



Himachal Pradesh Power Corporation Limited  
(A State Government Undertaking)  
Integrated Kashang HEP, Reckong Peo Distt. Kinnaur (HP).  
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NO: - IKHEP/ HPPCL (E&F) K-I/ Vol XXII/2023:- 5060

Dated: 24/3/23

To

The Divisional Forest Officer  
Kinnaur Forest Division,  
Reckong Peo Distt. Kinnaur.

**Sub:-** Diversion of 0.4148 Ha. of Additional Forest land in favour of HPPCL for construction of Integrated Kashang HEP Stage-II&III, (130MW) for some modifications in the project components within the jurisdiction of Kinnaur Forest Division, Distt. Kinnaur, Himachal Pradesh, Proposal No. FP/HP/HYD/49387/2020.

Sir,

This is with reference to your office letter No. Ft. No. 48-4008/2019(FCA) dated Nil on the subject cited above. In this context the shortcomings raised by your good office has been attended as below:-

Sr. No.	Observation	Reply
1.	<b>Point No.-3,</b> Detailed list of proposals commissioned/approved/existing/proposed in the river/rivulet area to be provided along with map, KML file and approved capacity of the river/rivulet	The KML file of the proposal in CD form has already been submitted to concerned CCF and Nodal Office. However, the copy of the same is again being submitted with this letter.
2.	<b>Point No.-5,</b> To assess the impact of project on wildlife and as, holistic assessment should be relied upon instead of project area specific assessment. Therefore, detailed comments on the holistic assessment on the impact of the proposed project on wildlife and near by as may also be provided.	The copy of wild life management plan as per EMP is attached. As per conditions of NWLB the cost of wildlife mitigation plan @2% of the Total cost of the project for Kashang Stage-I amounting to Rs. 9.41 Cr. Stand deposited on dated 27.03.2018 with the HP Forest Department towards cost of mitigation measures and wild life conservation plan. Whereas balance amount against Kashang Stage-II & III amounting to Rs. 9.61 Cr. Is concerned Shall be deposited before Stage-II approval.
3.	<b>Point No.-6,</b> State Govt. may provide the details of progressive detail/status of area treated and fund utilized under comprehensive CAT plan which is already in approved proposal No. 9-HPC-366/09-CHA, dated 14.06.2011 of Integrated Kashang HEP Stage-II & III.	Pertains to DFO Office. The details has to be provided and uploaded by the concerned DFO office





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4.	<b>Point No.-9,</b> State Govt. may provide the NOC issued by the Kashang Village Panchayat for establishment of proposed project. Further, the beneficiary villages may also be marked on the KML file.	There does not exist any Village Panchayat with the Name Kashang and the NOC form Gram Panchayat Pangi and revised KML file showing beneficiary village has already been uploaded on the Portal. However, the same is again attached and uploaded on the portal.
5.	<b>Point No.-11,</b> The project of Integrated Kashang HEP Stage-II & III has been approved in the year 2011. Therefore the plantation work carried under CA scheme may be provided in shape file of the CA land area in CD format along with the survival percentage of the plantation.	The required information pertains to concerned DFO Office.
6.	<b>Point No.-14,</b> Undertaking may be submitted by the concerned DFO that there is no change in the proposal in term of scope, purpose, approved layout Plan and other important aspects, nor any kind of violation has been made by the U/A in the already approved project of Integrated Kashang HEP Stage-II & III. Further, detailed justification may also be provided to delay in commencement of the project.	Pertains to concerned DFO Office.

Yours faithfully,

*Sanjay 24/03/2023*  
General Manager (Civil),  
IKHEP, Stage II & II,  
HPPCL, Reckong Peo (H. P.).





## CHAPTER - 5

### WILDLIFE MANAGEMENT, DEVELOPMENT & BIODIVERSITY CONSERVATION PLAN

#### 5.1 GENERAL

Himalayas one of the youngest and fragile mountain formation supports varied forms of life and unique ecosystems with moderate to steep slopes, forests, snow clad peaks, glaciers, and alpine meadows. The Himalayas have a rich reserve of life forms. Because of varied zonation in altitude and vegetation, the Himalaya is a treasure with unique biodiversity. Lippa Asrang sanctuary is about 1.5 kms upstream of the Project area. A Plan for Wildlife Management and Biodiversity Conservation of Lippa-Asrang Sanctuary is proposed to be funded by the project proponents.

The Lippa-Asrang Wildlife Sanctuary under the overall control of Sarahan Wildlife Division falls in Moorang Tehsil of Pooh Sub-Division in Kinnaur District. The Sanctuary is situated within the upper Catchment of Kerang stream on which Kashang Hydroelectric Project is proposed to come up. The area falls in the West Himalayan Zone of the Himalayan Mountain Chain. The area of the sanctuary is 30.89 sq. kms. The altitude ranges from 3000 mtrs. to 5122 mtrs. There are three villages along the lower boundary of the sanctuary area namely, Lippa, Asrang and Tokto. The prominent species available in the sanctuary includes Snow Leopard, Bharal, Ibex, Brown Bear, Muskdeer, Snow partridge, Snow-Cock etc. The sanctuary falls in high altitude Himalayan zone and there are hardly any trees within the sanctuary boundary. The vegetation is represented by alpine shrubs and juniper bushes. The zone on the lower altitude and cooler aspect has few trees of Deodar, Kail, Chilgoza, Juniper, Salix and Alnus species. This sanctuary has vast stretches of alpine pastures, which serve as storehouse of important Himalayan medicinal herbs like, Dhoop, Karoo, Patish and most prominently Kuth.

#### 5.2 STATUS OF WILDLIFE SANCTUARY

##### 5.2.1 Name and Location

The Lippa-Asrang Wildlife Sanctuary falls in Moorang Tehsil of Pooh Sub-Division in Kinnaur district. It was notified as a sanctuary first in 1962 and then re-notified in March, 1974 vide Himachal Pradesh Government Notification No. 5-11/70-SF dated 27-03-1974. The Lippa-Asrang Wildlife Sanctuary is situated between 31° 39' 30.1" North Latitude and 78° 22' 30.03" East Longitude. It is under the wildlife administrative control of Sangla Wildlife Range, which is a part of Sarahan Wildlife Division about 140 km. away from the sanctuary. The nearest town is Reckong Peo, which is also headquarters of the Kinnaur district. Nearest Rail Head and Airport is at Shimla.

Chapter-5: Wildlife Management, Development and Bio-diversity Conservation Plan

*Sand*  
General Manager  
IKHEP, Stage II-III  
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*[Signature]*  
Dy. Manager (Environment),  
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### 5.2.2 Boundaries

As per the Government of Himachal Pradesh Notification No. 5-11/70-SF dated 27-03-1974 the boundaries of the Lippa-Asrang Wildlife Sanctuary are as under:

North: Taiti Gad/stream.

