INITIAL ENVIRONMENTAL EXAMINATION REPORT

FOR PROPOSED

400 KV D/C LOHARINAGPALA - KOTESHWER LINE

PTCUL

POWER TRANSMISSION CORPORATION OF UTTARAKHAND LIMITED

Prepared For

Asian Development Bank

Under

Power Transmission Corporation of Uttarakhand Ltd

(ADB FINANCIAL ASSISTANCE PROJECT, PFR-II)

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TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Background

1. Uttarakhand is one of the most beautiful and enchanting region of northern India. Nature has endowed this land with so much beauty and spiritual bliss that it is also known as Dev Bhoomi, the Land of Gods. Ganga, Yamuna and scores of other rivers originate in Uttarakhand. Among them Ganga is the most holy and prominent as she represents the soul of India, her rich culture, history and civilization. In Sanskrit 'Himalaya' means Abode of Snow, truly characterizing the vast permanent snow fields above the snow line. In the heart of these majestic mountains lies the state of Uttarakhand with Kumaon region in its east and Garhwal in the west. Uttarakhand came into existence on 9th November 2000 as the 27th state of the Republic of India. It was carved out of Uttar Pradesh. The State has been granted status of special category state by Union Cabinet on 2nd May 2001.Uttarakhand is Border State bordering China and Nepal. Geographically Uttarakhand is situated between 77^0 34' to 81^0 2' East longitude and 28^0 4' to 31^0 27' North latitude. Uttarakhand is predominantly a hilly state with 88% of hilly area. The climate of the state varies from subtropical in valleys to temperate on higher slopes. Total area of Uttarakhand is 53483 Sq Km which is 1.73% of the total area of India. The state is very rich in natural resources specially forest and water, as it has many glaciers, dense forests, mountain peaks and a network of mighty rivers viz., Ganga, Yamuna, Ramganga, Kosi etc. A total of 64.6% of the area is under forest cover.

ADMINISTRATIVE SETUP

2. Uttarakhand has inherited its present administrative set-up from its parent state, Uttar Pradesh. The facts and figure about Uttarakhand are as follows-

Divisions	2
Districts	13
Tehsils	78
Development Blocks	95
Muncipal Areas	71
Nyay Panchayat	670
Gram Panchayat	7227
Villages	16826

Based on Year 2007 figure.

MAP OF UTTARAKHAND

DEMOGRAPHY

Population	8479562
Male	4316401
Female	4163161
Rural	6309317
Decadal Increase	19.2(1991-2001)
Population Density	159 Per Sq Km
Sex Ratio	964 Per Thousand
Per Capita Income	Rs 12000 Per Year
Birth Rate	40.6
Infant Mortality Rate	52.4
Literacy Rate	72.28%
Male	84.01%
Female	60.26%
Decadal Literacy Rate	14.47%

District Wise Population Distribution (2001 census)

S.No	District Name	Male	Female	Total
1	Almora	293576	336970	630446
2	Bageshwar	118202	131250	249453
3	Champawat	110916	113545	224461
4	Chamoli	183033	186165	369198
5	Dehradun	675549	605334	1279083
6	Haridwar	773173	671040	1444213
7	Nanital	400336	362576	762912
8	Pauri	331138	365713	696851
9	Pithoragarh	227592	234557	462149
10	Rudraprayag	107425	120036	227461
11	Tehri	294842	309766	605608
12	Udham singh Nagar	649020	585528	1234548
13	Uttarkashi	151599	142580	294179

	Total	4316401	4163161	8479562

Uttarakhand - Tourism State

3. Tourism is one of main source of income at Uttarakhand. The northern areas of Uttarakhand are part of the Great Himalayas range, with average heights up to 3000-5000 meters. The famous peaks are Nanda Devi (7816m), Trishul (7120m) and Panchchuli (6910m). Southern Uttarakhand has plains that are part of the Terai foothills, where temperatures are higher and towns more accessible. The state is not industrially developed and tourism is the mainstay of the economy. For the last 7 years, Dehradun, the largest town, has been its provisional capital. It has a well-connected railhead and a small domestic airport.

4. To most travelers Uttarakhand is associated with its ancient traditions of Hinduism that flourished in its high Himalayan reaches. The sources of India are most revered and important rivers Ganges as well as Yamuna, respectively called Gangotri and Yamunotri, lie here. These two spots, along with the shrines of Badrinath and Kedarnath, make the 4 holy sites (Char Dham) that Hindus aspire to visit. Snow-bound for most of the year, these are open from May to October. Lower south, along the Ganges lie the sacred towns of Rishikesh (43km from Dehradun) and Haridwar (connected by rail to Delhi).

5. Uttarakhand popular hill stations include Mussourie (2000m; 35 km from Dehradun) and Nainital (2000m; 35km from railhead Kathgodam). Corbett National Park is its noted wildlife sanctuary. The combination of mountains and rivers yields opportunities for trekking, river rafting, hiking, which the state is promoting now. Rishikesh is a hub of water adventure sports. There is also a skiing destination in Auli.

