PCCF/FCA/3386/2332-36 dated 04-09-2024 on the above cited subject matter.

In this context, it is submitted that during the meeting chaired by the Pr. Chief Conservator of Forests & HoFF, Jammu & Kashmir Forest Department, Govt. of J&K on 24.10.2024 to review the status of Forest Clearances of various hydroelectric projects under implementation in J&K. During the discussion, it was suggested that NHPC may resubmit details of Uri-I Stage-II HE Project for consideration for grant of In-Principle Forest Clearance stating that the proposed project is an extension of Uri Power Station and does not involve construction of new barrage and intake structures, etc.

Accordingly, details are submitted as under:

- i) Uri-I Stage-II HE Project is the second stage of already commissioned Uri-I Power Station of 480 MW on river Jhelum in Baramulla district of UT of Jammu & Kashmir. Department of Science & Technology Govt of India, New Delhi accorded Environment Clearance to Uri (Stage – I) on 27.06.1980 & MoEF granted Forest Clearance on 21.05.1986
- ii) This project is planned as per provision kept in the DPR of Uri-I Power Station. The provision for second stage has been kept in the design of surface water conveyance system of Uri-I Power Station. Accordingly, the main structures of Uri-I Power Station i.e. Barrage, Head regulator, desilting basins, open channel and Boniyar Nallah intake structure shall be utilized by the Project i.e. Uri-I Stage II HE Project.
- iii) Further, Uri-I Stage-II HE Project shall utilize water available in the existing reservoir of Uri-I Power Station and there shall be no change in submergence area due to the proposed project and also there will be no change in the current natural water course of the river.

पंजीकृत कार्यालय : एनएचपीसी कार्यालय परिसर, सेक्टर 33, फरीदाबाद (हरियाणा) – 121 003
Registered Office : NHPC Office Complex, Sector-33, Faridabad (Haryana) – 121 003

CIN : 140101HR1975GOI032564; Website : www.nhpcindia.com
Email : webmaster@nhpc.nic.in, EPABX : +91-129-2588110 / 2588500



एनएचपीसी लिमिटेड

(भारत सरकार का एक नवरात्रि उद्यम)

NHPC Limited

(A Government of India Navratna Enterprise)



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NEW DELHI 2024

उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.)
Uri Power Station, Gingle, Baramulla
UT of Jammu & Kashmir
Phone: 01956-253211

- iv) Only 17 ha of forest land shall be diverted that too underground for works which consists of Power House, Surge Shaft, TRT, HRT & other associated components.
- v) Uri-I Stage-II HE project does not involve any acquisition of revenue land and no R&R is required.

As discussed in the meeting held on 24.10.2024 and in view of above facts, it is reiterated that Uri-I Stage-II HEP is the second stage of already commissioned Uri Power Station (480 MW) which is a run of the river project on river Jhelum using the same dam and same reservoir of Uri-I Power Station. Hence, it is requested to consider this Project for grant of In-Principal Forest Clearance by exempting from submission of Cumulative Impact Assessment (CIA) and Carrying Capacity Study (CCS) reports at this stage.

Thanking you

Yours Sincerely,

Gr. General Manager - HOP

Copy to:

1. Pr. Chief Conservator of Forests & HoFF, Jammu & Kashmir Forest Department, Government of J&K for information please.

पंजीकृत कार्यालय : एनएचपीसी कार्यालय परिसर, सेक्टर-33, फ़रीदाबाद (हरियाणा) – 121 003
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|  |  |  | <p>एनएचपीसी लिमिटेड (भारत सरकार का उद्यम) NHPC Ltd. (A Govt. of India Enterprise) उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.) Uri Power Station, Gingle, Baramulla (UT of J&K) Phone: 01956-253211</p> |
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No. NH/UPS/GM-61/FC/2024/ 58

Dated: 06.08.2024

Addl. Pr. Chief Conservator of Forests cum Nodal Officer (FCA)

Govt. of Jammu & Kashmir
Forest Resource Management Centre,
Narwal, Jammu - 180 006
E-mail: cfffcjk1@gmail.com

Sub: Diversion of 17 ha of Forest land for URI I Stage II HE Project under NHPC Uri-I Stage-II Division J.V, District Baramula, UT of Jammu & Kashmir - EDS reg.

Ref.: PCCF/FCA/3386/593-97 Jammu Dated: 22.05.2024

Sir,

In reference to the above mentioned letter wherein essential details sought (EDS) were raised in respect of the Online Forest proposal of Uri I Stage II HE Project. In this regard it is to intimate that the same has been attended and the reply to the details sought is as below:

| S No | EDS Sought | Reply/Action |
|------|--|---|
| i. | The proposal shall be deferred till the State Govt. obtain the Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum River Basin, as per para 9.3 of Chapter 9 of the consolidated guidelines issued by MoEF&CC on 29.12.2023. | In this regard communication dated 28.05.2024 & 03.08.2024 has been forwarded to the Nodal Officer (FCA) J&K and Secretary Forests Govt of J&K for exemption of the requirement of said studies in order to avoid the delay in the execution of strategic importance project. The communications are attached herewith for reference as Annexure-I. |
| ii. | Site suitability certificate for CA land by the DFO concerned shall be submitted. | Already uploaded on the Parivesh portal by DFO office. Site suitability certificate of Compensatory Afforestation Site is attached as Annexure- II. |
| iii. | Comments of Chief wildlife warden, Jammu & Kashmir for the land proposed for diversion alongwith the conservation measures, if enquired, may be submitted since there is presence of Black Bear on it, as per Part II of the proposal. | A comprehensive EIA Study has been undertaken wherein study of the Biological Environment is one of the aspect. It covers both floral and faunal components including terrestrial and aquatic ecosystems. It describes forest type floristic as well as faunal diversity, the occurrence of RET species if any, and the presence of sensitive zones like any notified Protected areas etc. in the vicinity of the proposed project. As per EIA study, no project component |

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एनएचपीसी
NHPC

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Amrit Mahotsav

एनएचपीसी लिमिटेड
(भारत सरकार का उद्यम)
NHPC Ltd. (A Govt. of India Enterprise)
उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.)
Uri Power Station, Gingle, Baramulla (UT of
J&K)
Phone: 01956-253211

falls within any notified protected area or notified Eco-Sensitive Zones (ESZ). Also, no area around the project has been designated as the wildlife corridor. Moreover, the project involves construction of underground components only and there is a minimal impact on its surroundings.

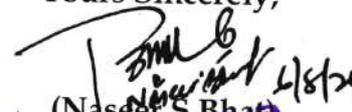
Further, in reference to additional conditions of Terms of Reference (ToR) issued by MoEF&CC vide letter No. F. No. J-12011/08/2021-IA-I, dated 10.06.2021, the Biodiversity Management and Wildlife Conservation Plan along with conservation Measures of Schedule-I species is prepared with a total cost of Rs.144.00 lakh. It is pertinent to mention that none of the Schedule-I species were reported in the primary survey during EIA study. The Biodiversity Conservation and Wildlife Management Plan and Conservation Plan for Schedule-I species is attached herewith.

The comments from office of the Chief wildlife warden dated 14.05.2024 stating that the Project area lies outside the boundaries of Notified limits of the eco-sensitive zone around the wildlife areas is also attached as Annexure - III.

In view of the above, it is requested that the proposal of forest clearance in respect of the project be please considered in Advisory Committee MoEF&CC for grant of FC-I as recommended by the integrated regional office's Empowered Committee in its 65th meeting on dated 25.01.2024.

Thanking you,

Yours Sincerely,


(Naseer S Bhat)
Sr Manager (Env)
उड़ी पावर स्टेशन Uri Power Station
गिंगल NHPC Ltd Gingle
बारामुल्ला (ज. व क.) Baramulla (J&K) 193

Copy to:

1. Conservator, of Forests, North Circle, Sopore, for favour of information pl
2. Divisional Forests Officer, JV Division Baramulla, for favour of information pl.

पंजीकृत कार्यालय: एनएचपीसी लिमिटेड, एनएचपीसी कार्यालय परिसर, सेक्टर 33-, फरीदाबाद, हरियाणा 121003-
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|  |  |  | <p>एनएचपीसी लिमिटेड (भारत सरकार का उद्यम) NHPCL Ltd. (A Govt. of India Enterprise) उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.) Uri Power Station, Gingle, Baramulla (UT of J&K) Phone: 01956-253211</p> |
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No. NH/UPS/GM-61/FC/2024/70

Dated: 03.08.2024

Addl. Pr. Chief Conservator of Forests cum Nodal Officer (FCA),
Government of J&K,
Forest Resource Management Centre,
Narwal, Jammu - 180 006.
e-mail: ccfcjnk1@gmail.com

Sub: Forest Clearance Proposal No. FP/JK/HYD/144277/2021 for diversion of 17-hectare forest land for Uri-I Stage-II HE Project (240MW) of NHPCL Ltd - Reg

Sir,

In continuation to this office letter No. NH/UPS/GM-61/FC/2024/21 dated 28.05.2024, wherein NHPCL requested to exempt the condition for compliance of Cumulative Impact Assessment (CIA) & Carrying Capacity (CC) study for the Jhelum river basin for accord of Forest Clearance (FC) Stage-I of Uri- I Stage II HE Project so as to avoid the delay in the execution of strategically important project, the following is again reiterated.

It is to mention here that the Forest Clearance proposal bearing No. **FP/JK/HYD/144277/2021** was recommended by the State Govt. on 13.10.2023 and MoEF&CC Chandigarh Sub office Jammu has recommended the case for FC Stage-I on dated 25.01.2024. Ministry of Environment, Forest and Climate Change (MoEF&CC) vide its letter dated 18.05.2024 (copy enclosed) has requested the Govt. of Jammu & Kashmir to submit the information/clarification raised by Advisory Committee in its meeting held on 30.04.2024 for further processing of the above cited proposal. The Advisory Committee in its meeting held on 30.04.2024 decided that the proposal shall be deferred till the State Govt. obtain the Cumulative Impact Study (CIS) and Carrying Capacity Study (CC) report for the Jhelum River Basin, as per para 9.3 of Chapter 9 of the consolidated guidelines issued by MoEF&CC on 29.12.2023. In this regard, following is submitted:

1. MoEF&CC, GoI has issued the consolidated guidelines under Van (Sanrakshan Evam Samvardhan) Adhinyam, 1980 on 29.12.2023 wherein the "Carrying Capacity and Cumulative Impact Assessment Study" of river basin has been made essential under Para 9.3 of Chapter 9. Further, as per Para 9.3 of Chapter 9 of Van Adhinyam, the "Cumulative Impact Assessment Study" and the "Carrying Capacity Study" is required to be undertaken by the 'Project Proponent' and the 'State Government', respectively.
2. While issuing the above guidelines under Van (Sanrakshan Evam Samvardhan) Adhinyam, 1980 on 29.12.2023, MoEF&CC Order further states, "all the provisions enshrined in these guidelines will be applicable from 1st December 2023" (copy enclosed).
3. Further, it has been stated for Carrying Capacity Study under Para 9.3 of Chapter 9 of Van (Sanrakshan Evam Samvardhan) Adhinyam, 1980, "All State Governments will be

पंजीकृत कार्यालय: एनएचपीसी लिमिटेड, एनएचपीसी कार्यालय परिसर, सेक्टर 33-, फरीदाबाद, हरियाणा-121005-
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required to get such studies done for river basins in their State. The process may be initiated in the next 3 months and completed within a period of 2 years, after which the carrying capacity study report would be made a pre-requisite for considering EC/FC cases of projects of any basin. All State Governments will send the details of river basins where such studies are to be done and confirm Initiation of studies to MoEF within 3 months of issuance of this OM".

Cumulative Impact Study: Cumulative Impact study of a basin would reflect the cumulative impact of commissioned/up-coming hydro-power projects in the basin on environmental flow, bio-diversity, muck disposal sites, traffic flow in the region, R&R issues, etc. While, the first project in a basin could come up without insisting on cumulative study for all subsequent hydro-power projects in the basin, it should be incumbent on the developer of the second/other project(s) to incorporate all possible and potential impact of other project(s) in the basin to get a cumulative impact assessment done. This condition shall be stipulated at the ToRs stage itself during the EC process. Once such a cumulative impact study has been done, the same could be shared by Expert Appraisal Committee with AC. The Cumulative impact study in respect of bio-diversity component may be separately got done by one of the specialized institutes. While making recommendation on EC/FC for such projects, the EAC/FAC will take into account the results of such cumulative studies.

It is to mention here that Cumulative Impact Study is not stipulated in the approved ToRs of the Uri-I Stage-II HE Project.

The Project does not involve construction of dam/intake as the said structure is already constructed for the existing Uri Power Station and the same shall be utilized for Uri-I Stage-II HE Project also. Further, the reservoir level will remain same as that of current FRL (at 1491.0m), hence, there shall be no change in submergence area due to the proposed project and there will not be any change in the current natural water course of the river. Also, e-flow is being ensured downstream of the barrage.

There is no requirement of additional non-forest land (Revenue Land) as the said land is already in possession of NHPC, hence, the project shall not involve R&R. Non-Forest land has been kept for Muck disposal purpose and the said plan is a part of EIA/EMP Studies.

With regard to traffic flow, it is to intimate that the project construction activities run parallel to the existing National Highway (Uri - Srinagar) and the same shall be utilised for project construction activities and hence, it is anticipated that the traffic impact due to construction activities shall have minimal effect within the project area.

It is to reiterate that based on the approved Terms of References issued by MoEF&CC dated 10.06.2022, EIA/EMP study (including Bio-diversity Plan) of Uri-I Stage-II HE project has been prepared and submitted in MoEF&CC for accord of Environment Clearance.

4. As per, MoEF&CC OM No. Fc-II/78/2023-Fc-part (1) dated 24.12.2023, Sl. No. (c) "The provisions mentioned in the clause (a) and (b) above, shall apply prospectively for sanctioning of new projects" (copy enclosed).

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5. Further, only 17 ha of additional forest land is required for construction of the proposed Uri-I Stage-II HEP, which is underground in nature and the proposed Project does not involve any R&R implication due its construction.

In this regard, it is pertinent to mention here that the processing of Forest Clearance (FC) proposal for diversion of 17 ha forest land for Uri-I Stage-II was started on 29.07.2021 and resubmitted on 02.11.2021. The FC proposal got finally recommended for approval by the State Govt. to IRO, Jammu on 13.10.2023. Since, the FC proposal for diversion of 17 ha of forest land was initiated and recommended by the State Forest Department prior to the issue of the MoEF&CC's OMs dated 24.12.2023 & 29.12.2023, the deferment of the instant FC proposal till the State Government obtain the "Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum River Basin" as per para 9.3 of chapter 9 of the consolidated guidelines issued by the Ministry on 29.12.2023" may be exempted for compliance.

In view of above, it is again requested to kindly consider the matter and submit the proposal in respect of exemption from the condition under para 9.3 of chapter 9 of the consolidated guidelines issued by the Ministry on 29.12.2023 for consideration by the Advisory Committee of MoEF&CC.