West: Precipitous ridge to the West of Balinaren and Nagach Thatches extending between Taiti Gad and Moltha Thong Dhar.

South: Moltha Thong Dhar

West: Drimbling Dhar

The area of the sanctuary is 30.89 sq. km.

### 5.2.3 Geology and Terrain

The Himalayas are the youngest geological formations in the world and are still in the stage of morphological evolution. The important rock formations are gneiss, granites, quartzite and schist. The area is very dry, mountainous and ecologically fragile. Between Asrang and Lippa to the North of Taiti Khad, the strata mainly consist of granite and gneisses, which are altered with the consequent formation of China clay. The rapid weathering of granite in the sanctuary appears due to high frequency of frost action and extreme temperature. It gives rise to sandy soil. Schist and gneisses produce clay and granite produces loam, and therefore sandy-clay soil type is most prominent in the sanctuary. The humus layer is not very thick. The soil depth is also not much due to precipitous slopes and coupled with high altitude, tree growth is almost negligible. On steep slopes the erosion due to snow, sliding of glaciers is very high and consequently the fertility of the soil is on lower side. In the buffer zone area, however, soil depth and humus layer is sufficient to sustain tree growth.

### 5.2.4 Climate and Rainfall

The area has extreme temperature, harsh climate with average to very heavy snowfall and rainfall being 22.63 mm. The temperature ranges from - 10° C to 15° C. Winter season is fairly prolonged from mid of November to end of March or early April. Summer is of short duration up to May and rains start in June, which lasts till September. During this period there is also snowfall in higher reaches.

### 5.2.5 Water Sources

Higher snow clad mountains are mainly the source of water. Taiti stream is the main source of water beside Kochi which being equally important, are the main source of water. When the snow starts melting, water is diverted through small check dams to small irrigation channels. Skillfully constructed wooden siphons are used for direction of water, which reduce the loss of water in transect. As the rainfall is less, snow fed streams play an important role in the water regime of the area.





#### 5.2.6 A. Flora of the Sanctuary

The vegetation of the sanctuary is represented by *Juniperus* shrubs and alpine pastures. There are hardly any trees in the sanctuary area. Eighty seven medicinal plant species have been reported, out of which fifteen are threatened. In the proposed buffer zone, trees of Deodar, Chilgoza and Kail with few broadleaves are present. Based on the eco-system classification of forests by Champion and Seth following forest types are representative of the area;

##### (i) Himalayan Dry Temperate Forests

###### Type 13/C-IIa Neoza Pine Forests (*Pinus gerardiana*)

Nearly pure crops of *Pinus gerardiana*, locally mixed with Deodar are seen. The forests being open and a great deal of surface is bare. These are much frequented by men for collection of the Neoza seed, which has got a readymade market. Upper storey consists of *Pinus gerardiana* and occasionally *Cedrus deodara*. In the second storey *Fraxinus xanthoxyloides* is common. Among the shrubs *Artimesia maritima*, *Daphne oleoides*, *Ephedra gerardiana*, *Lonicera hypoleuca* are common.

###### Type 13/C-IIb Dry Deodar Forests

This type has pure coniferous forest along the open slopes, broadleaved trees being confined to mostly ravines. It has open forests of low branching trees confined to the lower portion adjoining sanctuary. The Deodar tends to be gregarious and forms nearly pure crops. On drier situations, it is found mixed with *Pinus gerardiana* but open mixed crops are common especially in the more arid tracts where the Pine extends much higher up the slopes. Blue-Pine is also present and may occur as a pure crop over limited areas, especially at the higher elevations.

The undergrowth varies in type and density considerably in pure or mixed forests and also according to the dryness of the locality. The common shrubs and herbs are *Plectranthus* spp., *Indigofera gerardiana*, *Fragaria vesca* and *Viola serpens*, etc. When Kail is dominant, *Desmodium tiliaefolium*, *Asparagus filicinus* and *Salvia glutinosa* are more in evidence.

##### (ii) Moist Alpine Scrub

###### 15/C-3 Alpine Pastures

Extensive alpine pastures form a characteristic feature of the tract just above the tree line. The limit of their altitudinal distribution is between 3600-4550 m. elevation, the upper limit extending even to the perpetual snowline. The slopes are usually gentle and bear a thick mat of alpine grasses. The areas remain snow bound from November to April. The common herbs are *Primula glomerata*, *Anemone obtusiloba*, *Iris* spp., *Gentiana kurroo*, *Jurinea macrocephala*, *Aconitum heterophyllum*, etc. Other common species being *Agropyron* spp. *Brachypodium sylvaticum*, *B. japonica*, *Poa* spp., *Dactylis glomerata*, *Millium effusum*, etc.





(iii) Alpine Scrub

**Type-16/C-I Dry Alpine Scrub**

It is very open xerophytic formation. The annual precipitation is always below 350 mm, which is obtained in the form of winter snow. There is not much area available for grazing owing to inaccessibility and ruggedness of the terrain. The vegetation consists of dwarf trailing shrubs such as *Juniperus communis*, *Artemisia maritima*, *Caragana brevispina*, *Ephedra gerardiana*, *Lonicera hispida*, etc.

**Type-16/E-I Dwarf Juniper Scrub**

This type occurs on very dry sites exposed to intense isolation during the short growing season. The soil is very dry sandy and loose and is easily transported by wind. Scattered herbs occur but grasses are absent. The vegetation consists of *Juniperus communis*, about 0.6 m high in more or less compact patches of a few square meters at 2900 m. to 4250 m. *Juniperus indica*, with low spreading branches up to 30 cm., having average height of 1.5 m, occur in dense patches up to 0.2 hectares in extent at an altitude of 2900 m to 4200 m.

**5.2.7 B. Flora within 10 KM Radius from the Project Site & outside the Sanctuary**

In addition to the forest types representing the floral species present inside the Sanctuary, following forest types represent the floral diversity within the 10 km radius from the Kashang Hydroelectric Project site in the Kinnaur district of Himachal Pradesh.

**(i) Himalayan Dry Temperate Forests:**

This forest type mainly comprises of conifer spp. as Deodar, Neoza Pine, *Juniperus macropoda*, which being most characteristic with Kail and occasional Fir at higher elevations. Among the broadleaved trees, characteristics xerophytic species such as *Fraxinus xanthoxyloides*, *Quercus ilex* & *Olea ferruginea* occurs, the trees being of poor height, growth and occurring scattered among the conifers forming more or less small pure patches. Xerophytic shrubs such as *Daphne oleoides*, *Artemisia* spp., *Caragana* spp. and *Astragalus* spp., occurs freely and form a continuous cover.

**13.C.1 Dry Broadleaved and Coniferous Forests (*Quercus ilex*, *Pinus gerardiana*):**

An open forest of Pine rarely exceeding 16 m in height, mixed with evergreen Oaks and few other xerophytic trees, which form a fairly complete cover on sheltered sites and cool aspects, generally leaving much of the soil exposed. There is fair amount of low shrub growth of xerophytic nature. At places Pine is absent and Oaks predominate.