Infrastructure

S. No.	Items	Year/ Period	Number
1.	Important Tourist Places	2006-2007	214
2.	Developed Tourist Places	2006-2007	124
3.	Tourist Rest Houses	2006-2007	174
4.	No. of Beds in T.R.H.	2006-2007	6764
5.	Rain Baseras	2006-2007	32
6.	No. of Beds in Rain Basera	2006-2007	1610
7.	No. of Hotels and Paying Guest Houses	2006-2007	2312
8.	No. of Dharamshala	2006-2007	802

Tourist Statistics

S. No.	Items	Year/ Period	Number
1.	In Tourist Places (including Pilgrims)	2007	2,26,00,000
	(i) Indian Tourist	2007	2,21,00,000
	(ii) Foreign Tourist	2007	1,06,000
2.	In Important National Parks	2007	1,99,043

(i) Indian Tourist	2007	18,3481
(ii) Foreign Tourist	2007	15,562

6. Uttarakhand has been declared as an Herbal State and a maximum number of Ayurvedic and Homoeopathic medicines depend on plant sources and our state with its biodiversity has a tremendous potential and advantage in the herbal area. It also has the distinction to become the first state in the Nation to declare its Health & Population Policy in December 2002 and under the policy directions it will integrate the services of different systems of medicine such as Ayurveda, Homoeopathy and Unani to achieve synergy. The National Rural Health Mission (2005-12) too seeks to revitalize local health traditions and mainstream AYUSH into the public health system.

7. The Project has taken an initiative for integration of Ayush with Modern day Medical care especially in reference to a large unserved area of population of the state.

8. Uttarakhand is a predominantly agricultural state with 75% of the people deployed in this sector. The state is well linked by state highways, national highways and district roads. The state has broad gauge railway lines but only in the plain areas. Airports at Dehradun (Jollygrant) and Pantnagar are civil airports in the state.

9. POWER TRANSMISSION CORPORATION OF UTTARAKHAND LIMITED (PTCUL) was established to facilitate transfer of power and to improve the Transmission of electricity system within the state, thus leading to the formation of the State Power Grid. India has a large projected demand-supply gap and has extensive potential for hydropower development. Hydropower generation capacity has lagged behind particularly during the last two decades. Since 1975, the share of hydropower generation capacity has come down to a level of 25% against a desired level of 40%. Therefore, hydropower development is being given priority to improve hydro/thermal mix for optimizing the efficiency of country's power system and usage of resources for sustainable power generation in an environment friendly manner. Apart from being an environmentally clean source of power, hydropower would also provide a peaking power option for the country. Government is showing strong commitment towards hydropower projects and has launched a 50,000 MW Hydro Electric Initiative. Uttarakhand state is endowed with tremendous hydro power potential. At present there is an urgent necessity for constructing a power evacuation system of the order of 6000 to 6500 MW of generation project in Yamuna , Bahgirathi, Alakhnanda and Sharda Basin. The PTCUL objective is to evacuate the power from Yamuna, Bhagirathi, Alaknanda and Sharda river basins. The objectives of PTCUL in the ensuing Asian Development Bank's loan Project is to provide optimized power system expansion of the northern grid and increase the pace of economic development in less-developed regions in Uttarakhand State. The Project supports Government goal of providing affordable universal power service by 2020. The need of the hour is to ensure equitable distribution of energy, augmentation of existing transmission capacity, put and integrated robust transmission system in place within cost , quality and time parameters and maintain grid discipline within the frame work of the prescribed grid code. PTCULs response is a balanced combination of reliability, security and economy. PTCUL believes that these guiding principles must match rising expectations of a cleaner, safer, healthier environment and of people, both affected and benefited by its activities.

PROJECT DESCRIPTION & BENEFITS:

10. The proposed transmission system has been envisaged in consultation with CEA and other beneficiary constituents for the reliable evacuation of 1080 MW Power from

Loharinagpala P/H (600 MW) of NTPC and Palamaneri P/H (480 MW) of UJVNL. However, the proposed hydro power capacities in Bhagirathi basin are:

- Loharinagpala (600 MW) of NTPC,
- Palamaneri (480 MW) of UJVNL,
- Kotlibhel stage IA (195 MW) of NHPC,
- Kotlibhel stage IB (320 MW) of NHPC,
- Kotlibhel Stage II (530 MW) of NHPC,
- Bhelangana – I (22.5 MW) of M/s. Swati power engineering
- Bhelangana – II (49 MW)of UJVNL,
- Bhelangana – III (24 MW) of M/s. Polyplex and
- SHPs

11. Distribution among beneficiary states shall be decided by the CEA.. Some units of these projects are scheduled to be commissioned within 11th plan followed by subsequent units at some intervals.