Yours Sincerely,


(Om Prakash)

Gr. General Manager - HOP
Uri-I Stage-II HE Project

Copy to:

1. The Secretary (Forests), Deptt. of Forests, Environment & Wildlife, Government of JK, for information please.

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|  |  |  | <p>एनएचपीसी लिमिटेड (भारत सरकार का उद्यम) NHPC Ltd. (A Govt. of India Enterprise) उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व क.) Uri Power Station, Gingle, Baramulla (UT of J&K) Phone: 01956-253211</p> |
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No. NH/UPS/GM-61/FC/2024/21

Dated 28.05.2024

To,

Addl. Pr. Chief Conservator of Forests cum Nodal Officer (FCA)

Govt. of Jammu & Kashmir

Forest Resource Management Centre,

Narwal, Jammu – 180 006

E-mail: cffcajkl@gmail.com

Sub.: Forest Clearance Proposal no. FP/JK/HYD/144277/2021 for diversion of 17 ha forest land for Uri-I Stage-II HE Project (240 MW) of NHPC Ltd. – regarding.

Sir,

Please refer to the Ministry of Environment, Forest and Climate Change (MoEF&CC) letter's dated 18.05.2024 (copy enclosed) vide which the Govt. of Jammu & Kashmir has been requested to submit the information/clarification raised by Advisory Committee in its meeting held on 30.04.2024 for further processing of the above cited proposal. The Advisory Committee in its meeting held on 30.04.2024 decided that the proposal shall be deferred till the State Govt. obtain the Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum River Basin, as per para 9.3 of Chapter 9 of the consolidated guidelines issued by MoEF&CC on 29.12.2023.

In this context, it is submitted that as per para 9.3 of Chapter 9 of the consolidated guidelines issued by MoEF&CC on 29.12.2023, *"the carrying capacity study of a river basin is important to plan optimal number of power projects in a basin. All State Governments will be required to get such studies done for river basins in their State. The process may be initiated in the next three months and completed within a period of two years, after which the carrying capacity study report would be made a pre-requisite for considering EC/FC cases of projects of any basin. All State Governments will send the details of river basins where such studies are to be done and confirm Initiation of studies to MoEF within 3 months of issuance of this OM"* (copy enclosed). In this context, it is understood that Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum River Basin is yet to be prepared. And if preparation of Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report is taken up at this juncture, approval process of this strategically important Project would get delayed.

It is worth mentioning that as per MoEF&CC OM No. FC-11/78/2023-FC-Part (1) dated 24.12.2023 Sl. No. (c) *"The provisions mentioned in the clause (a) and (b) above, shall apply prospectively for sanctioning of new projects"* (Copy enclosed). **In the instant case, processing of proposal for Uri-I Stage-II was started on 29.07.2021 and resubmitted on 02.11.2021, which was finally recommended for approval by State Government to IRO, Jammu on 13.10.2023.** As such, since the proposal for diversion of 17 ha of forest land was initiated and recommended by State Forest Department prior to the issue of the MoEF&CC OM dated 24.12.2023, the same may be exempted for compliance of carrying capacity condition.

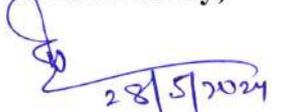
It is also brought out here that the Uri I Stage-II HE Project is an extension of the Uri-I Power Station and shall be utilizing the existing structures like Barrage, de-silting Basin, Intake etc. of Uri

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|  <p>स्वच्छ भारत एक कदम स्वच्छता की ओर</p> |  <p>एनएचपीसी NHPC</p> |  <p>75 Azadi Ka Amrit Mahotsav</p> <p>एनएचपीसी लिमिटेड (भारत सरकार का उद्यम) NHPC Ltd. (A Govt. of India Enterprise) उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व. क.) Uri Power Station, Gingle, Baramulla (UT of J&K) Phone: 01956-253211</p> |
|---|---|---|

Power Station and shall only involve construction of underground structures such as Head Race Tunnel, an underground power house, etc. The land in question i.e. 17 ha of forest land is required for underground works only and there is no R&R implication due to construction of this Project.

In view of above, it is requested to kindly consider the matter and submit the proposal in respect of exemption from the condition under para 9.3 of chapter 9 of the consolidated guidelines issued by the Ministry on 29.12.2023 for consideration by the Advisory Committee of MoEF&CC.

Thanking you,

Yours Sincerely,


(Pradip Kumar Ray)
GM (I/C) & HOP
Uri I Stage II HE Project.

Copy to:

1. The Secretary (Forests), Deptt. of Forests, Environment & Wildlife, Government of JK, for information please.

NOO:

Copy to:

- i) The Executive Director, Environment & Diversity Management Division, NHPC CO, Faridabad, for information please,
- ii) The Executive Director, Regional Office Jammu, Office Complex, Jammu, for information please.
- iii) The Gr. General Manager (C), PID CO NHPC, Faridabad, for information please.



20-05-24

Forwarded to FCA

Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj
New Delhi: 1100 03,
Dated: As per e-Signature

To,

The Secretary (Forests),
Department of Forests, Environment and Wildlife,
Government of Jammu & Kashmir,
Jammu.

Subject: Proposal for seeking prior approval of the Central Government under Section 2 (I) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 in favour of NHPC URI-ISTAGE-II, Baramula Jammu & Kashmir for non-forestry use of 17.00 ha. of forest land for underground work of URI-I Stage II HE Project, District Baramula UT of Jammu & Kashmir (Online Proposal No. FP/JK/HYD/144277/2021)- regarding.

Sir,

I am directed to refer to the Government of Jammu & Kashmir's letter No.FP/JK/HYD/144277/2021 dated 13.10.2023 on the above-mentioned subject seeking prior approval of Central Government under Section 2 (1) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. In this regard it is informed that the matter was discussed in the Advisory Committee (AC) in its meeting held on 30.04.2024. The detailed minutes of the said AC meeting are uploaded at parivesh.nic.in. The Committee after detailed discussion and deliberation with the DDGF (Central), RO Chandigarh and after going through the facts of the proposal decided that:-

- NO
FCA
UP
15/05/24
- i. The proposal shall be deferred till the State Government obtain the Cumulative Impact Study (CIS) and Carrying Capacity Study (CCS) report for the Jhelum River Basin, as per para 9.3 of chapter 9 of the consolidated guidelines issued by the Ministry on 29.12.2023.
 - ii. Site Suitability certificate for CA land by the DFO concerned shall be submitted.
 - iii. Comments of Chief Wildlife Warden, Jammu & Kashmir Government for the land proposed for diversion along with conservation measures, if required, may be submitted since there is presence of Black Bear on it, as per Part II of the proposal.

In view of the above, the Government of Jammu & Kashmir is requested to kindly furnish the above information/clarification at the earliest for further processing of the proposal under Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980.

Yours faithfully,

peef/PS/243
05/05/2024

Signed by
Sundar Sambamoorthi
Date: 18-05-2024 21:29:54

Sd-
(S. Sundar)
Assistant Inspector General of Forests

Copy to: -

1. The PCCF & HoFF, Govt. of Jammu & Kashmir, Jammu.
2. The APCCF-cum-Nodal Officer, Govt. of Jammu & Kashmir, Jammu.
3. The DDGF (C), Regional Office, Chandigarh, MoEF&CC.
4. The Monitoring Cell, MoEF&CC, New Delhi.
5. User Agency.

Office Address

Regional Office: Forest Complex, Shlekh Bagh, Phone: 0194-2483937
Chowk, Sgr-190001
Jammu Office: Forest Resource Mgmt. Centre, Phone: 0191-3511909
Jammu-180006



URL Address: www.jkforest.gov.in

E-mail: pccfjkforest@gmail.com



Jammu & Kashmir Forest Department
Office of the Pr. Chief Conservator of Forests & HoFF
Government of Jammu & Kashmir

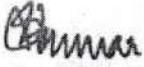


No. PCCF/FCA/ 3386/593-97

Dated 22-05-2024

Copy for information and necessary action to:

1. Pr.CCF/Chief Wildlife Warden J&K Jammu.
2. Addl. Pr.CCF Kashmir
3. Conservator of Forests, North Circle Sopore
4. Divisional Forest Officer, J.V.Forest Division
5. NHPC URI-I Stage-II (cmcurips@gmail.com)


(S.Senthil Kumar) IFS
Addl. Pr. Chief Conservator of Forests
& Nodal Officer (FCA)

By 22/05/24

Government of India
Ministry of Environment, Forests and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan,
Aliganj, Jor Bag Road,
New Delhi - 110003.

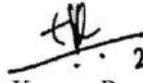
Dated: 29th December, 2023

ORDER

In exercise of the powers conferred under section 3 C of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, the Central Government, in suppression to all previous guidelines, hereby issue a Consolidated Guidelines and Clarifications on Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980, Van (Sanrakshan Evam Samvardhan) Rules, 2023, including the guidelines issued under sub-section (3) of section 1A, clause (iii) of sub-section (1) of section 2 and sub-section (2) of section 2 of the Adhiniyam for effective and transparent implementation of the provisions of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. All the provisions enshrined in these guidelines will be applicable from 1st December, 2023.

This issues with the approval of the competent authority.

Yours faithfully,


29.12.23
(Ramesh Kumar Pandey)
Inspector General of Forest

Distribution to:

1. All concerned
2. Director (Technical), NIC with a request to upload the same on the website of the Ministry

Government of India
Ministry of Environment, Forest and Climate Change
Forest Conservation Division

Indira Paryavaran Bhawan,
Jorbagh Road, New Delhi - 3
Dated: December, 2023

To,

Addl. Chief Secretary (Forests)/Principal Secretary (Forests),
All State Governments/Union territory Administrations

Sub: Processing of the proposals under the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 vis-à-vis Cumulative Impact Assessments Studies to assess the carrying capacities of the River Basin - reg.

Sir,

I am directed to refer to this Ministry's OM No. J-11013/1/2013-IA-I dated 28th May, 2023 streamlining the process of environment clearance and forest clearance cases by the Expert Appraisal Committee (EAC) and Forest Advisory Committee, respectively for Hydropower and River valley projects and to inform that matter has further been deliberated in the Ministry. In this connection, it is to inform that after further examination of the matter in the Ministry, specially with regards grant of prior approval of the Central Government under the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 to small and medium hydel projects proposed in various river basins, the following has been decided by the Central Government:

- a. Carrying Capacity Studies and Cumulative Impact Studies are essential if more than one Hydro-power Project is to be sanctioned in a river basin.
- b. Since grant of approval under the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 is a time taking process, the Forest Conservation Division of the MoEF&CC may consider grant of 'in-principle' approval under the Adhiniyam following due process subject to the conditions that Carrying Capacity Studies(CCS) and Cumulative Impact Assessment Studies(CIS) as per the OM NoJ-11013/1/2013-IA-I dated 28th May,2013 shall be carried out, except for the first Hydro-electric Project in a river basin where such study CCS and CIS need not be carried as mentioned in the aforesaid OM, and based on the outcome of such study the 'final' shall be granted for taking up any hydro-power project in a basin.
- c. The provisions mentioned in the clause (a) and (b) above, shall apply prospectively for sanctioning of new projects.
- d. Detail of available River basin study reports shall be shared by the IA Division of the MoEF&CC with the concerned State Governments.

This issue with the approval of Competent Authority.

Yours Faithfully,

Signed by

Charan Jeet Singh

Date: 27-12-2023 09:26:27

(Charan Jeet Singh)
Scientist 'D'

Copy to:

1. The Principal Secretary/Addl. Secretary, All States/Union Territories,
2. The PCCF, All States/Union Territories
3. The Nodal Officer, O/o PCCF, All States/Union Territories

I/60966/2023

4. Monitoring Cell of FC Division, MoEF&CC, New Delhi.
5. Guard file



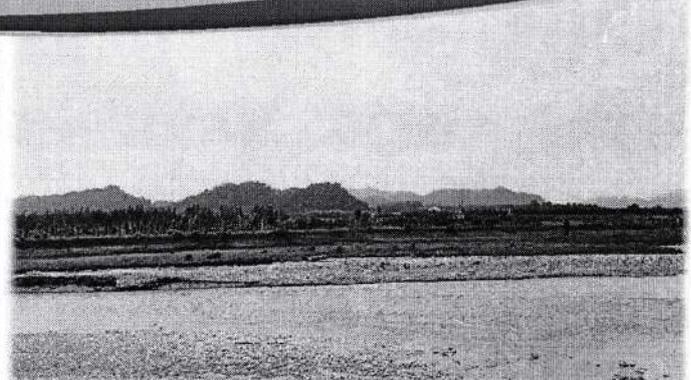
**CONSOLIDATED GUIDELINES AND
CLARIFICATIONS**

issued under

**VAN (SANRAKSHAN EVAM
SAMVARDHAN) ADHINIYAM, 1980**

and

**VAN (SANRAKSHAN EVAM
SAMVARDHAN) RULES, 2023**



**Government of India
Ministry of Environment, Forest and Climate Change**

(iv) The CAT Plan should have a socio-economic component including supply of CNG connections to the project affected families to be implemented through Joint Forest Management Committees (the nomenclature may vary among the States/UTs).

(v) The infrastructure component like construction of buildings, vehicles, salaries of staff etc. may be provided based on a careful analysis of the need for the same with detailed justification and should constitute a very small percentage (say up to 5%) of the total cost of the CAT plan.

(vi) All works and structures created under CAT plan shall be geotagged for monitoring purpose. The KML files for the area treated under CAT Plan shall be uploaded in e-green watch portal.

(vii) CAT plan shall be approved by the Principal CCF & HoFF or any other officer authorized by him for the purpose.

(viii) Regular monitoring is essential for effective implementation of the CAT Plan. The Chief Project Officer of the User Agency must be associated in implementation as well as monitoring of the progress of CAT plan. For this, a committee with following composition may be constituted at State level for quarterly review of progress of implementation of various CAT plans and take immediate steps to ensure the same:

| | | |
|----|--|--------------------|
| 1. | PCCF & HoFF | - Chairman |
| 2. | Secretary (Agriculture) or his representative | - Member |
| 3. | Secretary (Animal Husbandry) or his representative | - Member |
| 4. | Project Officer-User Agency | - Member |
| 5. | Concerned Conservator of Forests | - Member |
| 6. | Nodal Officer (FC) 0/0 PCCF | - Member Secretary |

The Monitoring Committee shall submit an annual report to the concerned Regional Office under whose jurisdiction the project is situated.

9.3 Carrying Capacity and Cumulative Impact Assessment Study of river basin

(i) **Cumulative Impact Study:** Cumulative Impact study of a basin would reflect the cumulative impact of commissioned/up-coming hydro-power projects in the basin on environmental flow, bio-diversity, muck disposal sites, traffic flow in the region, R&R issues, etc. While, the first project in a basin could come up without insisting on cumulative study for all subsequent hydro-power projects in the basin, it should be incumbent on the developer of the second/other project(s) to incorporate all possible and potential impact of other project(s) in the basin to get a cumulative impact assessment done. This condition shall be stipulated at the ToRs stage itself during the EC process. Once such a cumulative impact study has been done, the same could be shared by Expert Appraisal Committee with AC. The Cumulative impact study in respect of bio-diversity component may be separately got done by one of the specialized institutes. While making recommendation on EC/FC for such projects, the EAC/FAC will take into account the results of such cumulative studies.