#### 13.C.4 West Himalayan High Level Dry Blue Pine Forests (*Pinus wallichiana*)

This type is met with on the higher altitudes of Kalpa Range. The Blue Pine replaces both the Kharsu Oak and the Silver Fir as the typical high level tree of dry zone at elevation of 3000 m to 3600 m. It extends as far towards the arid Tibetan uplands as Deodar does. Below this level the Pine occurs quite frequently as a companion of Deodar, but its general tendency is to retreat uphill with increased aridity, depending more and more upon the snow beds of the colder northern aspects.

Silviculturally, this high level Blue Pine is quite different from the low level type. It forms very open stands on gentle slopes, which hold snow well, while the low level type prefers warm, well drained ridges. Ecologically also the two types of Blue-pine are different. Low level Blue-pine is merely a serial phase in the re-clothing of slopes, from which the forest has been burnt by fires, and leading it back to climax forest type of Deodar. The high level Blue-pine on the other hand is a true climatic climax type for the very specialized conditions in which it grows, and there is no other species except scrub *Juniper* spp., which could take over its role on the arid tracts. Important trees and shrubs met with in this type are *Betula utilis*, *Juniperus communis*, *Potentilla eriocarps*, *P. fruticosa*, *Pyrus foliolosa*, *Rhododendron anthopogon*, *R. campanulatum*, *Salix hastata*. Among the herbs, the common are *Aconitum heterophyllum*, *Achesmanthum*, *Anaphalis* spp., *Anemone* spp., *Aster* spp., *Geranium* spp., *Nepeta* spp., *Senecio* spp., etc.

#### (ii) West Himalayan Sub-alpine Forest

##### 14.C.1a West Himalayan Sub-alpine Forest

This type occurs not as a continuous belt but in large irregular patches above 3050 m. *Abies spectabilis* is found in pure form or mixed with *Betula utilis*. The examples can be seen on slopes of Kailas and above Rogi but it is seldom as common as the high level Blue-pine, which eventually displaces it altogether.

##### 14.C.1b West Himalayan Sub-alpine Birch/ Fir Forest

This type occurs in large open and irregular patches above 3000 m elevation or so. The predominant conifers is *Abies spectabilis* and occasionally few Kail trees. The crops are usually stunted with varying proportions of deciduous *Betula utilis*. Low *Rhododendron campanulatum* form dense mats and Kharsu Oak shrub sometimes extends into this type. Among the shrubby undergrowth, *Juniperus macropoda*, *Sorbus foliolosa*, *Cotoneaster* spp., are common. The herbaceous undergrowth consists of *Primula*, *Aconitum*, etc. Examples may be seen in the upper reaches of the Chaunda, Panwi, Melgad, Lishnam catchments.





(iii) Type-15/C1 Birch/ Rhododendron Scrub Forest

This type forms the upper limit of the alpine forest and occurs as patches of varied size in the sheltered sites and usually on northern and western aspects. This type forms a low evergreen forest almost entirely of species Rhododendron but with some birch and deciduous trees. Owing to snow pressure, the stems are curved up from a more or less horizontal or downwards bent base. The common shrubs are Salix spp., Cotoneaster spp. and herbs such as Potentilla spp., Primula spp. Polygonatum spp., Jurinea macrocephala etc.

5.2.8 Fauna of the Sanctuary

The main wildlife species found in Lippa-Asrang Wildlife Sanctuary are Snow Leopard (*Panthera uncia*), Musk Deer (*Moschus moschiferus*), Bharal (*Pseudois nayaur*), Ibex (*Capra ibex*), Himalayan Tahr (*Hemitragus jemlahicus*), Leopard Cat (*Felis bengalensis*), Himalayan Weasel (*Mustela sibirica*) etc. Among birds, main species are namely, Monal (*Lophophorus impyanus*), Snow-Cock (*Tetraogallus tibetanus*), Black Partridge (*Francolinus francolinus*), Chakor (*Alectoris graeca*), Jungle Crow (*Corvus macrorhynchos*), Eagle (*Aquila chryaetos*), Sparrow Hawk, Spotted Dove (*Streptopelia chinensis*), Blue Rock Pigeon, (*Columba livia*) Himalayan Nut Cracker (*Nucifraga carvocatactes*), Golden Eagle (*Aquila chryaetos*), Himalayan Griffon Vulture (*Gyps himalayensis*), Grey Tit (*Parus major*) and other smaller birds are also found. Brief description about main species of the sanctuary and their habitat is as under;

**Snow Leopard (*Panthera uncia*)**

This animal is of yellow grey colour with dark spots all over the body with long bushy tail. This is the main predator found in the Lippa-Asrang Wildlife Sanctuary up to 5500 m. It is nocturnal. It is distinctive in the shortness of its muzzle, high forehead and vertical chin. The spots are unbroken on head and lower parts of the limbs and break up into rosettes on the body. It usually resides above the tree line i.e. 12000-13000 feet above sea level. It preys upon Sheep, Goats, Ibex, Blue-Sheep, rodents and is known to follow the movement of grazing herds. Recently its number has been dwindling in wild and requires urgent attention to protect this species and its habitat. There have been instances where snow leopard has attacked domestic animals, causing considerable loss and thereby is in direct conflict with man. Habitat improvement and protection for its conservation is of utmost importance so as to improve prey base for long-term survival.

**Musk Deer (*Moschus moschiferus*)**

Locally this animal is known as "Musbapha". In the past, it has been hunted for its precious "Musk-Pod", which in fact an abdominal gland is found only in the male animal. Musk deer holds a place between the deer and the antelope and is regarded as the underdeveloped form of the deer. It is hornless and has a gall bladder. A solitary and secretive animal, it is found





between 2900-4000 m. elevation in the sanctuary. No systematic and detailed wildlife survey has been carried out for this species in the past, as there are few trees in the sanctuary area, necessary for refuge of the animals. However, direct and indirect evidence of the animal in the sanctuary has been reported. It feeds on grass, lichens, leaves and flowers.

**Bharal (*Pseudois nayaur*)**

This Himalayan Blue Sheep is seen mostly above 3000 m. In structure it holds a place intermediate between sheep and goat, as it graze like sheep on open grassy undulating slopes and like goat can climb to precipitous cliffs, inaccessible mountains when disturbed. It prefers undulating ground and is a splendid climber on stiff rocky terrain with considerable speed. Between trees and snowline, the Bharal finds their food in the occasional patches of coarse grass, moss and dwarf shrubs. It may occur in small group to big flock numbering up to two hundred occasionally.