12. Transmission system for these projects is of a regional/ state level collaboration as the power from these projects would be shared by Uttarakhand and other Northern region states such as Delhi, Himanchal Pradesh, Punjab, Rajasthan, Haryana and Uttar Pradesh. These will be connected through the proposed Intra-State transmission system and through existing lines/interconnection to other regions. Techno-Economic clearance of the proposed project has been obtained from Central Electricity Authority (CEA) vide letter no. 12A/G/2006-SP&PA/39 dated 09/01/2007(enclosed) and proposal has been examined by Ministry of Power, GoI and found in order vide letter no. 11/5/2004-IC dated 4th May 2007 (**Annexure-1, Annexure-2**).

13. For the subject, sub-project 400 KV Double Circuit Loharinagpala-Koteshwar Line, this IEE document is prepared on the data contained in the Environmental and Social Impact Assessment Report submitted by PTCUL on Feb 01, 2005. There is no change in the physical parameters of the subject in relation to its design, location, land acquisition, forest land, capacity etc. as mentioned in the report prepared earlier. This sub-project is the part of the ADB assisted financial project under PFR-II. This report depicts the details of IEE for proposed new 400 KV D.C. Loharinagpala-Koteshwar Line for which the survey has already been completed.

14. The IEE report describes the environment in the State of Uttarakhand, where the proposed transmission project is to be located and various measures that will be taken by PTCUL during design, construction and maintenance stages altogether to avoid and wherever not possible to mitigate the effect on environment of various construction activities.

1.2 Scope of Work & Methodology Adopted

15. A team of PTCUL, headed by qualified and experienced engineer specially assigned this work has carried out the IEE of this project. The team conducted reconnaissance survey to identify the major environmental issues. Accordingly, field surveys were also undertaken to assess physical and biological environment. Detailed assessment of the baseline environment has been conducted for the distance up to 5 Km. on the either side of proposed alignment and data collection from secondary source has been done to support the findings of the field survey. The field studies were supported by data collected from secondary sources such as Internet, Forest Atlas of India, and Statistical Handbook for Uttarakhand District Maps, National Atlas and Thematic Mapping Organization, Geological Survey of India, Physical map of Uttarakhand etc.

16. The broad scope of the study is:

i) To conduct field visits to collect data relevant to the study area and also collect secondary data so as to establish the baseline environmental status of the study area;

ii) To assess the impacts on environmental attributes due to the location, design, construction and operation of the proposed project;

iii) To prepare a mitigation plan outlining the measures for protecting the environment including institutional arrangement and environmental monitoring;

iv) To identify critical environmental attributes required to be monitored subsequent to the implementation of the proposed project and

v) To carry out consultation with local people so as to identify the public perception of the project.

vi) Borrower (i.e. PTCUL) will submit environmental monitoring reports to ADB once in a year.

1.2.1 Data Constraints

17. This report is prepared on the basis of survey, field study and with the help of available secondary data. The alignment of line may slightly vary after the exact demarcation of tower location.

2.0 DESCRIPTION OF THE PROJECT

2.1 The project

18. The new 400 KV Double Circuit (D.C.) Loharinagpala-Koteshwar Line is the sub-project of the ADB assisted financial project under PFR-II. The location map of this line is presented as **Figure 2.1**.

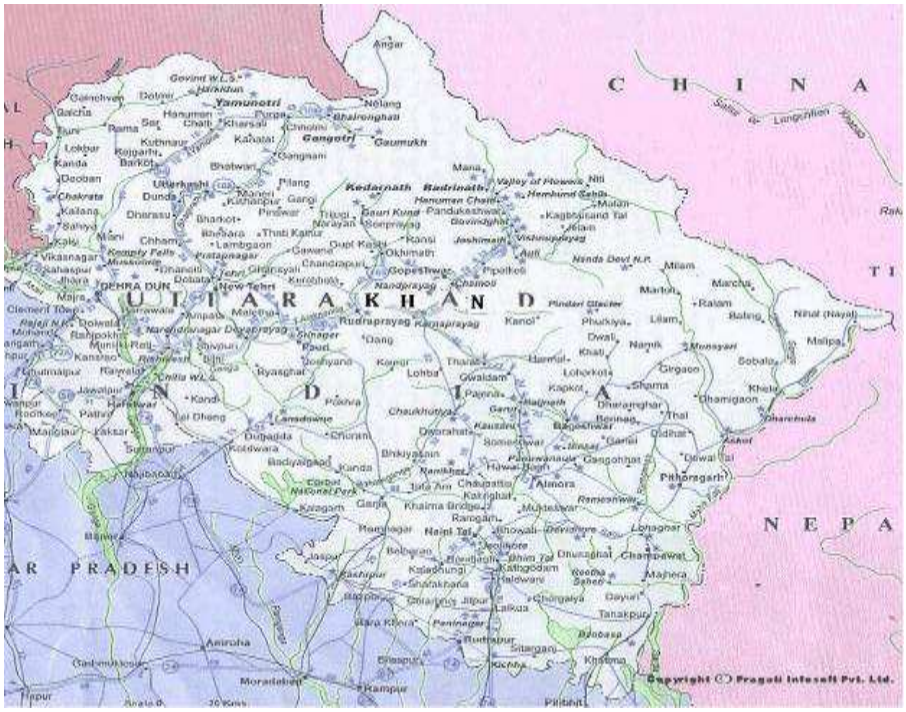

Figure 2.1: Location map of the proposed line

19. The proposed line will evacuate the power of Loharinagpala hydroelectric power project of capacity 600 MW up to Koteshwar substation which is a inter-state pooling point from where transmission of power will take place through the network of Power Grid Corporation of India Ltd. (PGCIL). This line will also evacuate the power of Palamaneri hydro electric power project of capacity 480 MW.