(ii) **Carrying Capacity Study:** The carrying capacity study of a river basin is important to plan optimal number of power projects in a basin. All State Governments will be required to get such studies done for river basins in their State. The process may be initiated in the next three months and completed within a period of two years, after which the carrying capacity study report would be made a pre-requisite for considering

EC/FC cases of projects of any basin. All State Governments will send the details of river basins where such studies are to be done and confirm Initiation of studies to MoEF within 3 months of issuance of this OM. The institutes for such studies may be settled by the State Government in consultation with the EAC.

- (iii) Studies, as mentioned under para (i) and (ii) above, shall be a prerequisite for grant of 'in-principle' approval under the Adhinyam and environment clearance under the Environment Impact Assessment Notification, 2006

9.4 Compensatory Afforestation (CA) and Net Present Value (NPV) will be regulated as per the relevant provisions of Van (Sanrakshan Evam Samvardhan) Rules, 2023 and guidelines issued by the Central Government from time to time.

Proposed Project : Uri-I stage II HE Project
Proposal No : FP/JK/HYD/144277/2021

Land Suitability certificate by DFO (Territorial)

This is to certify that 19.30 Ha land bearing Survey No. (Khasra No.)184, 203, 488 of Revenue land (Non Forest land) District Baramulla identified for compensatory is suitable for plantation from management point of view and is free from all sorts of encumbrances and encroachment.


Mr. Pervez Ahmad Wani (DCF)
Divisional Forest Officer
J.V. Forest Division
Baramulla



Boulevard Road, Near Lalit Grand Palace, Srinagar -
190001 Tel/Fax No: 0194-2501069
Manda - Hills (Near Ashoka Hotel) Jammu - 180005,
Tele/Fax: 0191-2572570
Website: www.jkwildlife.com
Email: jkwildlife78@gmail.com
jkwildlife72@gmail.com

GOVERNMENT OF JAMMU & KASHMIR
OFFICE OF THE PR. CHIEF CONSERVATOR OF FORESTS (WILDLIFE)/
CHIEF WILDLIFE WARDEN

General Manager (I/C)
Uri-Stage-II HE Project.

No: WLP/Tech/2024-25/ 124-36
Dated: 14.05.2024

Subject: Environmental Clearance proposal of Uri-stage-II project (240MW) of J&K-issuance of certificate and letter thereof.

Reference: Your letter No. NH/UPS/GM-61/certificate/2023-24/181 dated 16.03.2024.

Sir,

In reference to the above cited subject. I am directed to convey that based on the spot inspection report received from the subordinate offices the proposed project components fall outside the boundaries of Kazinag National Park, Limber and Lachipora Wildlife Sanctuaries, also outside the notified limits of the Eco-Sensitive Zone around these Wildlife Areas.

Hence for information and may take further necessary action in the matter only after ensuring all the necessary environmental safeguards are put in place including protecting and safeguarding wildlife corridors if any.

Yours faithfully,

(Rashid Yahya Naqash)
Regional Wildlife Warden
(Headquarters)-J&K 14/05

Copy to the:-

1. Regional Wildlife Warden Kashmir for information. This takes reference to his No. RWLW/K/Tech/2024-25/142 dated 06.05.2024.
2. Wildlife Warden, North Division, Sopore. This takes reference to his No. WLW(N)/Estt/2024-25/95-96 dated 27.04.2024.



एनएचपीसी लिमिटेड
(भारत सरकार का उद्यम)
NHPC Limited
(A Govt. of India Enterprise)



Uri 1 Power Station,
Gingle, Baramulla (J&K)
Phone: 01956-253211
CIN No.: L4010HR1975GOI032564

NH/UPS/GM – 61/2022-23/ 322

Dated: 30.03.2023

Wildlife Warden,
Sopore, Baramulla.

Sub: Bio-diversity Conservation and Wildlife Management Plan of Uri I Stage II HE Project — Approval thereof.

Ref: J-12011/08/2021-IA-I (R) dated 10.06.2021

Sir,

Based on the approved Terms of References issued by MoEF &CC dated 10.06.2022, EIA/EMP report of Uri I Stage II HE project is being prepared by consultant M/s RS Environlink Technologies Pvt Limited Gurugram, Haryana. The consultant is a NABL accredited agency. A copy of the registration certificate is enclosed herewith for reference please. It is to mention here that Uri I Stage II does not involve construction of Dam/intake as the said structure is already established for existing Uri Power Station and the same shall be used for Uri I Stage II HE project. Further, the Reservoir level will be the remain same as that of current FRL (at 1491.0m), hence, no new land will be submerged due to the proposed construction of the project. However, as a part of the process of preparation of EIA/EMP report in respect of Uri I Stage II HE project, Bio-diversity Conservation and Wildlife Management Plan amounting to Rs 144 lacs has been worked out by the consultant.

In view of the above, kindly find enclosed herewith the Bio-diversity Conservation and Wildlife Management Plan of Uri I Stage II HE project for accord of approval from Competent Authority, so that necessary action in this regard may be initiated by the project accordingly.

Thanking you,

Yours Sincerely,

(Ashok Kumar)

Gr. Sr Manager (E)

Uri I Stage II HE Project.

Encl: As Above



Department of Wildlife Protection J & K Government
OFFICE OF THE WILDLIFE WARDEN
NORTH DIVISION SOPORE

Email: wlnorth786@gmail.com

✓
Mr. Ashok Kumar (Gr Sr Manager) (E)
Uri Stage II HE project

No:-WLW(N)Acctts/2023-24/946-97
Dated: - 27-02-2024

Subject:- Bio-diversity Coservation and Wildlife Managemet plan of Uri I stage II HE project-Approval thereof.

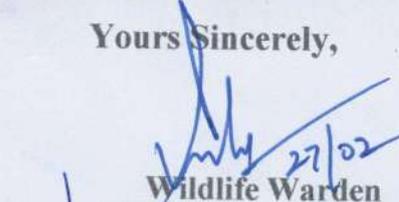
Reference:-your office letter no:-NH/UPS/GM-61/2022-23/322 Dated:-30-03-2023

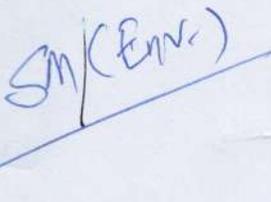
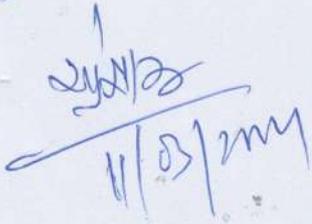
Sir,

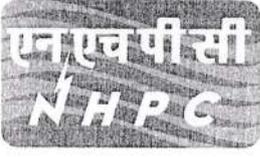
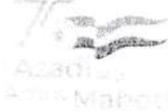
With reference to the aforesaid communication on the subject, it is to convey that the Regional Wildlife Warden Kashmir Srinagar has desired that before the plan is submitted to the competent authority for approval, a meeting to discuss various perimeters envisaged in the proposed plan maybe held with this Department.

You are as such requested to propose/nominate representatives from your side and communicate a convenient date for the said meeting.

Yours Sincerely,


27/02
Wildlife Warden
North Kashmir Division
Sopore



Copy submitted to the Regionl Wildlife Warden Kashmir Region, Srinagar, this has reference to his office letter no:-RWLW/K/Tech/2023-24/174 Dated:-10-05-2023

| | | | |
|---|---|---|---|
|  |  |  | <p>एनएचपीसी लिमिटेड (भारत सरकार का उद्यम) NHPC Ltd. (A Govt. of India Enterprise) उड़ी पावर स्टेशन, गिंगल, बारामुल्ला (ज. व.क.) Uri Power Station, Gingle, Baramulla (UT of J&K) Phone: 01956-253211</p> |
|---|---|---|---|

No. NH/UPS/GM-61/WL/2023-24/ 17

Dated: -15-/03/2024

Wildlife Warden,
North Kashmir Division,
Sopore (UT of J&K)

Sub: Bio-diversity conservation and Wildlife Management Plan of Uri-I Stage-II HE Project – Approval thereof.

Ref: 1. NH/UPS/GM-61/2022-23/322 dated 30.03.2023.
2. WLW(N)Acctts/2023-24/946-97 dated 27.02.2024.

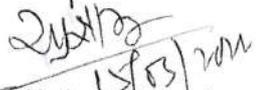
Sir,

With reference to above, this is to inform that 'Sh Naseer S Bhat, Sr. Manager (Env.), Mob. No. 9797127493' has been nominated to discuss the various parameters envisaged in the proposed 'Bio-diversity conservation and Wildlife Management Plan of Uri-I Stage-II HE Project' submitted by this office for accord of approval from the Competent Authority.

With regard to the date for the said meeting, it is to convey that 16.03.2024 or any other near date convenient to your office; may be considered.

Thanking you,

Yours Sincerely,


(Ashok Kumar)

Group Sr. Manager (E)
Uri-I Stage-II HE Project

Biodiversity Conservation and Wildlife Management Plan and Conservation Plan for Schedule-I species



Prepared for:

**URI-I STAGE-II HYDRO ELECTRIC PROJECT
District: Baramulla, Jammu & Kashmir
NHPC. Ltd.**

Prepared by:

R. S. Envirolink Technologies Pvt. Ltd.

403, Bestech Chamber Commercial Plaza,

B-Block, Sushant Lok-I, Gurugram

Phone: +91-124-4295383: www.rstechnologies.co.in

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|---|--|

1. INTRODUCTION

Uri-I Stage-II Hydro Electric Project is expansion of Uri-I Power Station (Uri-I Stage-I/ Uri-I Project), proposed to be developed on Jhelum River to harness the surplus water of Uri-I Power Station. The Uri-I Project was allotted to M/s NHPC Ltd. Uri-I Power Station was commissioned in the year 1997. The existing structures like 21.5m high barrage (from deepest foundation level), desilting basin, the surface water conveyance system consisting of Head regulator upto HRT intake of Uri-I Project shall be utilized for Uri-I Stage-II HEP. The construction of underground structures like 10.4 km long HRT, surge shaft, pressure shaft, an underground powerhouse complex and 2.28 km long TRT are proposed for Uri-I Stage -II Project.

1.1 PROPOSE OF REPORT

The proposed project does not fall in any protected areas like Wildlife Sanctuary/ National Parks etc. However, in reference to additional conditions of Terms of Reference (ToR) issued by Ministry of Environment, Forest, and Climate Change (MoEF&CC) via letter No. F. No. J-12011/08/2021-IA-I, dated 10th June 2021 (**Annexure-I of EIA Report**), directed to prepare Biodiversity Conservation Plan and Conservation Plan for the Scheduled I species reported from the study area and submit to State Forest Department for approval and implementation. In pursuant to the condition of ToR, The Biodiversity Management and Wildlife Conservation Plan along with conservation Measures of Schedule-I species is prepared. It is Pertinent to mention that none of the Schedule-I species were reported in the primary survey during EIA/EMP studies.

1.2 PROJECT LOCATION

The project is located on Jhelum River, in Uri tehsil of Baramulla district in Union Territory of Jammu & Kashmir. The barrage site is about 2 km from Boniyar (block headquarter) and about 30 km from Uri town (tehsil headquarter). The district headquarter at Baramulla is about 28 km from barrage site.

The nearest railheads are the railway stations Udampur. Udampur Railway Station. The distance from Udampur to the project site is about 265 km. The nearest airport at Srinagar is about 88 km (refer **Figure 1**).

1.3 PROJECT DESCRIPTION

The proposed Uri-I Stage-II HEP is planned as per provision kept in the DPR of Uri-I Power Station. Thus, the already exist structure like barrage, the surface water conveyance system consisting of Head regulator upto intake of Uri-I Power Station shall be utilized for Uri-I stage-II HEP.

Therefore, the proposed Uri-I Stage-II HEP envisaged the construction new Head Race Tunnel (HRT), Surge Shaft, Pressure Shaft, an underground Powerhouse complex and Tail Race Tunnel (TRT). The salient features and Layout map and Index map of proposed Uri-I Stage-II HEP are given in **Figure 2**.