**Ibex (*Capra ibex*)**

This is common animal of the Pin Valley National Park and do crossover to the Sanctuary. The locals call it Kin or Tangrol. An ibex is heavily built sturdy Goat with large horns. It occurs in the higher elevation above the tree line. The Ibex is distributed in the mountain ranges of Central Asia and Western Himalayas. The Himalayan Ibex inhabits the Western Himalayas on both sides of the main Himalayan Range. Its eastern limits are set by the upper reaches of the Satluj River, east of which it does not occur. The favourable ground of Ibex lies in the higher elevations above the tree-line. In spring, they are found low below the snow-line, grazing early in the morning and again in the evening. Above grazing ground they have the shelter and security of precipitations cliffs and ridges. It is found in herds and is hunted for soft woolly under fur.

**Brown Bear (*Ursus arctos*)**

Its heavier built and brown coat will suffice to distinguish it from the Black Bear. The coat is dark rich brown during summer and luxuriant before the onset of winter. It inhabits bare open peaks high above and along the tree-line. During early summer, they graze on newly grown grass and hunt voles and marmots. They also kill Sheep, Goat and Ponies during summer. During fruiting season, it feeds on berries and wild fruits. It hibernates during winter.

**Thar (*Hemitragus jemlahicus*):**

These heavily build wild Goat with short curving horns inhabits steep cliffs in the forest terrain. Locally, it is known as Meshi. Thar is found in most inaccessible ground in the Himalayas. It inhabits precipitous terrain along towering cliff, rocks and dense scrub. Found in herds, its number in the wild is declining and urgent protection measures are required.





#### Leopard Cat (*Felis bengalensis*)

It is about the size of a domestic cat but rather having longer legs. It looks like a miniature panther. There are four distinct bands running from the crown over the neck. They have a pair of horizontal check strips. It is nocturnal and preys on small birds and animals. Hollows in the tree are its favorite shelter. It preys upon small birds and animals. Instances of its inbreeding with domestic cat have been observed.

#### The Himalayan Weasel (*Mustela sibirica*)

It has been seen several times in thatches all over the sanctuary. It mostly inhabits stonewalls raised by shepherds to protect their Sheep and Goats. These small animal 60 cms. in size is known for inflicting damage on the pheasants. In the Himalayas it lives in temperate and alpine pastures up to 16000 feet showing remarkable adaptability.

### 5.2.9 Summary of Threats to Wildlife Conservation

Biotic pressure and habitat destruction are main threats to the wildlife conservation in the sensitive Himalayan region. The domestic animals compete with the dwindling wild population of the Himalayan species in alpine pastures resulting overgrazing, which has led to the degradation of pastures. Due to biotic pressure coupled with less precipitation and inhospitable terrain, the free migration of the wild species is restricted to the pockets in the Himalayas leading to inbreeding. Rehabilitation of the degraded areas, habitat improvement and corridor protection will also lead to the enrichment of biodiversity of the region.

### 5.2.9 Socio-economic Analysis

Villagers have right of grazing, fuel-wood collection, timber, minor forest produce collection, etc. Unsustainable pressure on the natural resources has lead to the degradation of the area in many parts of the sanctuary. Lippa, Asrang and Toktu villages are situated along the lower boundary of the sanctuary. Porang Dogri, people of these villages migrate seasonally is also situated within the sanctuary area. Agriculture is the chief source of livelihood of the people of Lippa-Asrang. They usually get only one crop in the year, due to high altitude and harsh winter. They grow barley, wheat and vegetables. The farmers have to make the living out of infertile, shallow and stony land holdings.

At the onset of winter, they move down to lower elevations to sell some of their indigenous items like wool, which add to their source of livelihood. They also grow Kuth, Peas and other vegetables as a cash crop. Animal husbandry is another occupation, which adds to the marginal income of the local population. Kuth is also being cultivated locally. Chilgoza Pine's (*Pinus gerardiana*) seeds are highly valued and add to the economy. The hostile terrain and unfriendly climatic conditions restrict developmental activities and living is generally harsh under these conditions.

### Chapter-5: Wildlife Management, Development and Bio-diversity Conservation Plan

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### 5.3 WILDLIFE MANAGEMENT, DEVELOPMENT AND BIO-DIVERSITY PLAN FOR THE LIPPA ASRANG WILDLIFE SANCTUARY

#### Objectives

This plan envisages the wildlife management, development and conservation of biodiversity of the Sanctuary and sustenance of mountain livelihood as long term goals. A plan for conserving the biodiversity of the area, ecological rehabilitation of the tract by pasture development and enrichment, afforestation and land stabilization measures, improving water regime, control of illicit poaching are some of the steps to protect and conserve the biodiversity of the area.

Eco-development of the area in addition to aforementioned factors will include sustaining mountain livelihoods, community development, eco-tourism promotion and protection of cultural values. To achieve these goals, the objectives of the plan are as under:

- i. To improve the habitat and protect the species found in the sanctuary.
- ii. To support pheasant conservation and breeding program at Sarahan.
- iii. Carrying out soil stabilization works in erosion prone areas by constructing bio-engineering/engineering structures to conserve and reduce soil erosion.
- iv. Promotion of LPG and non-conventional energy so as to reduce pressure on natural resources.
- v. To support livelihood enhancing components so as to reduce the dependence of the local population on natural resources.
- vi. To undertake basic infrastructure works in the Sanctuary and rural infrastructure and community development works in the area around the Sanctuary so as to get peoples' involvement in biodiversity conservation.
- vii. To promote eco-tourism and generate awareness regarding wildlife environmental values among local masses especially school children
- viii. To build capacity and impart professional training to the sanctuary staff.
- ix. To establish research and monitoring mechanism for effective implementation and achievement of plan components.

The priority will be to conserve and protect the biodiversity of the sanctuary. The eco-development to promote and sustain the livelihood support systems, promotion of eco-tourism and creating environmental awareness will be the other key areas requiring varied management efforts to achieve the long-term goal. In order to achieve the above objectives, activities under following components based on the objectives outlined above are required to be implemented.

#### Chapter-5: Wildlife Management, Development and Bio-diversity Conservation Plan

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## 5.4 WILDLIFE MANAGEMENT AND CONSERVATION

Himalayas representing very fragile ecosystems inhabits unique faunal and floral species. The key stone species sustaining the critical natural food web require appropriate management strategy and effective implementation of the plan. Tough rugged mountains with harsh climatic conditions and less working season during the year, makes the natural resource management more challenging. The management inputs have to be appropriate so as to allow nature to function within natural parameters. The preference of key stone species of the sanctuary has to be analyzed for habitat manipulation and management intervention. The following activities are proposed for the management and conservation of biodiversity of the Lippa-Asrang wildlife sanctuary:

### 5.4.1 Habitat Improvement

- 5.4.1.1 Pasture improvement and afforestation; Improvement of alpine pastures and planting of indigenous useful species will be undertaken. Rotational grazing in alpine pastures and stocking by genetically superior and improved varieties of grass, involving stakeholders, will decrease overgrazing and pasture degradation. Alpine grass species like, *Poa alpina*, *P. versicolor*, *Chrysopogon echinulatum*, *Bothrochoea*, *Agrostis gigantea*, *Bromus gracillimus*, *B. inermis* and legumes such as *Melilotus alba* and *Medicago falcata* will be taken up for pasture improvement. Weed control will also be factored in while carrying out pasture improvement activities. As the area is mostly situated in alpine pasture zone, planting of useful species i.e. *Populus ciliata*, *Fraxinus xanthoxyloides*, *Pinus gerardiana*, etc. will be restricted to the lower end along moist portions.
- 5.4.1.2 Creation of water resources: Construction of water ponds and check dams at appropriate places will help in augmentation of the water regime. Diversion of water to northern facing slopes and thereby prolonging the water discharge will add to the water regime of the area.
- 5.4.1.3 Soil conservation measures: Himalayas are prone to landslides due to precipitous terrain and shallow soil depth. Construction of Bio-engineering/ engineering structures to arrest the soil erosion and land degradation will help in stabilization of the strata. Soil conservation along steep slopes improves water regime, is conducive to support vegetation and thereafter get stabilized.
- 5.5.1.4 Strengthening the protection mechanism: Wild populations are to be protected against poaching for which support in the form of equipment and training will be required. To minimize the spread of diseases among wild animals vaccination of the local cattle will be supported by the plan.





#### 5.4.2 Support to *Ex-situ* Pheasant Conservation & Breeding Program at Sarahan

Some species are on verge of extinction and for protecting them *ex-situ* efforts are required. A pheasantry to support conservation and breeding of western Tragopan has been established at wildlife division headquarters at Sarahan. In the pheasantry birds are being bred in captivity for ultimately releasing them in natural habitat for establishing viable populations in the wild. Other rare and endangered species can be taken up for captive conservation and breeding program on priority basis for which funds in addition to the existing conservation efforts are proposed under this plan.

#### 5.4.3 Soil Stabilization and Bio- engineering Works

To arrest soil erosion for improvement of moisture regime and land productivity, construction of bio-engineering /engineering structures within the sanctuary has to be carried out. Check-dams, spurs (preferably vegetative) and check walls at appropriate places as per requirement will be constructed.

#### 5.4.4 Promotion of Non-Conventional Energy Sources

Energy saving devices like improved Chullahs/ Solar Cookers, Crematoriums, Solar Lanterns/ Lights, LPG, Gobar Gas Plants, etc. will be introduced in the villages located within and outside the protected area to reduce the requirement of fuel-wood and minimize over dependency of villagers on wood. The activities will be demand driven and location specific.

#### 5.4.5 Support to Sustainable Mountain Livelihoods

Himalayas are also referred to as Living Mountain due to high population concentration as compared to other mountainous regions of the world. However, at the altitude rise and we approach high Himalayan Ranges the density of population decreases whereas the dependency on natural resources of the people increases. The area falls in the tribal belt of the state and requires additional efforts to enhance and sustain livelihood delivery systems. In this plan following issues will help in sustaining the livelihoods of the local population.

#### 5.5.5.1 Livestock and Fodder Improvement

The aim is to improve productive potential of livestock through improvement of fodder, management practices and genetic upgradation. This subcomponent will include implementation of development plans, which are aimed at better and improved animal health care and promotion of income generating activities. Special emphasis will also be given on reducing man - animal conflict in the area and due compensation will be paid to the farmers for loss of human and cattle life and the damage caused to agriculture produce by wild animals after identifying mutually agreeable criteria. Livestock health will be improved by completing existing practices with additional support in terms of medicines, vaccination, veterinary aid-kits and organizing veterinary health camps on a regular basis making use of the existing veterinary facilities. Support will also be provided for activities like





nutritive food for rearing young calves by complementing the existing system in place. Based on the need, support will be provided in terms of facilities for artificial insemination as well as natural breeding by strengthening the existing veterinary services.

#### 5.5.5.2 Fodder Production and Community Woodlots

Agro-forestry, silvi-pasture and alpine pasture development in the degraded land will be encouraged. Improved planting material of grass and other local potential fodder crops will be encouraged on the field boundaries. Community woodlots through Panchayats will be created and managed on PFM principles on community/ forestlands. Existing community management practices in the region will be supported in the natural resource management sector. Fodder will be the main focus in all forestry-based plantations to attract the community participation. Stall feeding will be encouraged by providing one time subsidy/ support for (a) renovation of cattle/livestock shed (b) construction of cattle/livestock shed, only for the poorest of the poor and (c) chaff cutters. Conservation and value addition of fodder will be undertaken through encouraging practices of hay and silage making and quality will be improved by demonstrating and encouraging Urea-Molasses treatment of crop residues.

#### 5.5.5.3 Water Harvesting Structures

Depending on the local potential and suitable terrain, water resources will be developed for livelihood enhancement in the surroundings of the Lippa-Asrang Wildlife Sanctuary. Depending on the physiographic and local conditions, the components will include following indicative activities:

- Developing new and improving existing water resources;
- Construction of village ponds, tanks, check-dams;
- Support and encouragement for roof water harvesting and irrigation;
- Efficient use of water by improving conveyance systems, irrigation channels (kuhls) and introducing sprinkler and drip irrigation system.

The issues of developing new and improving existing water resources gain special significance in dry cold desert areas to promote vegetation. The catchment is to be rehabilitated for recharging the natural water delivery mechanism. Efforts to conserve water have to be taken as there is no conceivable substitute for such natural services.

#### 5.5.5.4 Agriculture and Allied Sector

Agriculture and allied activities are the main stay of the mountain communities' livelihoods. Strategic investments will be made to create on-farm based livelihood opportunities and income generation through improved agriculture, horticulture, poultry, bee-keeping, livestock and other farm based activities. Based on local potential and demand, improved hybrid





varieties of aromatic, medicinal and horticulture plant varieties will be introduced and provision for grading, processing, storage, branding, packaging and marketing will be facilitated. Propagation of Neoza (*Pinus gerardiana*), which is restricted to cold desert and medicinal plants promotion will also enhance the economy of the area. Activities that will be carried out under this sub-component can be categorized into two focus areas; (i) farming systems development and extension support, and (ii) value addition and marketing.

#### 5.5.5.5 Support to Farming System and Extension Support

Investments will be made to enhance farm input services and extension, which includes appropriate technologies generation and dissemination, provision for improved quality of seeds, integrated pest management, vermi-composting, soil testing and support for introduction of high value crops etc. Finances from the project will be directed towards introduction or further development of decentralized, collaborative technology generation and dissemination activities in villages around the sanctuary. The mobilization will ensure greater farmer involvement in planning and implementation of extension and adaptive programs. The implementation of this sub-component will tactically depend on the nature of collaboration between the project and other line departments responsible for agriculture and allied sectors, public-private partnership with private sector and NGO service providers. Introduction of innovative agricultural, livestock and poultry production systems would be actively promoted.