20. Since the project does not involve activities that can have significant adverse impact, IEE has been done to determine the extent of impact as per the guidelines of ADB for **Category B** Project.

2.2 Need for the Project

21. The proposed transmission system has been envisaged in consultation with CEA and other beneficiary constituents for the reliable evacuation of 1080 MW Power from Loharinagpala P/H (600 MW) of NTPC and Palamaneri P/H (480 MW) of UJVNL for further distribution among beneficiary states. Some units of these projects are scheduled to be commissioned within 11^{th} plan followed by subsequent units at some intervals. However some more proposed hydro electric capacities in Bhagirathi basin are Kotlibhel stage IA (195 MW) of NHPC, Kotlibhel stage IB (320 MW) of NHPC, Kotlibhel Stage II (530 MW) of NHPC, Bhelangana–I (22.5 MW) of M/s. Swati Power Engineering Bhelangana–II (49 MW) of UJVNL, Bhelangana–III (24 MW) of M/s. Polyplex and SHPs.

22. Transmission system for these projects is of a regional/ state level collaboration as the power from these projects would be shared by Uttarakhand and other Northern region states such as Delhi, Himachal Pradesh, Punjab, Rajasthan, Haryana and Uttar Pradesh. These will be connected through the proposed Intra-State transmission system and through existing lines/interconnection to other regions. Techno-Economic clearance of the proposed project has been obtained as already explained (**Annexure-1 and Annexure-2**)

23. The proposed project involves construction of 400 KV double circuit Loharinagpala-Koteshwar line. The project will help in evacuation of the power, improve operational efficiency and quality of power, reliability of the system and at the same time will reduce losses due to power transmission. This report depicts the details of IEE for proposed new 400 KV Loharinagpala-Koteshwar Line for which the survey has already been completed.

2.3 Project Location

24. The project falls under the Uttarkashi and Tehri Districts of Uttarakhand. It lies in the south east of Uttarkashi and north east of Tehri districts. The project route alignment is shown in the **Figure 2.2**.