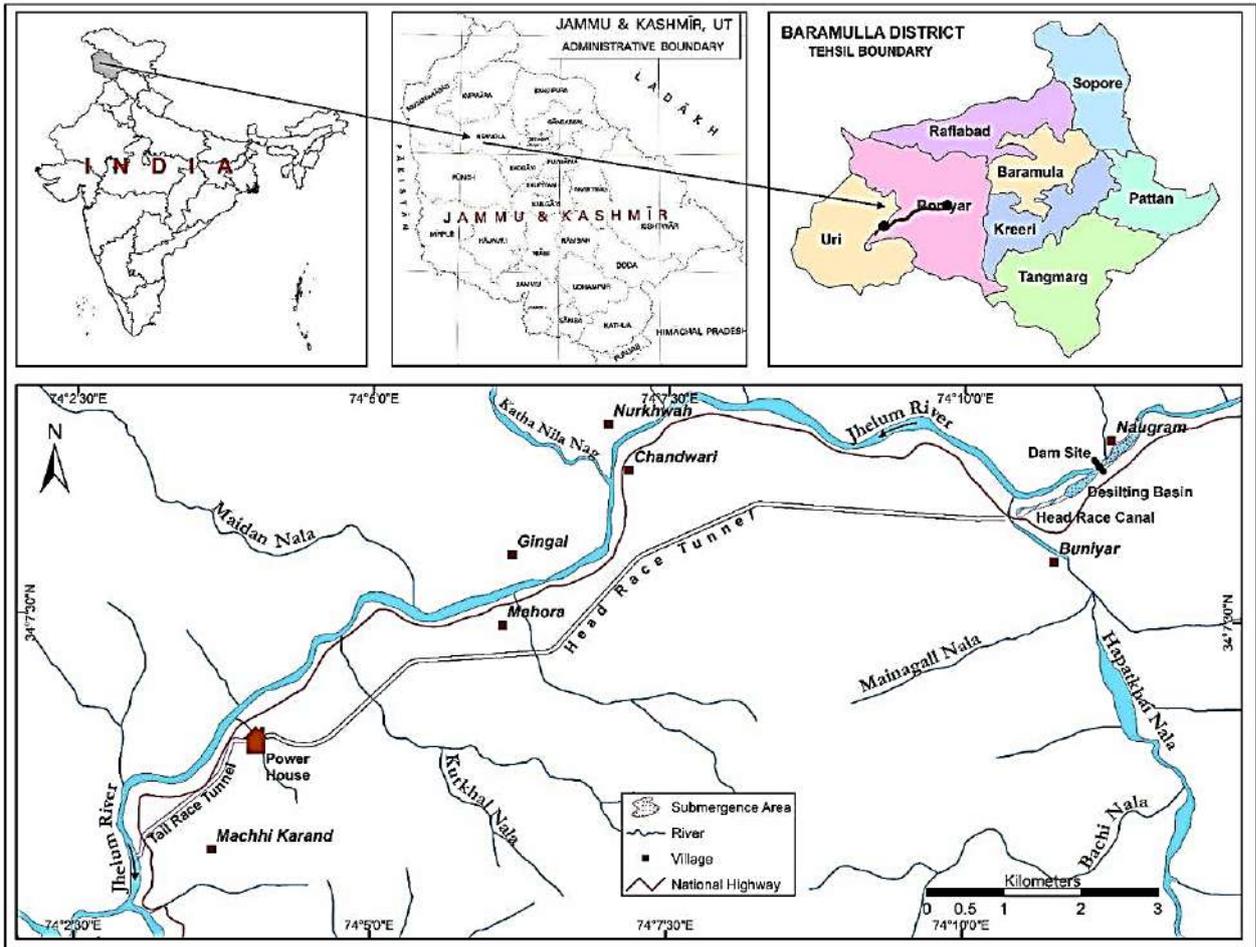


Figure 1: Location Map showing location of Uri-I Stage-II HEP

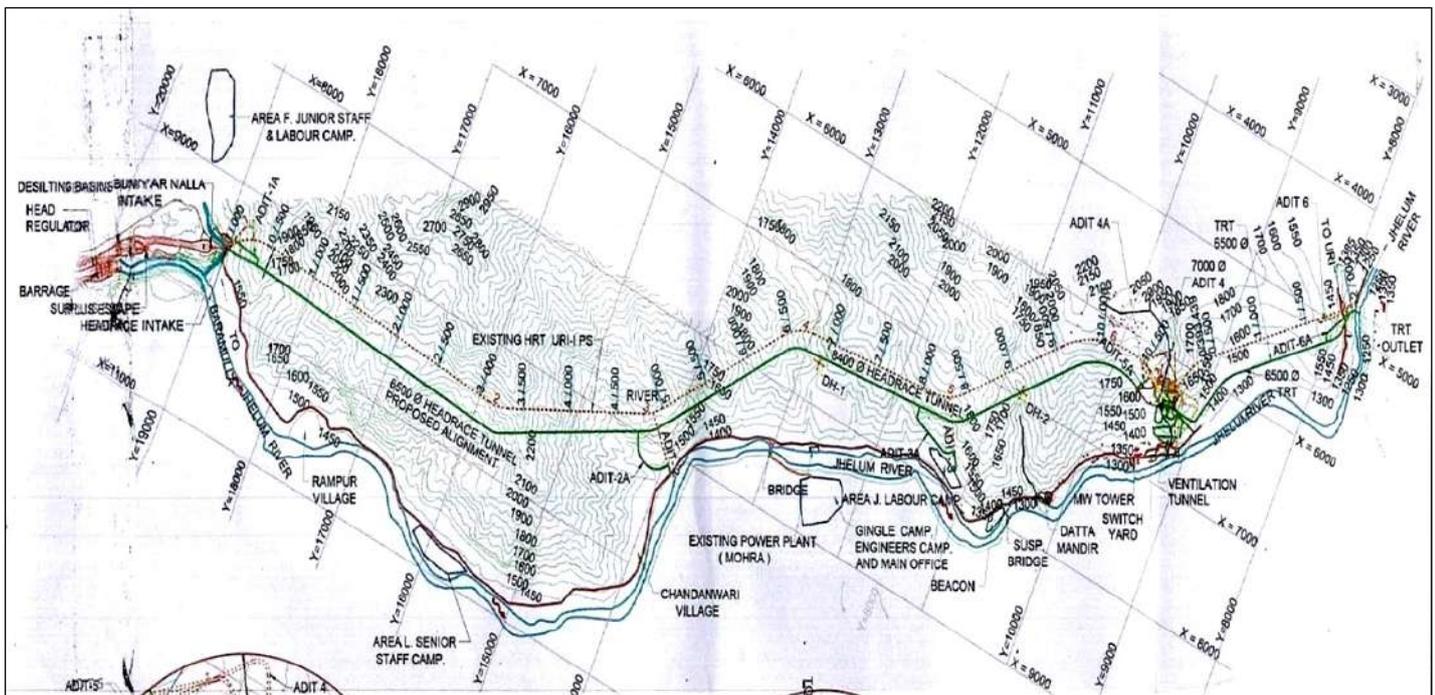


Figure 2: Layout Map of Uri-I Stage II HEP

Following are the major project components of existing project

- Uri-I Power Station Barrage 95m long and 21.5m high from its deepest foundation level. The full supply water level upstream of the barrage is EL 1491.00m and barrage top is at EL 1495.50m. Spillway consisting of 6 bays and 3 no. under sluice bays.
- A fish way is provided between bay no. 6 and bay no. 7. It is about 150m long with the inlet at EL 1489.0 and the outlet at EL 1475.50.
- Head regulator of 34m length, Headrace canal of about 470m length and 12m width, intake forebay at the downstream end of the canal of 195m, a siphon type surplus escape at a water level of EL 1491.30 and Boniyar Nalla Intake, culvert and tunnel intake of total length about 250.0m.

Proposed structures (Uri-I Stage-II H.E. Project)

- Horseshoe shape HRT of 10.4 km length and 6.50 m diameter in left bank and parallel in valley side to existing HRT.
- 1 no. 5m dia. steel lined pressure tunnels/shafts and 2 no. 3.35m dia. steel lined pressure tunnel for auxiliary units.
- Underground powerhouse cavern housing 2 no, units of 120 MW each.
- Transformer cavern located d/s of powerhouse cavern.
- Draft tube gate operation cavern further d/s of Transformer Cavern 1 no. main TRT of size 6.5m horseshoe shape having tailrace surge galleries
- To facilitate the construction and operation of the project components, suitable adits and access tunnels have been proposed.
- A 6.5 dia. 2.25 km long horseshoe shaped TRT of Stage-II is aligned on valley side and running parallel to the existing stage-I TRT. The TRT is located on the left bank of Jhelum River with TRT out fall near Bandi Village.

1.4 Description of Flora and Fauna of the Project Area

1.4.1 Forest Types in the Study Area

The project area falls in Jhelum Valley Forest Division of Jammu and Kashmir Forest Department. A large part of the vegetation is comprised of conifer forests especially in the surrounding of proposed project components. These forests in the study area can be classified following the 'A Revised Survey of the Forest Types of India' by Champion and Seth (1968) fall under **Group 12-Himalayan Moist Temperate Forest and Group 13-Dry Temperate Forest**. Further, forest in the area can categories under following four sub-group:

12/C1/f: Low-level Blue Pine Forest

This type of forest is distributed within an altitude of 1700 to 2300 m on relatively drier but easy slopes as well as fresh alluvium, the Karewa formations and degenerated sites. These forests are dominated by *Pinus wallichiana* and its colonisation in the recent and exposed sites is common feature. These forests are seral in nature and are distributed over the gentle to moderately steep slopes. The associated plant species are *Juglans regia*, *Aesculus indica*, *Fraxinus excelsior*, *Parrotiopsis jacquemontiana*, *Viburnum grandiflorum*, *Cotoneaster bacillaris*, *Indigofera heterantha*, *Berberis lycium*, *Plantago spp*, *Rubus spp*, etc.

13/C2b: Dry Deodar Forest

This type of forest extends from 1600 to 2100 meters elevation, generally as pure crop. However, *Pinus wallichiana* is also mixed occasionally, particularly towards upper limits and on ill drained sites. Other most common associated plant species are *Juglans regia*, *Aesculus indica*, *Ulmus wallichiana*, *Fraxinus excelsior*, *Parrotiopsis jacquemontiana*, *Viburnum grandiflorum*, *Cotoneaster bacillaris*, *Indigofera heterantha*, *Berberis lycium*, *Taraxicum spp.*, *Viola odorata*, *Fragaria nubicola*, etc.

12/Ce: Moist Temperate Deciduous Forest

This type of forest is distributed within an altitude of 1800-2750 meters in moist hollows and depressions often as strips along the hill streams and many of gentler slopes. These forests are comprised of the conifer species like *Pinus wallichiana*, *Abies pindrow* and the floor of valley carries broadleaved forest including *Ulmus villosa*, *Celtis australis*, *Juglans regia*, *Prunus padus*, *Fraxinus* with *Salix wallichiana* and *Populus ciliata* along the streams.

13/C3: West Himalayan Dry Temperate Deciduous Forest

This forest type is distributed within an altitudinal range of 1800 to 2700 meters and extends well into the dry zone behind the Himalayan axis, with rainfall under 1000 mm. This type is edaphic post climax to the coniferous forest on the slope. The common plant species are *Juglans regia*, *Prunus cornuta*, *Aesculus indica*, *Acer pictum*, *Fraxinus excelsior*, *Salix spp.*, *Populus spp.*, *Parrotiopsis jacquemontiana*, *Viburnum grandiflorum*, *Cotoneaster bacillaris*, *Skimmia spp.*, *Indigofera heterantha*, *Sambucus spp.*, *Rosa spp.*, *Fragaria nubicola*, *Rumex nepalensis*, etc.

1.4.2 Floral Diversity in Study Area

A total of 192 plant species, belonging 67 families, were reported in the study area. A brief description of number of plant species recorded in various taxonomic groups is given in the following paragraphs. Details of plant species recorded during the field surveys within families are given at **Table 1**.

Table 1: Number of species of different plant groups reported from the study area

| S. No. | Habit | No. of Families | No. of Genera | No. of Species |
|----------|----------------------|-----------------|---------------|----------------|
| 1 | Angiosperms | | | |
| | Trees | 15 | 23 | 26 |
| | Shrubs | 21 | 34 | 39 |
| | Herbs | 31 | 84 | 90 |
| | Grasses | 2 | 10 | 13 |
| | Climbers | 6 | 6 | 6 |
| 2 | Gymnosperms | | | |
| | Trees | 2 | 5 | 5 |
| | Shrubs | 2 | 2 | 3 |
| 3 | Pteridophytes | 2 | 3 | 3 |
| 4 | Bryophytes | 2 | 2 | 2 |
| 5 | Lichens | 4 | 5 | 5 |

i. Angiosperms

As per data collected during 3 seasons (monsoon, winter and pre-monsoon) field surveys, an inventory of 174 species of plants belonging to angiosperms was compiled which includes plant species found in forested areas, scrub land, near agricultural fields and settlements, abandoned land, etc. This list includes 26 species of trees, 39 species of shrubs, 90 species of herbaceous plants, 13 species of grasses and 6 species of climbers. Dominant families in the area are Asteraceae (27 species) and Rosaceae (20 species), followed by Poaceae (10 species), Lamiaceae (10 species) and Fabaceae (8 species). List of angiosperms recorded from the area is given in **Table 2**.

Table 2: List of Angiosperms recorded from the study area

| S. No. | Family / Botanical Name | Habit | S. No. | Family / Botanical Name | Habit |
|--------|-----------------------------------|---------|--------|--------------------------------|---------|
| | Acanthaceae | | 37 | <i>Inula racemosa</i> | Herb |
| 1 | <i>Justicia adhatoda</i> | Shrub | 38 | <i>Saussurea costus</i> | Herb |
| 2 | <i>Strobilanthes attenuata</i> | Herb | 39 | <i>Jacobaea analoga</i> | Herb |
| | Aceraceae | | 40 | <i>Sonchus mauritanicus</i> | Herb |
| 3 | <i>Acer caesium</i> | Tree | 41 | <i>Taraxacum officinale</i> | Herb |
| | Adoxaceae | | 42 | <i>Youngia japonica</i> | Herb |
| 4 | <i>Viburnum cotinifolium</i> | Shrub | | Balsaminaceae | |
| 5 | <i>Viburnum grandiflorum</i> | Shrub | 43 | <i>Impatiens edgeworthii</i> | Herb |
| | Amaranthaceae | | 44 | <i>Impatiens glandulifera</i> | Herb |
| 6 | <i>Achyranthes bidentata</i> | Herb | | Berberidaceae | |
| 7 | <i>Axyris hybrida</i> | Herb | 45 | <i>Berberis lycium</i> | Shrub |
| 8 | <i>Chenopodium album</i> | Herb | | Betulaceae | |
| 9 | <i>Gomphrena celosioides</i> | Herb | 46 | <i>Alnus nitida</i> | Tree |
| | Apiaceae | | 47 | <i>Corylus jacquemontii</i> | Tree |
| 10 | <i>Angelica glauca</i> | Herb | | Boraginaceae | |
| 11 | <i>Carum carvi</i> | Herb | 48 | <i>Arnebia benthamii</i> | Herb |
| 12 | <i>Chaerophyllum reflexum</i> | Herb | 49 | <i>Cynoglossum zeylanicum</i> | Herb |
| 13 | <i>Heracleum lanatum</i> | Herb | | Brassicaceae | |
| | Araliaceae | | 50 | <i>Arabidopsis thaliana</i> | Herb |
| 14 | <i>Hedera nepalensis</i> | Climber | 51 | <i>Capsella bursa-pastoris</i> | Herb |
| | Asclepiadaceae | | 52 | <i>Rorippa indica</i> | Herb |
| 15 | <i>Vincetoxicum hirundinaria</i> | Herb | | Cannabaceae | |
| | Asteraceae | | 53 | <i>Celtis australis</i> | Tree |
| 16 | <i>Ageratina adenophora</i> | Shrub | 54 | <i>Cannabis sativa</i> | Herb |
| 17 | <i>Artemisia nilagirica</i> | Shrub | | Caprifoliaceae | |
| 18 | <i>Achillea millefolium</i> | Herb | 55 | <i>Lonicera angustifolia</i> | Shrub |
| 19 | <i>Ainsliaea aptera</i> | Herb | 56 | <i>Sambucus wightiana</i> | Shrub |
| 20 | <i>Anaphalis contorta</i> | Herb | 57 | <i>Valeriana jatamansi</i> | Herb |
| 21 | <i>Anthemis cotula</i> | Herb | | Caryophyllaceae | |
| 22 | <i>Artemisia filifolia</i> | Herb | 58 | <i>Arenaria serpyllifolia</i> | Herb |
| 23 | <i>Aster thomsonii</i> | Herb | 59 | <i>Stellaria monosperma</i> | Herb |
| 24 | <i>Bidens pilosa</i> | Herb | | Celastraceae | |
| 25 | <i>Carduus edelbergii</i> | Herb | 60 | <i>Euonymus lucidus</i> | Tree |
| 26 | <i>Centaurea iberica</i> | Herb | | Convolvulaceae | |
| 27 | <i>Cichorium intybus</i> | Herb | 61 | <i>Cuscuta reflexa</i> | Herb |
| 28 | <i>Cirsium wallichii</i> | Herb | | Cyperaceae | |
| 29 | <i>Conyza aegyptiaca</i> | Herb | 62 | <i>Carex infusata</i> | Grass |
| 30 | <i>Erigeron canadensis</i> | Herb | 63 | <i>Carex obscura</i> | Grass |
| 31 | <i>Cousinia thomsonii</i> | Herb | 64 | <i>Eriophorum comosum</i> | Grass |
| 32 | <i>Dichrocephala integrifolia</i> | Herb | | Dioscoreaceae | |
| 33 | <i>Erigeron bonariensis</i> | Herb | 65 | <i>Dioscorea deltoidea</i> | Climber |
| 34 | <i>Erigeron multiradiatus</i> | Herb | | Elaeagnaceae | |
| 35 | <i>Erigeron trilobus</i> | Herb | 66 | <i>Elaeagnus umbellata</i> | Shrub |
| 36 | <i>Galinsoga parviflora</i> | Herb | | Euphorbiaceae | |