Demonstration, field days, exposure visits, mass media, development of local resource persons and master trainers and wherever feasible information technology will be used as extension tools. The precise nature of demonstrations, training programme and other interventions will be detailed out in the project implementation plan.

#### 5.5.5.6 Value Addition and Farming

Value addition and marketing is critical for ensuring sustainable economic growth in the mountains. Providing private entrepreneurs with an enabling environment, efforts will be made to create a congenial environment for promoting private entities involved in value addition. Finances (on a one-time subsidy basis) will be made available to assist potential entrepreneurs to establish sustainable backward linkages with producers and producer groups, identify business opportunities, identify domestic and export markets through market surveys, participate in trade fairs and also access investment funds from GOI sponsored schemes and commercial banks. Basically the value-addition element will cover investment on product diversification, processing, grading, storage, packaging, branding, credit linkages and marketing.





## 5.5 Rural Infrastructure and Community Development

### 5.5.1 Infrastructure Development

This sub-component covers construction of footpaths and small bridges to improve the accessibility within and outside the Sanctuary for its effective management and promotion of eco-tourism.

The project will prepare plans showing paths, footbridges, and culverts required and indicating how these provide access to each habitation to nearby roads or market centers. These plans would be prepared in such a way that they complement the existing master plans for rural roads prepared under plans like, Local Area Development Fund (LADF), the Prime Minister Gram Sadak Yojna (PMGSY), etc. The traditional bridle paths will also be included in the plans. These plans will be finalized in consultation with the Panchayats and local communities. The component will also include, if required, construction of ropeways in identified areas.

### 5.5.2 Community Development

Local institutions like, Panchayats, Self Help Groups, Yuvak and Mahila Mandals will be strengthened. Exposure and study tours of local groups to places and institutions, which demonstrate innovative ideas/ models to improve their living standards, will be planned. This will widen their knowledge and enhance their understanding of natural resources resulting in developing site-specific solutions to sustain mountain livelihoods. The resettlement and rehabilitation benefits under Chapter-2 will be extended to all the villagers in the catchment including Lippa and Asrang. The benefits as free electricity to all Project Affected Families, providing alternative energy resources, training to teachers with a focus on environment conservation education, etc. will be provided to the inhabitants/ serving teachers in the catchment area. Merit Support Scholarship, community development, skill upgradation, etc. will also be funded from the Resettlement and Rehabilitation Plan, under which a provision of Rs. 300 lacs has been earmarked.

## 5.6 ECO-TOURISM AND ENVIRONMENTAL AWARENESS

### 5.6.1 Eco-tourism

Himalayas are well known for trekking and mountain expeditions. Sighting of wildlife species i.e. as Blue-Sheep and Ibex along well-defined trails inside the sanctuary can boost the wildlife tourism in the area. Local youths can get employment by acting as local Guides. Organizing trekking expeditions is another field having good adventure tourism potential. Local youth will be imparted training in this field in places, which are well developed having expertise in similar areas, like Leh (Jammu & Kashmir).





#### 5.6.2 Environment Awareness Centre

Environmental Awareness Centre is proposed to be established at appropriate place, preferably at district Headquarters, which is not far off from the sanctuary, for general environmental awareness. With children as target group, centre will act as knowledge center about wildlife and environmental values. This will inculcate the sense of belongingness among them helping in wildlife and environmental protection and understanding the biodiversity richness of the Himalayas. The centre will also develop publicity material, organize environmental awareness meetings and workshops.

#### 5.7 CAPACITY BUILDING AND SKILL-UPGRADATION

For quality management inputs, the capacity of the field staff deployed will be enhanced with appropriate training inputs in relevant fields at regular intervals.

Exposure visits and field study tours to the well managed protected areas like Pin Valley National Park in Spiti, High Altitude Hemis National Park in Ladakh and high altitude well managed sanctuaries will be organized. Besides training in wildlife management, field staff will also be sent to human and social development management courses.

#### 5.8 RESEARCH AND MONITORING

Himalayan biodiversity is not well studied at present and require research efforts to gain information and knowledge on the species found in the Sanctuary. Research parameters are to be prioritized to study the habitat preferences of the species found in the sanctuary and accordingly devise and apply the management practices in the sanctuary. Research and monitoring is an important part of natural resource management. It has become more significant today as more species are being added to the endangered list.

Biodiversity as we move up the Himalayas go down both in richness and numbers considerably. However, the uniqueness of the area of the Sanctuary falling in cold deserts in the trans-Himalayan falls in the transition zone between middle and trans-Himalayas. The confluence of climate and edaphic factors strongly influence the biodiversity of the Sanctuary. Recent study by the HFRI showed that the area supports some of the vanishing floral species. Due to the impact of global warming, the vegetation line, insect biodiversity is going to be altered influencing the distribution and type of wild animals found in the Sanctuary. The wildlife species such as, Snow Leopard, Blue-Sheep and Ibex could move further up to the higher altitude for which regular monitoring and evaluating trends in the wild population are proposed.

The sanctuary falls in the higher Himalayan region and melting of snow is a main source of water in the cold areas. The small water channels spread all over contribute as a water collecting system in the pastures and are also a





source of water to the animals. In water-stress areas after proper identification and monitoring, waterholes as per requirement will be built for even utilization of habitat by the wild animals. The Arid Zone Field Research Station to be established under CAT Plan (Chapter 1, Para 1.12.13) will also cater to the wildlife research operations/ activities in the field.

Research and Monitoring will include the following parameters:

1. Habitat analysis viz., food, shelter, availability of water, etc.
2. Wildlife census and trends.
3. Periodic survey for wild animal diseases.
4. Monitoring the cattle influx into the sanctuary.
5. Resources evaluation.
6. Monitoring and evaluation results to support management intervention in the Sanctuary.
7. Survey and study of Griffon Vulture species, i.e. *Gyps himalayensis*, *Gypus fulvus*, *Neophron percnopterus*, *Gypaetus barbatus* (Bearded Vulture or Lammergier) and other high altitude Birds of Prey spp.

A mechanism to monitor and evaluate the objectives proposed under the plan will be established in the beginning for effective implementation. Monitoring wildlife population trends, Non-Timber Forest Produce shall be taken up on priority. Research will also be required to uplift the socioeconomic condition of the local population for harmony between man and nature. An Implementation and monitoring committee is proposed to be constituted for implementation, monitoring and evaluation of the project components under the chairmanship of the Divisional Forest Officer, wildlife Division Sarahan. The committee shall have local Panchayat Pradhan, two reputed NGOs, representatives of Mahila Mandals and Youth clubs as members. The committee will meet once in each quarter in the sanctuary area.

#### 5.9 Cost Estimate

The budget for different activities required to be carried out for Wildlife Management, Development and Conservation of Biodiversity of the Lippa-Asrang Sanctuary from Kashang HEP, amounting to Rs. 100 lacs has been earmarked and the details are given in Table 5.1 & Table 5.2. Maps showing dimensions of Lippa-Asrang Wildlife Sanctuary along with Hydroelectric Project site (stage IV) are given in Figures 5.1, 5.2 and 5.3.