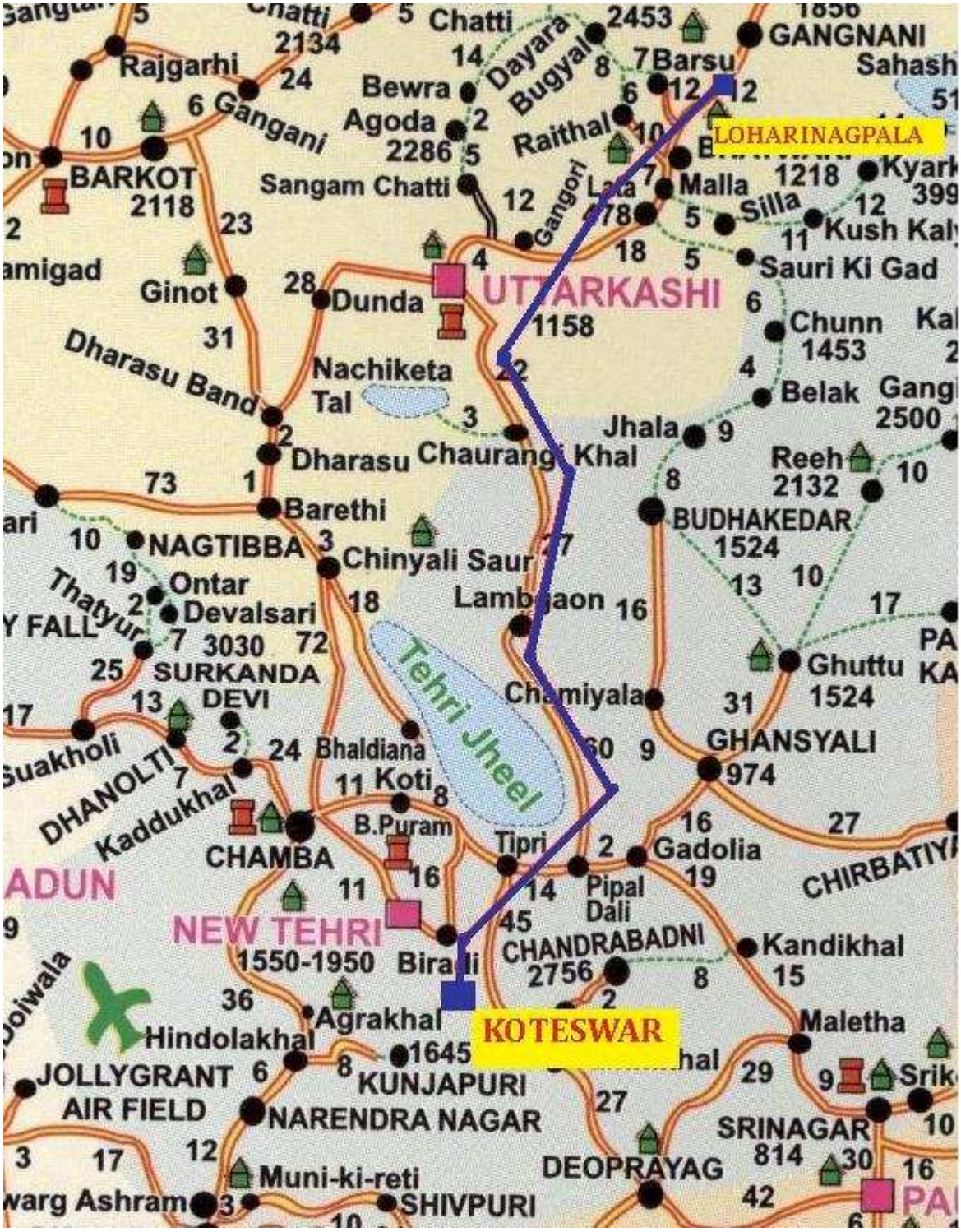

Figure 2.2: Route Map of 400 KV Loharinagpala – Koteshwar Line

UTTARKASHI

25. The holy town of Uttarkashi is located at 30.73^0 N 78.45^0 E on the banks of river Bhagirathi at an altitude of 1352 metres, about 145 kms from Rishikesh on the main route to Gangotri.

26. Uttarkashi is the North Western most important district in the new state of Uttrakhand in the Indian Himalaya. Uttarkashi borders with Tibet/China in the North and the Indian state of Himachal Pradesh in the West. Mori Block is in the interior of Uttarkashi. The land during the monsoon is green and lush. Villages are dotted around, mostly along the side of the valleys. Farming is mostly subsistence. Paddy fields surround the villages along the valley bottoms, extending a little way up the mountainsides. The impression is that the land cannot be tamed here. Communities have to make do living off land they are able to farm without upsetting the precarious balance between themselves and the environment.

Demographics

27. As of 2001 India census, Uttarkashi had a population of 16,220. Males constitute 57% of the population and females 43%. Uttarkashi has an average literacy rate of 78%, higher than the national average of 59.5%: male literacy is 83%, and female literacy is 71%. In Uttarkashi, 11% of the population is under 6 years of age. It is predominantly inhabited by the Bhotiya Jadh people.

District Headquarters: Uttarkashi

Area: 7951 sq km

Total Population: 295,013

Literacy: 78%

TEHRI

28. Tehri Garhwal, one of the western most districts of Uttarakhand is located at 30.38° N 78.48° E on the outer ranges of the Himalayas. It has an average elevation of 933 metres (3,061 feet).

29. It is bounded by the districts of Uttarkashi in the north, Rudraprayag in the east, Pauri Garhwal in the south and Dehradun in the west. Tehri Garhwal, covering an area of over 4,100 sq km, has a population of around 610,000. The major languages are Garhwali, Hindi and English. The district headquarters is New Tehri

30. Tehri Garhwal resembles other parts of the Himalayas where various ethnic groups live side by side. Following chiefly the agrarian-pastoral way of life, native Garhwalis make their living from the hilly land the best they can. Some, like the Bhotia traders, migrate far and wide, although the ancient trade routes with Tibet have been closed since 1950. Most of the indigenous people like Jaunsari, Buksha, Tharu, and Raji are heterodox Hindus and Buddhists, while Sikh migrants from West Punjab have settled in the lowlands since 1947. A few Muslim groups are also native to the area, although most of them have settled recently. The Muslim Gujjar herders also migrate to the hills.

Demographics

31. As of 2001 India census, Tehri had a population of 25,425. Males constitute 65% of the population and females 35%. Tehri has an average literacy rate of 78%, higher than the national average of 59.5%: male literacy is 81%, and female literacy is 71%. In Tehri, 10% of the population is under 6 years of age.

General Information

Population	:	6, 04,608 (2001 census).
Altitude	:	933 m.
Climate	:	Cold in winters and hot in summers.
Languages	:	Garhwali, Hindi and English.
Air	:	Nearest airport is Jolly Grant, 101 km.
Rail	:	Rishikesh is the nearest railway station.
Road	:	Tehri is well connected by road to Dehradun, Mussoorie, Haridwar, Pauri, Rishikesh, Uttarkashi, and other parts of the region.

32. The study area is characterized by reserved forest, civil soyam forest and unirrigated crop land. The area comprised mainly forest, soyam forest, non agriculture, agriculture fields and thick vegetation bushes in between. The study area runs into series of ridges and valleys. Each is leads to another coiling up in seemingly unending chains. Most of the terrain is mountainous consisting of high rise ridges, hills and plateaus and flat pieces of land are rare. The soil found is alluvial soil.