| S. No. | Family / Botanical Name | Habit |
|--------|--------------------------------|-------|
| 67 | <i>Ricinus communis</i> | Shrub |
| 68 | <i>Euphorbia pilosa</i> | Herb |
| | Fabaceae | |
| 69 | <i>Bauhinia variegata</i> | Tree |
| 70 | <i>Robinia pseudoacacia</i> | Tree |
| 71 | <i>Desmodium elegans</i> | Shrub |
| 72 | <i>Indigofera cassioides</i> | Shrub |
| 73 | <i>Spartium junceum</i> | Shrub |
| 74 | <i>Lespedeza cuneata</i> | Herb |
| 75 | <i>Oxytropis humifusa</i> | Herb |
| 76 | <i>Trifolium pratense</i> | Herb |
| | Geraniaceae | |
| 77 | <i>Geranium lucidum</i> | Herb |
| 78 | <i>Geranium nepalense</i> | Herb |
| 79 | <i>Geranium wallichianum</i> | Herb |
| | Grossulariaceae | |
| 80 | <i>Ribes glaciale</i> | Shrub |
| | Hippocastanaceae | |
| 81 | <i>Aesculus indica</i> | Tree |
| | Hydrangeaceae | |
| 82 | <i>Deutzia staminea</i> | Shrub |
| | Hypericaceae | |
| 83 | <i>Hypericum oblongifolium</i> | Shrub |
| | Iridaceae | |
| 84 | <i>Iris kashmiriana</i> | Herb |
| | Juglandaceae | |
| 85 | <i>Juglans regia</i> | Tree |
| | Lamiaceae | |
| 86 | <i>Caryopteris odorata</i> | Shrub |
| 87 | <i>Isodon rugosus</i> | Shrub |
| 88 | <i>Ajuga bracteosa</i> | Herb |
| 89 | <i>Clinopodium umbrosum</i> | Herb |
| 90 | <i>Elsholtzia ciliata</i> | Herb |
| 91 | <i>Lamium album</i> | Herb |
| 92 | <i>Nepeta laevigata</i> | Herb |
| 93 | <i>Origanum vulgare</i> | Herb |
| 94 | <i>Prunella vulgaris</i> | Herb |
| 95 | <i>Thymus linearis</i> | Herb |
| | Lythraceae | |
| 96 | <i>Punica granatum</i> | Shrub |
| | Malvaceae | |
| 97 | <i>Grewia optiva</i> | Tree |
| 98 | <i>Malva verticillata</i> | Herb |
| | Meliaceae | |
| 99 | <i>Toona ciliata</i> | Tree |
| 100 | <i>Toona sinensis</i> | Tree |
| | Moraceae | |
| 101 | <i>Ficus Palmata</i> | Tree |
| 102 | <i>Morus serrata</i> | Tree |
| | Nitrariaceae | |
| 103 | <i>Peganum harmala</i> | Herb |
| | Oleaceae | |
| 104 | <i>Fraxinus excelsior</i> | Tree |
| 105 | <i>Chrysojasminum humile</i> | Shrub |
| | Oxalidaceae | |
| 106 | <i>Oxalis corniculata</i> | Herb |
| | Papaveraceae | |
| 107 | <i>Argemone mexicana</i> | Herb |
| 108 | <i>Corydalis crassifolia</i> | Herb |

| S. No. | Family / Botanical Name | Habit |
|--------|---------------------------------|---------|
| | Plantaginaceae | |
| 109 | <i>Digitalis purpurea</i> | Herb |
| 110 | <i>Lindenbergia grandiflora</i> | Herb |
| 111 | <i>Plantago lacustris</i> | Herb |
| 112 | <i>Plantago major</i> | Herb |
| | Platanaceae | |
| 113 | <i>Platanus orientalis</i> | Tree |
| | Poaceae | |
| 114 | <i>Agrostis pilosula</i> | Grass |
| 115 | <i>Apluda mutica</i> | Grass |
| 116 | <i>Aristida depressa</i> | Grass |
| 117 | <i>Arundo donax</i> | Grass |
| 118 | <i>Chrysopogon fulvus</i> | Grass |
| 119 | <i>Eragrostis pilosa</i> | Grass |
| 120 | <i>Festuca kashmiriana</i> | Grass |
| 121 | <i>Poa annua</i> | Grass |
| 122 | <i>Poa himalayana</i> | Grass |
| 123 | <i>Poa stapfiana</i> | Grass |
| | Polygonaceae | |
| 124 | <i>Polygonum molle</i> | Herb |
| 125 | <i>Fagopyrum acutatum</i> | Herb |
| 126 | <i>Oxyria digyna</i> | Herb |
| 127 | <i>Persicaria nepalensis</i> | Herb |
| 128 | <i>Rumex hastatus</i> | Herb |
| 129 | <i>Rumex nepalensis</i> | Herb |
| | Primulaceae | |
| 130 | <i>Myrsine africana</i> | Shrub |
| 131 | <i>Primula denticulata</i> | Herb |
| | Ranunculaceae | |
| 132 | <i>Caltha palustris</i> | Herb |
| 133 | <i>Delphinium denudatum</i> | Herb |
| 134 | <i>Ranunculus arvensis</i> | Herb |
| 135 | <i>Thalictrum elegans</i> | Herb |
| 136 | <i>Clematis montana</i> | Climber |
| | Rhamnaceae | |
| 137 | <i>Rhamnus virgatus</i> | Shrub |
| | Rosaceae | |
| 138 | <i>Malus baccata</i> | Tree |
| 139 | <i>Prunus armeniaca</i> | Tree |
| 140 | <i>Prunus padus</i> | Tree |
| 141 | <i>Pyrus pashia</i> | Tree |
| 142 | <i>Sorbus cuspidata</i> | Tree |
| 143 | <i>Cotoneaster microphyllus</i> | Shrub |
| 144 | <i>Crataegus oxyacantha</i> | Shrub |
| 145 | <i>Prinsepia utilis</i> | Shrub |
| 146 | <i>Pyracantha crenulata</i> | Shrub |
| 147 | <i>Rosa macrophylla</i> | Shrub |
| 148 | <i>Rosa moschata</i> | Shrub |
| 149 | <i>Rosa webbiana</i> | Shrub |
| 150 | <i>Rubus foliosus</i> | Shrub |
| 151 | <i>Rubus macilentus</i> | Shrub |
| 152 | <i>Rubus niveus</i> | Shrub |
| 153 | <i>Sorbaria tomentosa</i> | Shrub |
| 154 | <i>Spiraea canescens</i> | Shrub |
| 155 | <i>Potentilla indica</i> | Herb |
| 156 | <i>Fragaria vesca</i> | Herb |
| 157 | <i>Rosa brunonii</i> | Climber |
| | Rubiaceae | |
| 158 | <i>Leptodermis lanceolata</i> | Shrub |

| S. No. | Family / Botanical Name | Habit |
|--------|-----------------------------------|---------|
| 159 | <i>Rubia cordifolia</i> | Climber |
| | Rutaceae | |
| 160 | <i>Skimmia laureola</i> | Shrub |
| | Salicaceae | |
| 161 | <i>Populus ciliata</i> | Tree |
| 162 | <i>Salix alba</i> | Tree |
| 163 | <i>Salix tetrasperma</i> | Tree |
| | Saxifragaceae | |
| 164 | <i>Bergenia ciliata</i> | Herb |
| 165 | <i>Saxifraga saginoides</i> | Herb |
| | Scrophulariaceae | |
| 166 | <i>Buddleja asiatica</i> | Shrub |
| 167 | <i>Verbascum thapsus</i> | Herb |
| | Simaroubaceae | |
| 168 | <i>Ailanthus excelsa</i> | Tree |
| | Ulmaceae | |
| 169 | <i>Ulmus wallichiana</i> | Tree |
| | Urticaceae | |
| 170 | <i>Boehmeria macrophylla</i> | Shrub |
| 171 | <i>Girardinia diversifolia</i> | Shrub |
| 172 | <i>Pouzolzia zeylanica</i> | Herb |
| 173 | <i>Urtica dioica</i> | Herb |
| | Vitaceae | |
| 174 | <i>Parthenocissus semicordata</i> | Climber |

ii. Gymnosperms

Gymnosperms in the area are represented by 8 species belonging to 3 families and 7 genera. A list of gymnosperms recorded from the study area is given in **Table 3**.

Table 3: List of Gymnosperms recorded from the study area

| S. No. | Family | Scientific Name |
|--------|--------------|-------------------------------|
| 1 | Cupressaceae | <i>Cupressus sempervirens</i> |
| 2 | Cupressaceae | <i>Juniperus communis</i> |
| 3 | Ephedraceae | <i>Ephedra vulgaris</i> |
| 4 | Ephedraceae | <i>Ephedra gerardiana</i> |
| 5 | Pinaceae | <i>Abies pindrow</i> |
| 6 | Pinaceae | <i>Cedrus deodara</i> |
| 7 | Pinaceae | <i>Picea smithiana</i> |
| 8 | Pinaceae | <i>Pinus wallichiana</i> |

iii. Lower Plants (Pteridophytes and Bryophytes)

In the study area presence of pteridophytes and bryophytes was observed along the streams and moist and wet places. The Pteridophyte group is represented by 3 species belonging to 3 genera and 2 families. *Athyrium foliolosum*, *Pteris cretica* and *Pteridium aquilinum* are dominant pteridophyte species in the area. Bryophytes in the study area are represented by 2 species belonging to 2 families. *Funaria hygrometrica* and *Marchantia paleacea* are commonly found bryophytes in the study area. The list of Pteridophytes and Bryophytes recorded from the study area are list below in **Table 4**.

Table 4: List of lower plants recorded from the study area

| S. No. | Family | Name of Species |
|----------------------|----------------|-----------------------------|
| Pteridophytes | | |
| 1 | Athyriaceae | <i>Athyrium foliolosum</i> |
| 2 | Pteridaceae | <i>Pteris cretica</i> |
| 3 | Pteridaceae | <i>Pteris aquilinum</i> |
| Bryophytes | | |
| 1 | Funariaceae | <i>Funaria hygrometrica</i> |
| 2 | Marchantiaceae | <i>Marchantia paleacea</i> |

iv. Lichens

During field survey four genus of Liches were recorded from the study area. List of Lichen recorded are given below in **Table 5**.

Table 5: List of lichens recorded from the study area

| S. No. | Family | Scientific Name |
|--------|-----------------|--------------------------|
| 1 | Physciaceae | <i>Anaptychia sp.</i> |
| 2 | Cladoniaceae | <i>Cladonia sp.</i> |
| 3 | Parmeliaceae | <i>Flavoparmelia sp.</i> |
| 4 | Parmeliaceae | <i>Usnea sp.</i> |
| 5 | Teloschistaceae | <i>Xanthoria sp.</i> |

1.4.2.1 Rare, Endangered, and Threatened Plant Species

The conservation status (Rare, Endangered, and Threatened) of all 192 species of plants reported from the study area was assessed by consulting Red Data Book of Indian Plants and IUCN Red List of Threatened Species Version 2022-2.

As per the Red Data Book of Indian Plants published by Botanical Survey of India, *Acer caesium*, *Dioscorea deltoidea* and *Inula racemose* are listed as Vulnerable (VU) species, while *Saussurea costus* is listed as Endangered (EN) species.

Out of 192 plant species reported from the study area, only 66 species were evaluated by IUCN ver. 2022-2. As per the IUCN Red List of Threatened Species 2022-2, *Saussurea costus* was listed under Critically Endangered (CR), *Angelica glauca* under Endangered (EN), *Ephedra gerardiana*, *Marchantia paleacea* and *Ulmus wallichiana* under Vulnerable (VU), *Sonchus mauritanicus* and *Fraxinus excelsior* were listed under Near Threatened (NT) category. The rest of the species evaluated are either Least Concern (LC) or Data Deficient (DD) category.

1.4.3 Faunal Elements

The fauna of the study area has been compiled with the help of sighting during field surveys, supplemented with secondary sources and information provided by local people during a field survey in the study area. For the preparation of a checklist of fauna in the study area, the Forest Working Plan of Jhelum Valley Forest Division and ZSI Publication were consulted.

1.4.3.1 Mammals

a. Presence of Mammals based upon Field Surveys

During field surveys only Rhesus macaque (*Macaca mulatta*) and Small Indian Mongoose (*Herpestes auropunctatus*) are the species sighted in the study area. Besides these, no other wild animal was sighted during field investigation. A list of mammals commonly reported in the area is listed in **Table 3.42**.

b. Data on mammals based upon secondary Data

The data on mammals reported from the study area was compiled from the Forest Working Plan (implanting years 2020-21 to 2030-31) of the Jhelum Valley Forest Division after consultation with forest officials and villagers. Forest officials mention the presence of Common Leopard (*Panthera pardus*), Common Langur (*Semnopithecus entellus*), Himalayan Goral (*Naemorhedus goral*) and Asiatic black bear (*Ursus thibetanus*) in the proposed study area lies under Jhelum Valley Forest Division and same was confirmed by villagers in the study area. However, no direct or indirect evidence could be recorded during the field survey about their presence in and around the project area.

Based on primary data collected during field survey and supplemented with secondary data, a list of 23 species of mammals with their conservation status reportedly found in the study area was compiled and the same is given in **Table 6**.