## WILDLIFE MANAGEMENT AND BIODIVERSITY CONSERVATION PLAN FOR THE LIPPA-ASRANG WILDLIFE SANCTUARY

### FINANCIAL COST

(Table 5.1)

Sl. No.	Component	Outlay (in Lakhs)
1	Habitat improvement	22
2	Support to Pheasant conservation and breeding program at Sarahan	10
3	Soil stabilization and bio engineering works	15
4	Promotion of non-conventional energy sources	3
5	Support to sustainable mountain livelihoods	10
6	Rural infrastructure and community development	20
7	Eco-tourism environmental awareness	5
8	Capacity building and skill-up gradation	5
9	Research and monitoring	10
	<b>Total</b>	<b>100</b>

Table 5.2 Financial Cost for Ten Years

### Annual Financial Outlay (Rs. in Lakh)

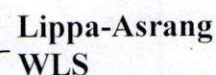
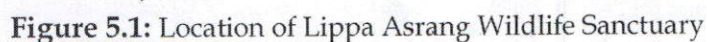
Sl. No.	Component	Financial Year										Total
		2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	
1	Habitat improvement	1.5	2	3	3	3	3	2	1.5	1.5	1.5	22
2	Support to Pheasant conservation at Sarahan	1	2	2	2	2	1	-	-	-	-	10
3	Soil stabilization	1	2	3	3	3	1	1	0.5	0.5	-	15
4	Promotion of non-conventional energy sources	0.5	0.5	1	0.5	0.5	-	-	-	-	-	3
5	Support to sustainable mountain livelihoods	0.5	1	2	3	1	1	0.5	0.5	0.5	-	10
6	Rural infrastructure and community development	0.5	2	4	4	3	2	2	1	1	0.5	20
7	Eco-tourism & environmental awareness	0.5	1	1	1	1	0.5	-	-	-	-	5
8	Capacity building and skill-up gradation	0.5	1	1.5	1.5	0.5	-	-	-	-	-	5
9	Research and monitoring	-	0.5	2.0	2.0	2.0	1.5	0.5	0.5	0.5	0.5	10
	<b>GRAND TOTAL</b>	<b>6.0</b>	<b>12</b>	<b>19.5</b>	<b>20</b>	<b>16</b>	<b>10</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>2.5</b>	<b>100</b>

### Chapter-5: Wildlife Management, Development and Bio-diversity Conservation Plan

General Manager  
IKHEP, Stage II-III  
HPPCL, Reckong Peo.

Dy. Manager, Environment,  
Integrated Kashang HEP  
HPPCL, Kinfed Building R/Peo  
Distt. Kinnaur 172107





**Figure 5.2: Location of Lippa Asrang Wildlife Sanctuary**



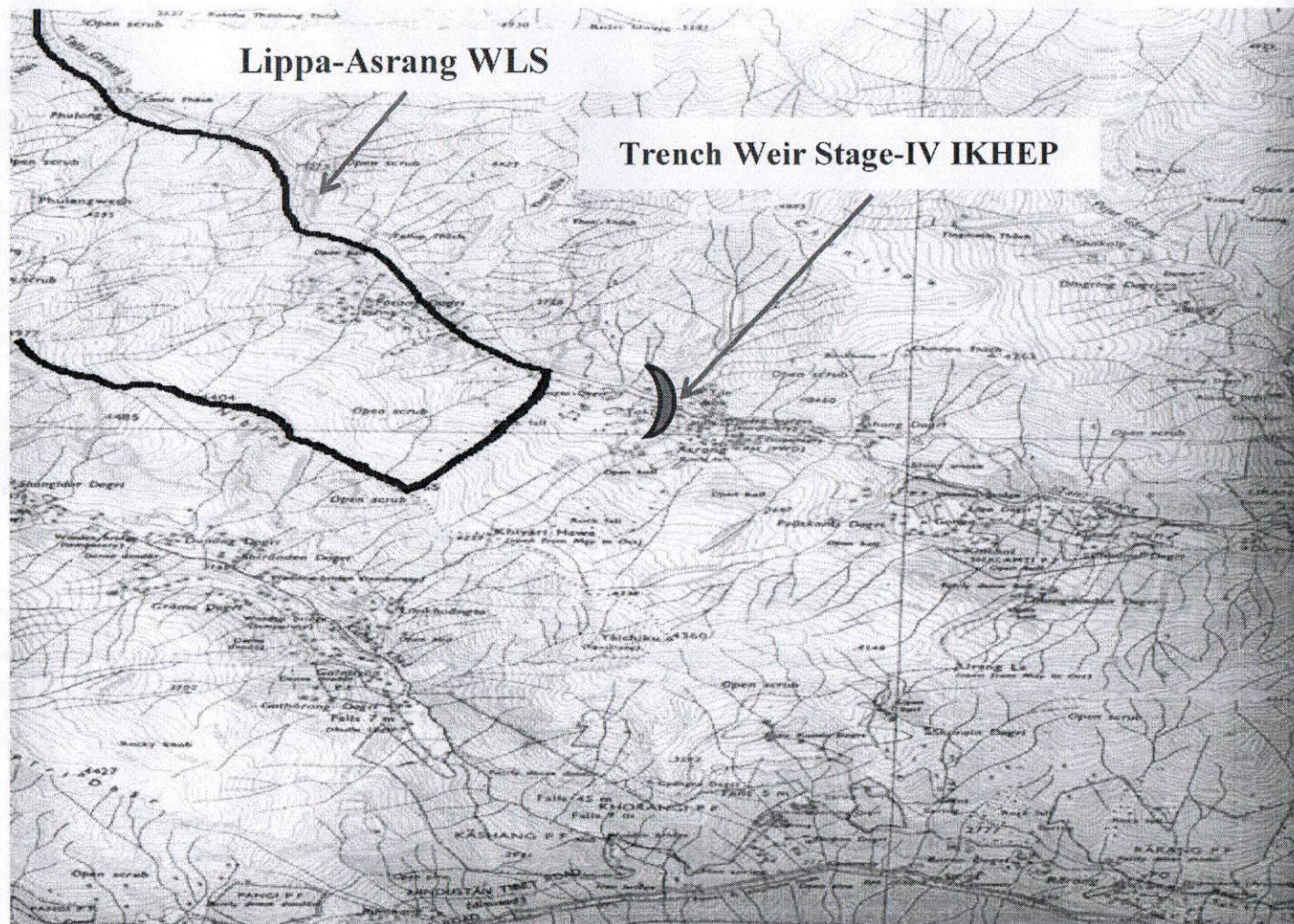


Figure-5.3: Map showing dimensions of Lippa-Asrang Wildlife Sanctuary vis-à-vis the Hydroelectric Project

General Manager  
IKHEP, Stage II-III  
HPPCL, Reckong Peo.