33. The proposed transmission line route alignment will start at Loharinagpala and will run parallel to the Bhagirathi river upto 8-10 Km in district Uttarkashi. It will cross the Bhagirathi River at village Netal (Uttarkashi) and this line will cross the Bhilangna River near village Pipola (Tehri). The transmission line route alignment will again cross the Bhagirathi River at village Chopra (Tehri) and will run parallel up to the Koteshwar by 8-10 Km. It will enter in Tehri district from Uttarkashi district near village Bhotiya (Uttarkashi). The access road to the proposed transmission line is poor at the most of the places. Some roads are kutcha (unbuilt road) which is not accessible during the rainy season. Since these area faces heavy rainfall so the full construction activity will be possible during mid September to mid June.

2.4 Implementation Plan

34. The proposed project involves construction of approximately 90 Km. 400 KV D.C. line from Loharinagpala to Koteshwar. Since the construction of substation does not involve, hence the land acquisition is not involved. In case of construction of new transmission line, the project would involve administration formalities, survey work, forest case and clearance, design and engineering of hard wares, tender for procurement, civil work related to 90 Km line, erection of towers, line stringing and testing and commissioning. All the above work is expected to take total 30 months. The total project cost is anticipated to Rs. 356.78 corers.

3.0 DESCRIPTION OF ENVIRONMENT

3.1 Physiography

35. The area along the proposed transmission line runs into series of ridges and valleys each is leads to another coiling up in seemingly unending chains. Most of the terrain is mountainous consisting of high rise ridges, hills and plateaus and flat pieces of land are rare. The soil found is alluvial soil. The transmission line route alignment will cross the Bhagirathi River at village Netal (Uttarkashi) and it will cross the Bhilangna River near village Pipola (Tehri). It will again cross the Bhagirathi River at village Chopra (Tehri) and will run parallel to the river up to the Koteshwar by 8-10 Km. of the proposed route alignment.

3.2 Climate

36. The area experiences heavy monsoon climate with chilling winter and summer. The average annual rainfall in the study area is approx 1700 mm. The climate in the study area is classified into four seasons: (a) winter, (b) pre-monsoon (summer), (c) monsoon and (d) post monsoon. The average maximum temperature varies between 34.6°C and 32°C in pre-monsoon (March to mid June) and average minimum temperature varies between 0.2°C and 0.6°C in winter season (November to February). The month of mid June to mid September constitutes monsoon season. The occurrence of thunderstorms is the most conspicuous characteristics of the monsoon weather. Non monsoon rains also occurs during rest of the year in the area. During the winter snowfall occurs in most of the project area.

3.3 Soil

37. Soil is the thin upper most layer of the earth's crust. It supports all forests, grass lands and crops from which all living creatures on earth derive their food. In the hilly mountainous Himalayan region the soils found are mountain soils. These soils include peat, meadow, forest and hill soils. The soils found at the project site are entisols comprising mainly combination of younger alluvial and old alluvial soil. The soils of the area are basically the product of fluvial process of the river Bhagirathi and its tributaries (Bhelangana etc.). The alluvial soil of the area is dry, porous, sandy, faint yellow and consists of clay and organic matter. It is slightly acidic in reaction. The new alluvial is less acidic as compared to the old alluvial. Its pH value varies from 5.5 to 9.0. The old alluvial on the other hand occurs in the upper and middle parts of the valleys. These deposits contain alternating beds of pebbles, gravel or boulder with loose sand and clays. The old alluvial have relatively high percentage of acid and soluble Mg accompanied by Ca. The pH value ranges between 4.2 and 5.5. In certain parts, both the old and new alluvial are so combined that it is difficult to distinguish them.

3.4 Geology and Minerals

38. A fairly thick group of sedimentary rocks occurs ranging in age between Eocene and Pieistocene period of geological succession. The most part along the alignment and the valley portion along the Bhagirathi river area are covered by thick alluvial deposits belonging to sub-Recent and recent periods. The thick sedimentary rocks of the Tertiary period have been observed on patches along the alignment and found to be over thrust due to the tectonic forces. Overall the study area along the alignment is dominated by mainly the unconsolidated sedimentary deposits consisting of alluvial. The study falls under Zone IV which is equivalent to seismic intensity VIII on Modified Mercalli Intensity Scale. This is not the most severe seismic zone and is refer as medium damage risk zone.

39. Mainly mineral found in Uttarkashi and Tehri districts are Limestone, Gold, Graphite, Sulphur etc. Lime is produced out of limestone, which is use for manufacturing of cement and in all constructional work.

3.5 Hydrology

40. Uttarakhand state can be divided into four basins namely

1. Yamuna Basin
2. Bhagirathi Basin
3. Alaknanda Basin
4. Sharda Basin

41. Above main rivers and their associated rivers have abundant water which can be utilize very effectively for the generation of electricity. Large capacity hydro powers and medium & small capacity hydro powers can be constructed based on the reservoir and run of the river technology. The whole study area along the alignment is underlain by discontinuous aquifers with porous formation.