Table 6: List of Mammalian species reportedly found in the study area

| S. No. | Family/Scientific name | Common name | Conservation status | |
|-------------------------------|---------------------------------|--------------------------------------|---------------------|----------|
| | | | IUCN 2022-2 | WPA 1972 |
| ORDER: CETARTIODACTYLA | | | | |
| | Family - Cervidae | | | |
| 1 | <i>Muntiacus muntjak</i> | Barking Deer | LC | III |
| 2 | <i>Naemorhedus goral</i> | Himalayan Goral | NT | III |
| | Family - Moschidae | | | |
| 3 | <i>Moschus leucogaster</i> | Himalayan Musk Deer | EN | I |
| | Family - Suidae | | | |
| 4 | <i>Sus scrofa</i> | Wild Boar | LC | III |
| ORDER: CARNIVORA | | | | |
| | Family - Felidae | | | |
| 5 | <i>Panthera pardus</i> | Leopard | VU | I |
| 6 | <i>Prionailurus bengalensis</i> | Leopard Cat | LC | I |
| 7 | <i>Felis chaus</i> | Jungle Cat | LC | II |
| | Family - Herpestidae | | | |
| 8 | <i>Herpestes edwardsii</i> | Grey mongoose | LC | II |
| 9 | <i>Herpestes auropunctatus</i> | Small Indian mongoose | LC | II |
| | Family - Canidae | | | |
| 10 | <i>Canis aureus</i> | Golden Jackal | LC | II |
| 11 | <i>Vulpes vulpes</i> | Red Fox | LC | II |
| 12 | <i>Vulpes bengalensis</i> | Bengal Fox | LC | II |
| 13 | <i>Cuon alpinus</i> | Wild Dog | EN | II |
| | Family - Ursidae | | | |
| 14 | <i>Ursus thibetanus</i> | Asiatic Black Bear | VU | II |
| | Family - Mustelidae | | | |
| 15 | <i>Mustela sibirica</i> | Himalayan Weasel | LC | II |
| 16 | <i>Lutra lutra</i> | Common Otter | NT | II |
| ORDER: PRIMATES | | | | |
| | Family - Cercopithecidae | | | |
| 17 | <i>Macaca mulatta</i> | Rhesus Macaque | LC | II |
| 18 | <i>Semnopithecus entellus</i> | Common Langur | LC | II |
| ORDER: RODENTIA | | | | |
| | Family - Hystricidae | | | |
| 19 | <i>Hystrix indica</i> | Indian Crested Porcupine | LC | IV |
| | Family - Muridae | | | |
| 20 | <i>Mus booduga</i> | Little Indian Field Mouse | LC | V |
| | Family - Sciuridae | | | |
| 21 | <i>Funambulus pennantii</i> | Himalayan five-striped Palm Squirrel | LC | IV |
| 22 | <i>Petaurista petaurista</i> | Red Giant Flying Squirrel | LC | |

IUCN- International Union for Conservation of Nature; VU – Vulnerable; EN: Endangered; NT- Near Threatened; LC - Least Concern; WPA – Wildlife (Protection) Act, 1972

1.4.3.2 Avifauna

As time constraint and accessibility plays an important role in conducting the survey, birds were sampled on the same transect and trails marked for mammals. Sampling was carried out on a fixed width trails of 2 km wherever the terrain permits.

During the field survey, a total number of 25 bird species were sighted during the field survey. A large portion of avifauna species is comprised of resident birds in the project study area. Himalayan Bulbul, Red-vented Bulbul, Russet Sparrow, Black Drongo, Black Kite, Water Redstart, Slaty-headed Parakeet and Long-tailed Shrike were the most frequently sighted bird species in the study area.

Based on the sighted birds during the field survey, an inventory of avifauna was prepared which is enlisted in **Table 7**.

Table 7: List of avifauna recorded from the study area with their conservation status

| S. No. | Family | Common Name | Scientific Name | Conservation Status | | Residential Status |
|-------------------------------|---------------|-----------------------------|----------------------------------|---------------------|----------|--------------------|
| | | | | IUCN 2022-2 | WPA 1972 | |
| ORDER: BUCEROTIFORMES | | | | | | |
| 1 | Upupidae | Common Hoopoe | <i>Upupa epops</i> | LC | IV | SV |
| ORDER: ACCIPITRIFORMES | | | | | | |
| 2 | Accipitridae | Black Kite | <i>Milvus migrans</i> | LC | IV | RR |
| 3 | Accipitridea | Crested-serpent eagle | <i>Spilornis cheela</i> | LC | | RR |
| ORDER: COLUMBIFORMES | | | | | | |
| 4 | Columbidae | Spotted Dove | <i>Spilopelia chinensis</i> | LC | IV | RR |
| 5 | Columbidae | Rock Dove | <i>Columba livia</i> | LC | IV | RR |
| ORDER: PASSERIFORMES | | | | | | |
| 6 | Motacillidae | White Wagtail | <i>Motacilla alba</i> | LC | IV | WV |
| 7 | Motacillidae | Grey wagtail | <i>Motacilla cinerea</i> | LC | IV | SV |
| 8 | Leiotrichidae | Jungle Babbler | <i>Argya striata</i> | LC | IV | RR |
| 9 | Passeridae | Russet Sparrow | <i>Passer cinnamomeus</i> | LC | IV | RR |
| 10 | Passeridae | House Sparrow | <i>Passer domesticus</i> | LC | IV | SV |
| 11 | Laniidae | Long-tailed Shrike | <i>Lanius schach</i> | LC | IV | SV |
| 12 | Muscicapidae | White Capped water Redstart | <i>Phoenicurus leucocephalus</i> | LC | IV | SV |
| 13 | Muscicapidae | Plumbeous water Redstart | <i>Phoenicurus fuliginosus</i> | LC | IV | RR |
| 14 | Dicruridae | Black Drongo | <i>Dicrurus macrocercus</i> | LC | IV | RR |
| 15 | Pycnonotidae | Red-vented bulbul | <i>Pycnonotus cafer</i> | LC | IV | RR |
| 16 | Pycnonotidae | Himalayan Bulbul | <i>Pycnonotus leucogenys</i> | LC | IV | RR |
| 17 | Sturnidae | Common Myna | <i>Acridotheres tristis</i> | LC | IV | RR |
| 18 | Corvidae | Yellow-billed Blue Magpie | <i>Urocissa flavirostris</i> | LC | IV | RR |
| 19 | Monarchidae | Indian Paradise-flycatcher | <i>Terpsiphone paradisi</i> | LC | IV | SV |
| 20 | Muscicapidae | Grey Bushchat | <i>Saxicola ferreus</i> | LC | IV | RR |
| 21 | Muscicapidae | Blue Whistling-thrush | <i>Myophonus caeruleus</i> | LC | IV | RR |
| 22 | Corvidae | Eurasian Jackdaw | <i>Corvus monedula</i> | LC | IV | RR |
| 23 | Corvidae | Large-billed crow | <i>Corvus macrorhynchos</i> | LC | IV | RR |
| 24 | Corvidae | House Crow | <i>Corvus splendens</i> | LC | V | RR |
| ORDER: PSITTACIFORMES | | | | | | |
| 25 | Psittacidae | Slaty-headed Parakeet | <i>Himalayapsitta himalayana</i> | LC | IV | RR |

IUCN- International Union for Conservation of Nature; LC - Least Concern; WPA – Wildlife (Protection) Act, 1972.; R: Resident; SV: Summer Visitor; PV: Passage Visitor

FAUNAL SPECIES SIGHTED DURING FIELD SURVEY

| | | |
|---|--|---|
|  |  |  |
| Small Indian Mongoose | Rhesus Macaque | Common Hoopoe |
|  |  |  |
| Slaty-headed Parakeet | Black kite | Crested serpent Eagle |
|  |  |  |
| Spotted Dove | Rock Dove | White wagtail |
|  |  |  |
| Grey wagtail | Jungle Babbler | Russet sparrow |
|  |  |  |
| House Sparrow | Long tailed shrike | White capped Water Redstart |
|  |  |  |
| Plumbeous Water Redstart | Black Drongo | Red Vented Bulbul |

| | | |
|---|--|---|
|  |  |  |
| Himalayan Bulbul | Common Myna | Yellow-Billed blue Magpie |
|  |  |  |
| Indian Paradise-flycatcher | Grey Bushchat | Blue whistling thrush |
|  |  |  |
| Eurasian Jackdaw | Large-billed crow | House Crow |

1.4.3.3 Herpetofauna

The herpetofauna were sampled on the same transect marked for mammals. The sampling also carried along riverbanks and the sampling was repeated during evening time following the time constrained Visual Encounter Rates (VES) method. During the survey, Garden lizard (*Calotes versicolor*), Kashmir Rock Agamid (*Laudakia tuberculata*), and Skinks (*Asymblepharus ladacensis*) were commonly sighted species in the area. Common Rat Snake (*Ptyas mucosa*) and Himalayan Pit Viper (*Gloydius himalayanus*) are also reported in the Working Plan of Jhelum Valley Forest Division.

1.4.3.4 Butterflies

Based on monsoon, winter and pre-monsoon season field survey, an inventory of butterflies was prepared which is enlisted in Table 3.44. The butterflies belong to families Lycaenidae, Nymphalidae and Pieridae family represents maximum species of butterfly in the proposed project area.

Table 8: Butterflies recorded from Study Area

| S. No. | Family | Scientific name | Common name |
|--------|-------------|------------------------------|----------------------|
| 1 | Lycaenidae | <i>Lycaena phlaeas</i> | Small Copper |
| 2 | Nymphalidae | <i>Aglais cachmirensis</i> | Indian Tortoiseshell |
| 3 | Nymphalidae | <i>Vanessa cardui</i> | Painted Lady |
| 4 | Pieridae | <i>Pieris canidia indica</i> | Indian Cabbage White |
| 5 | Pieridae | <i>Colias fieldii</i> | Clouded Yellow |
| 6 | Pieridae | <i>Euchloe daphalis</i> | Pearl white |

IUCN Ver 2022-2; LC: Least Concern'; NA: Not Assessed

1.4.3.5 Conservation Status of Fauna

IUCN Red List of Threatened Species Version 2022-2 categorised *Moschus leucogaster* (Himalayan Musk Deer) under the Endangered (EN) category. *Capricornis sumatraensis* (Himalayan Serow), *Panthera pardus* (Common Leopard) and *Ursus thibetanus* (Asiatic Black Bear) are listed under Vulnerable (VU) category. *Naemorhedus goral* (Himalayan Goral) and *Lutra lutra* (Common Otter) are the species listed under the Near Threatened (NT) category of IUCN (Table 6). The remaining are listed under Least Concerned (LC) category.

As per Wildlife (Protection) Act 1972, Common Leopard (*Panthera pardus*), Himalayan Musk Deer (*Moschus leucogaster*), and Mainland Leopard Cat (*Prionailurus bengalensis*) are the mammalian species listed as Schedule I species (Table 6).

All the avifaunal species sighted from the study area fall under Least Concern (LC) category as per IUCN 2022-2. As per WPA (1972), all the species recorded from the area are listed as Schedule IV except House crow and Jungle crow which are listed as Schedule V species (refer to Table 7).

1.5 Protected Areas

No project component falls in any notified protected area or notified ESZs of protected area. Nearest Protected Area to from Uri-I Stage-II HE Project are Kazinag National Park, Lachipora Wildlife Sanctuary and Limber Wildlife Sanctuary. The location of all protected areas with respect to project components are shown in Figure 3. Also, no area around the project has been designated as the wildlife corridor around the project area.

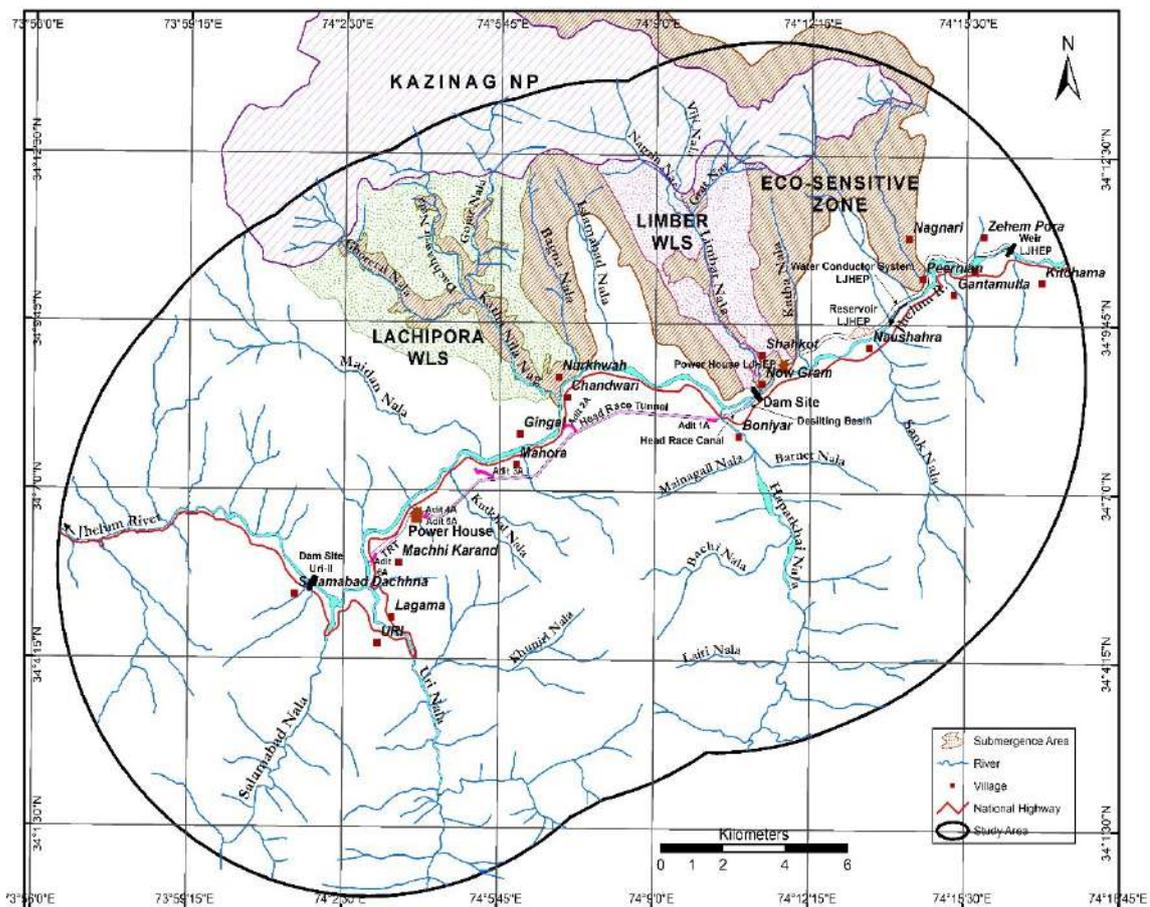


Figure 3: Map Showing distance of project components from Protected Area

1.6 Threats to Biodiversity & Wildlife

Habitat loss due to change of land use and use of heavy machinery for construction activities will affect biodiversity in the study area. Such activities might lead to increased disturbance to wildlife in the area, man-animal conflict, introduction of exotic weedy plant species into the adjacent forested area. Major threats to biodiversity and wildlife in the project area are as follows.