Dy. Manager (Environment),  
Integrated Kashang HEP  
HPPCL, Kinifed Building R/P  
Distt. Kinnaur 172107





# कार्यालय ग्राम पंचायत, लिप्पा

तहसील मूरंग, जिला किन्नौर, हि0प्र0 - 172 109

प्रतिलिपि प्रस्ताव संख्या: - I

ग्राम पंचायत/ग्राम सभा बैठक दिनांक: - 9-12-07

अध्यक्षता: - प्रधान श्री 2 मास लाल

विषय: - निर्माणधीन कशंग जंगल क्षेत्र में बनवाने से पूर्व स्थानीय लोगों द्वारा निम्नलिखित मांगें रखने को :-

आज दिनांक 9-12-07 को ग्राम पंचायत लिप्पा को विषय ग्राम सभा में उपस्थित विषय पर काफी विचार विमर्श के पश्चात सर्व एकमति से यह प्रस्ताव पारित किया गया कि उपरोक्त निर्माणधीन कशंग जंगल क्षेत्र में से बनवाने से पूर्व इसे समस्त ग्रामवासी लिप्पा निम्न मांगें रखना चाहती हैं जो कि इस प्रकार है :-

1. पेपर वर्क में सुलभ होने या होने की सम्भावना उद्घाटन पत्र पर अनुवाद के रूप में पत्र के संलग्न है।

2. उप मंडल क्षेत्र में समस्त जमींदारों के खेतों में विचार के सुविधा हेतु नहर का निर्माण किया जाए।

3. बिजली के तारों में कटौती हो।

4. सड़क एवं कोई में लगाने वाले लोगों व वाहनों की जायजता हो जाए।

5. खेती संबंध का निर्माण किया जाए।

6. पंगलिंग नहर का निर्माण किया जाए।

7. ग्राम लिप्पा में निम्नलिखित हर्टिकल कार्ड का उपयोग किया जाए।

8. औद्योगिक प्रशीतन केन्द्र खोला जाए।

9. ग्राम सभा पारित कर प्रस्ताव की प्रतिलिपि अतिरिक्त अभियंता कशंग निर्माण मण्डल के क्षेत्र में रिकॉर्ड पिओ की सेवा में प्रेषित है।

उपरोक्त विचार जाता है कि नहर रखी व सुधरती है।

General Manager  
IKHEP, Stage II-III  
HPPCL, Reckong Poo.

General Manager  
Integrated Kashiang HPP  
HPPCL, Reckong Poo.

पंचायत सहायक  
ग्राम पंचायत लिप्पा  
तह. मूरंग, जिला किन्नौर (हि. प्र.)





अनुसूचित जनजाति और अन्य परम्परागत वन निवासी (वन अधिकारों की मान्यता), अधिनियम, 2006 कार्यालय ग्राम पंचायत पांगी

विकास खण्ड कल्पा जिला किन्नौर (हि0प्र0),

संख्या:- पी0जी0पी0/2019-6971

दिनांक 11.09.2019

अध्यक्षता : प्रधान श्री तेजिन्द्र सिंह

दिनांक 11-09-2019

प्रस्ताव संख्या : 05 गणपूर्ति : 8/9

पंचायत बैठक

प्रेषित : उप महाप्रबन्धक (जनपद), चरण 2 व 3, काशंग जल विद्युत परियोजना, एच0पी0सी0एल0 रिकांग पिओ।

विषय

Himachal Pradesh Power Corporation Ltd. को Integrated Kashang HEP Stage-II & III Disstt. Kinnaur (H.P) के निर्माण हेतु Ltd. DPF-234 काशंग-I, जंगल / वन क्षेत्र में प्रस्तुतवित 0-93-48 है0 वन भूमि के उपयोग की मंजूरी के लिए सहमति प्रदान करने हेतु ।

आज की पंचायत बैठक में विषय उपरोक्त के सन्दर्भ में HPPCL के कार्यालय पत्र संख्या एचपीसीएल/आई 0के/आर0एण्ड0आर0(25)/2019 -2274-77 दिनांक 30.08.2019 बारे चर्चा किया गया कि ग्राम पंचायत पांगी द्वारा उपरोक्त परियोजना के चरण 2 व 3 के निर्माण हेतु दिनांक 03.04.2017 को ग्राम सभा द्वारा प्रस्ताव संख्या 01 दिनांक 12.03.2017 के माध्यम से प्रस्ताव पूर्ण बहुमत के साथ प्रारित कर चरण 2 व 3 कार्य को क्रियान्वयन के लिए सहमति दिया जा चुका है।

परन्तु HPPCL को वन अधिकार अधिनियम 2006 के तहत वन भूमि DPF- C-234 काशंग-I, रक्बा 0-93-48 है0 भूमि वन संरक्षण अधिनियम 1980 के तहत पर्यावरण एवम वन मंत्रालय से वन मंजूरी प्राप्त करने में प्रोफार्मा के बिना स्वीकृति लेने में दिक्कत आ रही है।

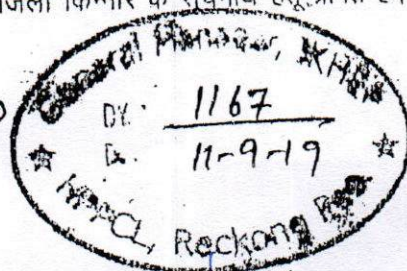
इस बारे में इस पंचायत बैठक में ग्राम सभा द्वारा जारी सहमति प्रस्ताव के आधार पर ग्राम पंचायत पांगी प्रस्ताव सर्व सम्मति से प्रस्ताव पारित कर उपरोक्त DPF- C-234 काशंग-I 0-93-48 है0 के लिए वन अधिकार अधिनियम 2006 के अन्तर्गत व वन संरक्षण अधिनियम 1980 के तहत पर्यावरण एवम वन मंत्रालय से वन मंजूरी स्वीकृति हेतु सहमति प्रस्ताव जारी करती है।

प्रस्ताव स्वीकार्य है। प्रस्ताव नकल असल व सही है।

पृष्ठांकन संख्या - 30/9/19  
प्रतिलिपि :

1. उपायुक्त, किन्नौर, जिला किन्नौर के सूचनार्थ हेतु प्रेषित है।
2. वन मण्डलाधिकारी जिला किन्नौर के सूचनार्थ हेतु प्रेषित है।

Mgr(E+R)  
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copy to DGM (E+R) & DGM (C)  
11/9/19



General Manager  
IKHEP, Stage II-III  
HPPCL, Reckong Poo.



PRADHAN  
SECY

GRAM PANCHAYAT PANGI  
DEV. BLOCK KALPA, KINNAUR, H.P.



PRADHAN

SECY

GRAM PANCHAYAT PANGI  
DEV. BLOCK KALPA, KINNAUR, H.P.