3.6 Ecological Resources

42. The study area along the alignment falls in the districts of Uttarkashi and Tehri. Details are given in **Table- 3.6.1** and **Table -3.6.2.**

Table 3.6.1: District wise Geographical Area, Population, Forest Area, per Capita Forest Area, forest Area as Percentage of Geographical Area of Uttarkashi & Tehri

No	Name of District	Geographical Area (Sq. Km.)	Population (2001)	**Forest Area (Sq. Km.)**									
				Under Forest Department	Under Revenue Department	Panchayat Forest under Van Panchayats			Under Private/Other Agencies (Municipal, cantt, Central Deptt etc.)	Total Forest Area	Per capital Forest Area (Sq. km.)	Forest area under forest deptt. As per centage of geographical area	Total Forest area as percentage of geographical area
						Area Completely recorded as Van Panchayat	Aea under control of Van Panchayat but recorded in Reserved forest of Forest deptt.	Total					
1	Tehri	3642	604747	2315.174	768.664	131.800	0.000	131.800	0.000	3215.638	0.005317	63.57	88.29
2	Uttarkashi	8016	295013	6954.888	231.889	29.838	0.000	29.838	0.000	7216.615	0.024462	86.76	90.03

Table 3.6.2: Analysis of Forest Based on the Satellite Imageries done by Forest Survey of India

Sl. No.	Name of District	Geographical Area (Sq. Km.)	Very Dense Forests	Moderate Dense Forests	Open Forests	Total	Forest cover as percentage of Geographical Area	Recorded Forest Area as percentage of Geographical Area
1	Tehri	3642	227	1255	656	2138	58.7	88.43
2	Uttarkashi	8016	408	2062	674	3144	39.22	90.03

43. The proposed alignment pass through the reserve forest and civil soyam forest area in both the districts. However the proposed alignment does not pass through any National Park or Reserve Bird Sanctuary area. Details of the ecological resources in proposed route alignment are as below:

Ecological Resources

Flora

44. Ferns: Over 120 species of fern grow in damp ravines, Covered rocks and tree trunks. Fueli Ferns grow abundantly in the monsoon month of July, August and September.

45. Tree: The hills abound wild cherry, wild Apple, Spindle Wood, Oak, Fig, Poplar, Holly, Rhododendron, Masuri Berry, Dogwood, Horse Chestnut and hill tuna. At higher altitudes, forests are crowded with Himalayan cypress, Deodar, Blue pine, Fir and Long leafed pine.

46. Acacia Arabica (Babul): This tree and other of same genus yield a gum, which is used as substitute for gum Arabic.

47. Egle Marmelos (Bel): The fruit is a specific in atonic diarrhea and dysentery.

48. Artemisia Vulgris (Pati): It has stomachic and tonic properties and is given in fevers.

49. Boenning Hausenia albiflora (Pisu-ghas): Exported and used as a medicine for poultry.

50. Bauhinia Veriegata (Kachnar): The root in decoction is useful in dyspepsia and flatulency, the flowers with sugar as gentle laxative, and the bark, flowers or root triturated in rice-water as a cataplasm to promote suppuration.

51. Berberis Lycium (Kingora-ki-jar): An extract from the roots is known as rasaut. The medicinal extract is highly esteemed as a febrifuge and as a local application in eye diseases.

52. Bombax Malabaricum (Semal): The gum is given in asthenic cases, the root furnishes one of the musali and is used as a stimulant and tonic and in large doses as an emetic, and the leaves are employed as an aphrodisiac and in special diseases.

53. Cinnamomum Tamala Tej (Bark), Tejpat (Leaves): The bark and leaves are used as a carminative, aromatic and stimulant in coughs and dyspepsia and generally as substitute for tree cinnamon.

54. Aconitum Hetrophyllum Atis (Root): It is used as a tonic, febrifuge and aphrodisiac.

Fauna

55. The valleys of Garhwal are quite rich in wild life and are excellent grounds for the naturalist. Shielded from trigger-happy populace, animals and birds abound in the thick forests.

56. Animals: The cat family is abundant in these mountains and would include the Tiger, Panther, Civet cat, Leopard cat and Jungle Cat. Relatives of the domesticated dog would include the Himalayan Silver Fox and the Jackal. Various species of deer including the Musk Deer and the Barking Deer roam in the forest. Sambhar and Gural as well as the Bear and the Porcupine can also be seen. The flying mammal, the Bat too is common. Among the most adorable animals in this region are the Chipmunk, the Rhesus Monkey and the Flying Squirrel.

57. Birds: Over 400 varieties of birds have been recorded in the Himalayan region. The shore Bird- Musphekraa forest host, the Jewel Thrush, Black headed Oriole, Black headed yellow Bulbul, Rosy Minivet, Laughing Thrush, Golden Backed Wood pecker and the Blue fly Catcher, Wintering waterfowl include the Goosander, Brahminy Duck & Green Shank, Grey headed Fishing Eagles may also be seen by the river edge. After ascending over 5000 feet, the Woodpecker, Thrush & Warbler become more common, between 8000-11000 feet, Grosbeak, Rock Thrush, Crested black Tit & red headed Laughing Thrush are a plenty.