1.6.1 Threat Due to Project Activities

a) Project Construction Phase Impact

i) Impact of Flora

For the proposed scheme, no tree felling or clearing of vegetation cover will be undertaken. Only 17.0 ha underground forest land will be diverted for the underground construction work of the project components. Therefore, there is no impact on floral diversity and faunal diversity due to land acquisition

The direct impact of construction activity will be limited in the vicinity of the construction sites. As mentioned earlier, a large population of 500 including technical staff, workers, and other groups of people are likely to congregate in the area during the peak project construction phase. It can be assumed that the technical staff will be of higher economic status and will live in a more urbanized habitat, and will not use wood as fuel if adequate alternate sources of fuel are provided. However, workers and other population groups residing in the area may use fuelwood, if no alternate fuel is provided. Hence, to minimize such impacts, it is proposed to provide alternate fuel for cooking e.g. LPG/ kerosene to the construction workers. The other alternative is to provide community kitchens on a cooperative basis by the contractor. The details of the same have been covered in Environmental Management Plan.

Other major impacts on the flora in and around the project area due increased level of human interference i.e. the workers may also cut trees to meet their requirements for the construction of houses, furniture, and space heating. Normally in such situations, a lot of indiscriminate use or wastage of wood is also observed, especially in remote or inaccessible areas. Thus, it is necessary to provide alternative fuel, training and awareness; and implement adequate surveillance to mitigate the adverse impacts on terrestrial flora during the project construction phase.

ii) Disturbance to Wildlife

During the construction period, a large number of machinery and construction workers shall be mobilized, which may create disturbance to the wildlife population in the vicinity of the project area. During the EIA studies no major wildlife species has been reported from the project area. The operation of various equipment will generate significant noise; noise and vibration will also increase during blasting which will affect the fauna of the area. The noise may scare the fauna and force them to migrate to other areas, however, it will be temporary and last during the construction phase. Likewise, siting of construction plants, workshops, stores, labour camps, etc. could also lead to adverse impacts on the fauna of the area. During

the construction phase, accessibility to the area will lead to an influx of workers and the people associated with the allied activities from outside will also increase. An increase in human interference will have an impact on the terrestrial ecosystem.

The impact of blasting needs to be mitigated by adopting controlled blasting and a strict surveillance regime and the same is proposed to be used in the project. This will reduce the noise level and vibrations due to blasting to a great extent.

Forest cover in the vicinity of the proposed project work sites and their immediate vicinity is comprised of coniferous forest associated with broad-leaved forest. 23 species of mammals and 25 species of avifauna have been compiled from the study area, as discussed in the Environmental Baseline chapter. Therefore, adequate measures will be required during the construction phase not to cause any adverse impact on the terrestrial and avifaunal population.

Thus, it is necessary to formulate a conservation and management plan to mitigate the adverse impacts on terrestrial flora during the project construction phase.

b) Operation Phase Impacts

On completion of the construction of the project, the land used for construction activities will be restored. Construction workers who have resided in that area will move to another project site. By ensuring all the mitigation and management measures, as planned for this project, are implemented to minimize the impact of the construction phase, a large part of the area will return to more or less its original form. Operation phase impacts on flora and fauna will be positive due to muck disposal area, green belt development, implementation of Biodiversity Management and Wildlife Conservation Plan, etc. The increase of greenery and increased moisture due to the creation of the reservoir will have a positive impact on avifauna diversity.

1.6.2 Human Wildlife Conflict:

Deforestation, growing human settlements, expansion of agricultural land and fragmentation of natural habitat and grazing ground of species like Wild Boar are the causes behind rising of human wildlife conflict. In the study area human-wildlife conflict in terms of crop damage is perhaps more common and causes huge loss to the farmers.

1.6.3 Hunting and Poaching

Damage of crops by species like Monkey, Langur, Wild Boar, etc. and loss of livestock Common Leopard and Black Bear results as hunting and killing of these wild animals by means of setting up of trap, poisoning or with the help of hunters.

1.6.4 Illegal cutting of trees

The area well known for Red Sanders (*Pterocarpus santalinus*) forest. There is huge demand for its heart wood for furniture and for making the musical instrument in international market. The felling and trading of Red Sander is illegal in India. Also, the stakeholders from the study area depends upon forest for their day to day need of fodder, fuelwood, and other non-

Timber Forest products (NTFP) as well as timber wood needs. This results in tremendous pressure on the forests.

1.6.5 Grazing Pressure

The grassland and scrub land in the area is under heavy grazing pressure by the livestock and is susceptible to damage by livestock. Also, the altitude grassland in the area provide habitat and feeding ground to ungulates and antelopes like Musk Deer, Himalayan Goral, Barking Deer, etc. The over grazing and encroachment in the area and change in land use cause degradation of wildlife habitat.

2. BIODIVERSITY MANAGEMENT AND WILDLIFE CONSERVATION PLAN

2.1 OBJECTIVES OF MANAGEMENT

Keeping in view of the anticipated impacts as per the foregoing chapters, the management objectives can be described as:

- i. Maintenance of ecological balance through preservation and restoration, wherever it has been disturbed due to project developmental activities,
- ii. Conservation and preservation of natural habitats in project surrounding
- iii. Mitigation and control of project induced biotic and/or abiotic pressures/ influences that may affect the natural habitats,
- iv. Habitat enhancement in project area by taking up afforestation and soil conservation measures,
- v. Creating all round awareness regarding conservation and ensuring people's participation in the conservation efforts and minimizing human wildlife conflict.

2.2 MITIGATION MEASURES

The following management strategies including shall be implemented by forest department in the impact area of proposed project.

- i. Habitat Improvement of Schedule-I species through conservation and preservation of natural habitats in project surrounding
- ii. Infra-structure development
- iii. Anti-Poaching measures
- iv. Training Programme for Techniques of faunal species Rescue
- v. Prevention of Forest Fire
- vi. Creating all round awareness regarding conservation and ensuring people's participation in the conservation efforts and minimizing human wildlife conflict.

2.3 CONSERVATION AND MANAGEMENT MEASURES

Wildlife conservation is the preservation and protection of animals, plants, and their habitats. The most effective way of biodiversity management and wildlife conservation in the area are habitat management through habitat enhancement, preservation and improvement, conducting conservation programmes and creation of environmental awareness involving local people, and strict enforcement of wildlife protection laws.

2.3.1 Wildlife Habitat Preservation & Improvement

i. Afforestation and Enrichment plantation

Afforestation and enrichment plantation will be carried out in the area. Area under forest and tree cover will be expanded through systematic planning and implementation of afforestation and rehabilitation programme on available community lands. Afforestation programme in the degraded Forest Compartments is also proposed to be carried out in the surrounding to the project area. The sites and species to be planted will be finalized by the State Forest Department as the program will be implemented by them.

Plantation site will be trench fenced and brushwood fence, for the protected from cattle grazing. With the improvement in habitat of wildlife the incidences of human wildlife conflict will accordingly reduce. The estimate cost for plantation over about 25 ha degraded forest land in the surrounding of Project area has been worked @ Rs. 80,000 per ha for Enrichment plantation. The enrichment plantation will be carried in the adjoining forest area along the periphery of reservoir and intermediate area between barrage and powerhouse. As such, no additional forest land will be diverted for this purpose.

ii. Farm Forestry

The villagers for fuel and fodder to adjacent forest area. The project area harbours number of economically important plants like *Aesculus indica*, *Bauhinia variegata*, *Juglans regia* and *Pyrus pashia*, etc. These valuable resources will be directly useful to the people of the area.

With a view to reduce dependence on the natural forests for biomass and other non-timber forest products (NTFPs) or minor forest produce (MFP) alternate resources need to be building up. NTFPs/MFP plantations will be carried out on the community land, degraded land, fallow lands which help in sustainable land management and also a tool for reclamation.

Under this scheme Seedlings will be distributed every year to villagers on a nominal rate. Villages in the surrounding of project area has been given preference. The distribution will be facilitated through Forest Range office in the area. Forest department may take up prior survey with the help of local administrative bodies/panchayats to assess the requirement plants.

A budgetary estimate of **Rs. 5.00 lakh** has been made for development of farm forestry in the project area.

2.3.2 Development of Pastureland

As there are degraded patches of pasture in the area, this measure will be adopted to encourage development of new and healthy pastures for use of cattle of the area. Barren land with greater slopes has been recommended to be treated by developing pastures over them. Under this treatment, suitable species of grasses and leguminous plant species be planted in the land area earmarked for the purpose. A provision of Rs. 12,00,000/- (@ Rs. 60,000/ha) for development of pastureland over 20 ha degraded scrubland and grassland has been kept under this plan.

2.3.3 Awareness Programme

The success of any conservation plan of this magnitude is entirely hinged on the active support and wholehearted co-operation of all stakeholders with the members of public playing a major role. For this purpose, meetings and workshops will be organized from village to village on regular basis. Functions like Van Mahotsav, Wildlife Week, World Forestry Day, and World Environment Day will be organized in a befitting manner to which village heads, members of public representatives' system at Gram Panchayat level, local leaders and members of NGO will be involved. The topics should include deterioration of biodiversity, habitat loss, control of Blue Bull and Wild Boar damages and other human wildlife conflicts, fire damage control and how best the vegetation can be revamped etc. Members of public will be encouraged to speak. Student community should also be sensitized on various conservation issues.

Considering that the wildlife populations will be impacted by project construction activities and also due to influx of migrant labour force, mitigation measures should also be taken for the larger area. The following measures are proposed:

- Control on poaching.
- Awareness campaigns aimed at creating awareness towards respecting the habitat protection in general and the protection of wildlife species in particular.

Under this programme, various activities viz. training, publishing of pamphlets, brochures, hoardings, etc. shall be carried out during the construction phase of the project. The following activities are planned under this programme:

Observance of Wildlife Week: The wildlife week will be celebrated every year in the month of March to assess all the tasks set aside for wildlife management. Under this programme, seminars, art competitions and awareness campaigns will be held.

Nature Club: Nature clubs will be introduced at Higher secondary and High school level in the project area. They will be imparted education by means of audio-visual aids so as to sensitize them about importance of wildlife conservation.

Involvement of Village Panchayats and NGOs: The Panchayats of affected villages and active NGOs in the project area would be involved to disseminate the knowledge about the benefits of the proposed project and ensuring greater participation in the conservation efforts and safeguard the environment of the area.

For implementation of awareness programme an amount of **Rs. 1.00 lakh/year** for four year has been budgeted.

2.3.4 Strengthening of Infrastructural Facilities of Forest Department

Under this plan Project authority would assist the State Forest Department in strengthening the infrastructure facilities, which are poorly developed in the area. Various activities which are necessary for the forest protection plan are described in the following paragraphs.

- i) For improvement of vigilance and measures to check poaching, check posts and watch towers will be needed. In order to strengthen the working capacity, the workforce of the

State Forest/Wildlife Department they must be provided with necessary equipment such as a camera, wireless, binoculars GPS, search lights, health kits, etc. that would increase their capability and efficiency of monitoring.

- ii) The construction of inspection paths and watch towers for more effective and meaningful patrolling by the department.
- iv) Creation of veterinary facilities and rescue camps for healthcare of wild animals and for disease control. For this purpose, it is essential to maintain a stock of medicines in addition to setting up of a *mobile-rescue-cum-rehabilitation-van*.

Project authorities would provide funds to State Forest Department. Total financial outlay under this head would be **Rs. 25.00 lakh**.

2.3.5 Budget

Total budget for the Biodiversity Management & Wildlife Conservation Plan would be **Rs. 66.00 lakh**. The breakup of the budget is given at **Table 9** below.

Table 9: Budget for Biodiversity Management & Wildlife Conservation Plan

| S. No. | Particulars | Total Amount (Rs. in lakh) |
|--------|--|----------------------------|
| 1 | Afforestation and Enrichment along the adjoining forest area (@ Rs. 80,000/ha for 25 ha) | 20.00 |
| 2 | Farm forestry for fuelwood and timber | 5.00 |
| 3 | Development of Pastureland | 12.00 |
| 5 | Awareness Programme @ Rs. 1 lakh/year for 4 years | 4.00 |
| 6 | Strengthening of Infrastructural Facilities of Forest Department | 25.00 |
| | Total | 66.00 |

3. CONSERVATION AND MANAGEMENT OF SCHEDULE-I SPECIES

3.1 Introduction

The development activities often present a threat to biodiversity in the area like habitat destruction, degradation, fragmentation through overexploitation, poaching, hunting, pollution, etc. Therefore, developmental projects are required to maintain ecological integrity to ensure biodiversity conservation and sustainable development together. The impacts need be mitigated or minimized substantially through well drafted conservation management plan. The Indian Wildlife (Protection) Act, 1972 mandates protection of plants and animal species by way of listing them under different schedules to provide them varying degrees of protection. Schedule I and part II of Schedule II provide absolute protection and offences under these are prescribed the highest penalties. Key strategies required for any biodiversity management plan are *in situ* strategy, *ex situ* strategy, reduction of anthropogenic pressure and rehabilitation of endangered species.

3.2 Biodiversity in the Study Area

The details of biodiversity in the study area have already given in section 1.4. According to it Common Leopard (*Panthera pardus*), Himalayan Musk Deer (*Moschus leucogaster*), and Mainland Leopard Cat (*Prionailurus bengalensis*) are the Schedule-I species as per Indian Wildlife (Protection) Act, 1972 reported from the study area.

3.3 Conversation Measures for Schedule-I Species

3.3.1 Leopard (*Panthera pardus*)

Apart from Asiatic lion, Bengal tiger, Snow leopard and Clouded leopard, the Indian Leopard (*Panthera pardus*) is one of the big cats found in India. The Indian Leopard (*Panthera pardus*) is widely distributed in the Indian subcontinent. They inhabit tropical rain forests, dry deciduous forests, temperate forests, and northern coniferous forests.

3.3.1.1 Conservation Status

The leopard is classified as Vulnerable (VU) on the IUCN Red List of Threatened Species Ver. 2022-2 (<https://www.iucnredlist.org/species/15954/163991139>). *Panthera pardus* is listed in CITES Appendix I.

3.3.1.2 Threats

- a. **Habitat Threats:** Loss of natural habitat is a major threat to leopard. Habitat fragmentation reduced prey base and conflict with livestock have reduced Leopard populations throughout most of their range (<https://www.iucnredlist.org/species/15954/163991139>). Habitat degradation outside the protected area, caused by overgrazing, overharvest of forest products, expansion of agricultural areas, and mining of minerals also possess threats to the habitat of species.
- b. **Human - Leopard Conflicts:** Many wildlife biologists have studied the human leopard conflict in India like Athreya et. al. (2007), Chellam (2010), Aggarwal et. al. (2011), Mathur (2014), Chauksey et. al. (2017), Kshetry et. al. (2017), Naha et. al. (2018), and Athreya et. al. (2020). These studies have listed number of factors responsible these conflicts. Some of them are the expansion of agriculturally used land, encroachment of humans and their livestock into protected areas are main factors contributing to habitat loss and decrease of wild prey. As a result, Leopard's approach human settlements, where they are tempted to prey on domestic livestock like cattle, dogs, and goats, which constitutes an important part of their diet, if they live on the periphery of human habitations. Human-leopard conflict situations ensue and have increased in recent years. In retaliation for attacks on livestock, leopards are shot, poisoned, and trapped in brutal snares. Leopard-human conflict is a serious problem in India and the subcontinent and is another cause of significant mortality of Leopards. India's Forest Department is entitled to set up traps only in cases of a leopard having attacked humans. According to Chellam (2010) several cases of leopard attack have been reported in Maharashtra and Madhya Pradesh and human leopard conflict is a well-known problem in and around protected as well as unprotected areas in India (Chauksey et al., 2017).
- c. **Poaching:** A significant immediate threat to wild leopard populations is the illegal trade in poached skins and body parts. Illegal trade in Leopard body parts (skin, bones, and claws) continues to threaten the survival of the species in the wild.

3.3.2 Mainland Leopard Cat (*Prionailurus bengalensis*)

The Mainland Leopard Cat (*Prionailurus bengalensis*) is amongst the smallest of Southeast Asia's wild cats. This species is highly adaptable, occurring in a wide range of habitats including various types of primary forest, secondary habitats including cultivated areas, and

plantations. Its diet is highly varied and includes large insects, and small vertebrates such as lizards and reportedly amphibians.

3.3.2.1 Conservation Status

The Mainland Leopard Cat is classified as Least Concern (LC) by IUCN Red List of Threatened Species Ver. 2022-2 (<https://www.iucnredlist.org/species/223138747/223178117>) and listed under Appendix II of CITES.

3.3.2.2 Threats

Deforestation is potentially an important driver of habitat deterioration and may be a localised threat to Mainland Leopard Cat survival in certain areas. Other potential threats to Mainland Leopard Cat vary across its geographic range are hunting and snaring occur in most parts of Mainland Leopard Cat's range and is particularly intense in South-east Asia (Gray et al. 2018, Harrison et al. 2016, Willcox et al. 2014).

Misidentifications (as, for example mistaking the species as Leopard *Panthera pardus* or Fishing Cat leading to lethal anthropogenic responses are common in countries like India, Bangladesh and Nepal. These perspectives instil fear, resulting in stern retaliatory anthropogenic responses. Road kills in and around forests is another visible potential issue for the Mainland Leopard Cat in some areas.

3.3.3 Himalayan Musk Deer (*Moschus leucogaster*)

The Himalayan Musk Deer (*Moschus leucogaster*) distribution includes a large portion of northern India (including Sikkim), Bhutan, Nepal, Pakistan, Afghanistan, and China (southwest Xizang). This species inhabits high alpine environments, observed at lowest altitude of 2,500 m by Groves et al. (1995). It is found on barren plateaus at high altitudes, where it occupies meadows, fell-fields, shrublands or fir forests. It feeds mainly on grasses, shrubs, leaves, moss, lichens, shoots, and twigs (Green 1987). It is generally solitary and crepuscular (Harris and Cai 1993).

Himalayan musk deer mate between November and January. The gestation period is 185 to 195 days. One to two young are typically born between May and June and nurse from their mother for about 2 months.

3.3.3.1 Conservation Status

The Himalayan Musk Deer (*Moschus leucogaster*) is listed as Endangered (EN) on the IUCN Red List of Threatened Species Ver. 2022-2 (<https://www.iucnredlist.org/species/13901/61977764#habitat-ecology>) and listed in Appendix I of CITES.

3.3.3.2 Threats

Population growth has forced the people of Himalayan region to exploit forest resource to fulfill their forest basic needs such as fuel wood, timber, fodder. An unsustainable harvesting practices in Himalaya region lead to the subalpine and alpine vegetation in degradable condition (Echolm, 1975). These activities have urged the degradation of wildlife habitat which ultimately contribute in the reduction of musk deer population. In addition, owing to socio-economic and political conditions, musk deer population aren't being afforded safe

sanctuary even in remote areas because of poaching and hunting for their live hood subsistence (Jackson, 1979).

Habitat destruction, due to increasing human and livestock populations limited the distribution of musk deer to smaller and fragmented area. As result, the population of musk deer has reduced considerably. The habitats of musk deer in the subalpine region of the Himalayas are increasingly used for harvesting firewood and as pasture land. Besides, this causes the loss of the understorey of vegetation which is of particular importance to musk deer for food and shelter against predators In addition, fire and other anthropogenic activities also altered the potential musk deer habitat into vulnerable condition.

Musk deer is killed for the collection of natural musk which is found in the musk gland of mature males near the umbilicus. During illegal killing for every mature male, 4 – 5 females and juveniles are killed which have no musk or very small amount of musk. This activity results in the rapid decline of population of musk deer.

3.3.4 Management and Conservation Measures

a. Panthera pardus (Leopard) & Prionailurus bengalensis (The Mainland Leopard Cat)

Habitat improvement: Leopards live in a variety of dry and wet forests, and in some grasslands, where boulders and scattered shrubs and trees provide shelter. The Leopard has the widest habitat tolerance than any big cat in India. Habitat of the species will be improved by planting suitable species in surrounding areas. The prey species preferred by leopard will be conserved to ensure sufficient prey availability, which will also reduce the conflict with humans. The prey species preferred by leopard will be conserved to ensure sufficient prey availability which will also reduce the conflicts with humans.

In addition to conservation of Sloth Bear habitat, restoration of habitat through community-based forestry activities needs to be implemented. Community-based forestry programs could significantly expand habitat for sloth bears. The benefits of this community-based approach to maintaining ecosystem integrity thus extends well beyond sloth Bear.

Biological Fences: Conflicts generally arises when leopard or Sloth Bear enters in human settlements, which indirectly reflect the condition of adjacent forested areas, i.e. its ability to support Leopard and Sloth Bear habitat. Protective Fencing to Protect Livestock: Biological fences will be used to protect the livestock from the leopard attack.

Strict Protection Measures: The Wildlife (Protection) Act of 1972 provides us with the statutory framework for wildlife conservation, and Poaching is a crime against wildlife. During interview and discussion with local people it was noted that study area is not prone to poaching or any other wildlife violence related to leopard. But precaution will be always taken while dealing with wildlife. The contact information of concern wildlife and forest department will be provided to every worker or at the field office. If any kind of poaching or other offense is noticed; it will be immediately clued-up to the concern Forest and Wildlife Officials. More importantly, worker will make aware of wildlife crime and subsequent penalties and punishment.

b. Himalayan Musk Deer (Moschus leucogaster)

- I. Habitat Conservation by initiation of landscape conservation
- II. Controlled and restrict the grazing on area identified as Muck Deer feeding ground.
- III. Strengthening of patrolling to restrict hunting and poaching
- IV. Control excessive exploitation of forest resource collection.
- V. Awareness among the society about the ecological importance of Himalayan Muck Deer.

c. Public Awareness Programme

Involvement of local people in conservation activities will be ensured by organizing meetings and seminars from village to village on regular basis to carry the people along with implementation. The support of village heads and other members of gram panchayat, local leaders and members of regional NGO would be solicited to execute the proposed awareness and habitat improvement programmes. Functions like wildlife week, world forestry day, *Van Mahotsav* and world environment day will be organized. The discussion may evolve around habitat loss, human- wildlife conflicts and how best the vegetation can be revamped etc.

Moreover, a training workshop for all workers will be conducted in starting of any project. It will include the formal training on the importance of biodiversity and to make available the information of the flora and fauna of high conservation value present in the area. Information on Wildlife policies and Government regulation and penalties will be provided to workers. Similar kinds of activities will be done from time to time to enhance the interest of villagers and workers in the conservation.

3.4 Management Measures

In view of the above, various Management and Conservation measures like Habitat improvement, development of Biological Fences using suitable plant species, enforcement of Strict Protection Measures, Public Awareness Programme involving villagers and forest officials for protection and conservation of various species, Anti-Poaching measures, Construction and filling of water holes and check dams/Ponds, tube wells etc, Support/Provision of veterinary care, cages, rescue centers, etc., Infra-structure development (Surveillance Equipment's like Cameras, Wireless Sets, GPS etc)., Training Programme for Rescue Techniques of faunal species, Prevention of Forest Fire activities like Training and Infrastructure facilities etc., have been proposed.

3.4.1 Veterinary care

Following provision has been made for ensure the veterinary care of wildlife in the protected area.

- i. Strengthen of veterinary facilities and rescue centres for healthcare of wild animals and for disease control.
- ii. Provision of 02 mobile-rescue-cum-rehabilitation-van with financial provision of **Rs. 20.00 lakh**.
- iii. For Maintenance of mobile-rescue-cum-rehabilitation-van and medical supplies provision of **Rs. 4.00 lakh/ year** for 4 years has been proposed under this plan.

- iv. Training programme shall be organised for upgradation of knowledge and techniques of faunal species rescue and veterinary care. A total budget of **Rs. 5.00** has been proposed for training programme.

3.4.2 Prevention of Forest Fire

The deciduous vegetation and pastureland in the area are prone to fire. Forest fire is caused both naturally as well as by the human beings. Anthropogenic causes will be minimized through forming a fire line around the forest area. The following measures are therefore proposed to be taken to prevent forest fire:

- i. **Fire Fighting Equipments:** These Fire watchers will also be equipped with certain Fire Fighting Equipments such as Fire resistance dress, Water bottle, Axe, Shoes etc. to attend to emergencies. Therefore, financial provision has been made for fire-fighting equipments.
- ii. **Clearing of Fire Line:** Fireline will be cleared over a vulnerable area.
- iii. **Training & Awareness:** Financial provision to organise firefighting training for forest officials and villagers residing around project area has been made under this Plan.

3.4.3 Maintenance of Drinking Water Sources in Wildlife Habitat

To avoid interference with human habitation it is necessary to maintain the drinking water sources of wildlife in their habitat. For easy accessibility of drinking water for wildlife within the forest area provision of maintenance of natural drinking water sources has been made. Fund has been allocated for maintenance of existing springs, waterholes/ ponds in the forest area. A total of **Rs. 10.00 lakh** has been allocated under this scheme.

3.4.4 Training to Volunteers/ Local Youth

In addition to activities like management and conservation of habitat and provision of veterinary care for faunal species in the area, training programme has been organized regarding the rescue techniques of faunal species for interested volunteers/ local youth, Government officials other than forest department by State Forest Department with the help of recognized organizations, wildlife professionals and NGO's. A lump sum budget of **Rs. 5.00 lakh** has been kept for Wildlife rescue training to volunteers.

3.4.5 Safeguards during construction phase

During the construction phase, various adverse impacts on the forest and wildlife are anticipated in the surrounding areas of the proposed project in terms of increased noise levels, release of air and water pollutants, etc. To avoid and minimize the negative impacts of these activities, project authorities are advised to prepare strict guidelines as suggested below:

- (i) Minimum levels of noise during construction activities will be maintained and ambient noise should be monitored periodically at different locations as outlined in Environment Monitoring Program.
- (ii) Strict restrictions shall be imposed on the workers at project sites to ensure that they do not harvest any species/produce from the forests and cause any danger or harm to the animals and birds in the wild.

- (iii) The provision made for community kitchen and ensure the supply of the kitchen fuel from the nearest depots to avoid forest degradation and destruction of forest and wildlife habitats.
- (iv) The interference of human population would be kept to a minimum in the adjacent forested areas and it would be ensured that the contractors do not set up labour colonies in the vicinity of forests and wilderness areas.

3.5 Budgetary Provisions

The total budget allocated focusing on Conservation plan for Schedule -I species is **Rs 74.00 lakh**, under Biodiversity Conservation and Wildlife Management Plan of Uri-I Stage-II HEP. The Break-up of the budget is given in **Table 10**.

Table 10: Break-up for Wildlife Management and Conservation Plan for Schedule I Species

| S. No. | Activity | Fund Allocated (Rs in Lakh) |
|--------------|--|-----------------------------|
| 1 | Habitat Improvement by development of vegetation cover by plantation with suitable species. | 0.0* |
| 2 | Biological fence (<i>Berberis</i> species, <i>Rosa macrophylla</i> , Bamboo species, <i>Salix</i> sp., <i>Agave americana</i> , etc.) around the habitation and around the agriculture fields adjoining to forest area to control human wildlife conflict | 15.00 |
| 3 | Support/Provision of veterinary care, cages, recuse centers, etc. | 29.00 |
| 4 | Prevention of Forest Fire: Training and Infrastructure facilities | 10.00 |
| 5 | Protection and maintenance of natural drinking water sources in wildlife habitat. | 10.00 |
| 6 | Training Programme for Techniques of faunal species rescue | 5.00 |
| 7 | Anti-Poaching measures and preventing illegal tree felling | 5.00 |
| 8 | Infra-structure development (Surveillance Equipment's like Cameras, Wireless Sets, GPS, etc.). | 0.0* |
| Total | | 74.00 |

*Covered under Biodiversity Management & Wildlife Conservation Plan (refer table 7)

4. MONITORING AND EVALUATION

The monitoring and evaluation of Biodiversity Conservation and Wildlife Management Plan of **Uri-I Stage-II HEP** will be carried out by a Biodiversity Management Committee (BMC). The committee will follow the guidelines of National Biodiversity Authority, State Biodiversity Conservation Strategy Action Plans (SBCSAP) and State Forest Department to implement, monitor and evaluate the Biodiversity Conservation and Wildlife Management Plan of the proposed Project. The activities of BMC shall be under the direct administrative control of the Chief Wildlife Warden/Principal Chief Conservator of Forests, Jammu and Kashmir State Forest Department. The BMC will comprise of the following members:

| | |
|---|------------------|
| Chief Wildlife Warden/Principal Chief Conservator of Forests, Jammu & Kashmir | Chairman |
| Manager (Environment), NHPC. Ltd. | Member Secretary |
| Divisional Forest Officer of the concerned Division | Member |
| Experts form State University and Active NGO's | Member |
| Local Body's Representatives from the villages | Member |

The Chairman of the committee will have the right to assign various activities to various members for proper functioning and result-oriented tasks. The committee will monitor the progress of the proposed plan. Total financial outlay for the BMC would be **Rs. 4.00 lakh** only.

5. LOCATIONS OF PROPOSED INTERVENTION

Proposed intervention shall be implemented by State Forest department. Hence the selection of site for implementation of proposed measures will be finalized by state forest department.

6. FINANCIAL PROVISION

The total budget allocated focusing on Biodiversity and Wildlife Conservation and Management Plan including conservation and management measures for Schedule-I species is **Rs 144.00 lakh**. The Break-up of the budget is given in **Table 11**.

State Forest Department shall be the executing agency for implementation of the proposed mitigation measure under Biodiversity Conservation and Wildlife Management Plan in the surrounding of proposed project site, therefore, a total amount of **Rs. 144.00 lakh** will be deposited with the State Forest Department for taking up proposed activities within the area.

Table 11: Total Cost of Biodiversity Management and Wildlife Conservation Plan

| S. No. | Activity | Fund Allocated (Rs in Lakh) |
|--------|--|-----------------------------|
| 1 | Biodiversity Conservation and Wildlife Management Plan | 66.00 |
| 2 | Conservation & Management of Schedule-I Species | 74.00 |
| 3 | Monitoring And Evaluation | 4.00 |
| | Total | 144.00 |