3.7 Human and Economic Development

58. This section discusses the baseline scenario of the socio-economic environment in the study area. The issues discussed are population, education, employment, community services and transportation. For assessing the baseline socio-economic data, information from secondary data sources i.e. the 2001 census data has been considered.

3.7.1 Population

59. The study area falls in the Uttarkashi and Tehri district of Uttarakhand state. Population details as per the 2001 census are as below:

S.No	District Name	Male	Female	Total
1.	Tehri	294842	309766	605608
2.	Uttarkashi	151599	142580	294179

3.7.2 Education

60. Uttarkashi has an average literacy rate of 78%, higher than the national in average of 59.5%: male literacy is 83%, and female literacy is 71%. In Uttarkashi, 11% of the population is under 6 years of age. It is predominantly inhabited by the Bhotiya, Jadh people. Tehri has an average literacy rate of 78%, higher than the national average of 59.5%: male literacy is 81%, and female literacy is 71%. In Tehri, 10% of the population is under 6 years of age.

District	Junior Basic Schools	Senior Basic School	Higher Secondary School	Degree Colleges	PG Colleges	Universities	ITI	Poly-technic
Uttark	915	247	77	03	02	NO	4	1

ashi								
Tehri	1098	296	92	07	01	NO	5	1

3.7.3. Employment

61. Mote than 37% of the people of Uttarakhand are defined as workers in relation to the rest of the population. There is a percentile increase in the proportion of marginal workers from six to 10% from 1991 to 2001 (and decline in the proportion of main workers). There is another aspect too, the highly qualified people of Uttarakhand leave the State for better employment/ business opportunities. “This is adversely affecting the State in launching any ambitious scheme due to the paucity and unavailability of indigenous human resources.” But now due to development of Basis Infrastructure and Industrial Policies of GoU the situation is reversing and rate of employment has increase. Moreover, 70% employments in the state industries have been reserved for the people of Uttarakhand.

Employment (in lacks)

District	Total Main Workers	Cultivators	Agricultural Labourers	Other Workers	Marginal Workers	Non-Workers
Uttarkashi	1.07	0.37	0.05	0.37	0.28	1.87
Tehri	2.20	0.76	0.10	0.76	0.58	3.85

Source- Depart of Information and Public Relation GoU (2002-06).

3.7.4 Community Services

District	Allopathic	Ayurvedic	Homeopathic	Primary Health Centers	Community Health Centers	Family Welfare Centers
Uttarkashi	24	46	06	11	02	74
Tehri	28	55	07	13	03	88

3.7.5 Transportation

62. Uttarkashi is about 145 Km. from Rishikesh on the National Highway 108 route to Gangotri. Tehri is 84 Km. from Rishikesh, National Highway 94 is up to the Chamba and State Highway from Chamba to Tehri. There is an airport at Jollygrant which is 17 Km. from Rishikesh. The road network in the study area can be described as moderate. The road is in moderate condition as there are heavy rains in the project area. The villages in

the study area connected by branch roads and semi pucca roads. The road condition in the interiors is rather bad condition and for some propose tower erection sites do not have proper access roads.

3.7.6 Economic Scenario

63. Both Rabi as well as Kharif crops are harvested. The main Kharif crops are paddy, small millets and potato and Chief Rabi crops are wheat and barley. In the project area 88% of the land is either covered by forests or is barren and uncultivable. The land is low in fertility except in the valleys and even land is too few and far between. Shorter agricultural season, low temperature, high altitude, smallness of land holding, perpetual problem of soil erosion due to steep gradients etc. are other inhibiting factors effecting agriculture. The cultivation in these areas are carried on largely by making terraces on the sloping hillsides. Sheep rearing for production of wool and meat, orchard raising, spinning and weaving of wool and other cottage industries etc. are source of income but it does not have much potential. Horticulture is another source of income which has enough potential. In the summer's season, tourism is one of the sources of income. Uttarkashi district having holy places like Gangorti, Yamunotri and many others. In Tehri major tourist destinations are Buda Kedar temple, Deoprayag, Kunjapuri, Khatling glacier, Narendra Nagar, Chamba, Omkarananda Kamakshi Devi Mandir, Dhanaulti and Nagtibba.

3.7.7 Health Environment

64. The project site is situated in hilly region in very good climatic condition; there is no air, noise, water and industrial pollution. Health environment is very good as both men and women are hard working by nature and fruits & herbs available locally are the part of their eating habits.

3.7.8 Historical, Cultural and Archaeology Sites / Places

65. There are no archaeological, historical importance sites or protected monuments in the study area along the alignment.

4.0 PTCUL's APPROACH FOR ROUTE SELECTION

ROUTE SELECTION- (ASSESSMENT & MANAGEMENT PROCESS)

66. At the planning stage itself, one of the factors that govern the establishment of the transmission system in the state is the infringement of forest area. Wherever such infringements are substantial, different alternative options are to be considered. While identifying the transmission system for a generation project or as a part of state power grid, preliminary route selection is done by PTCUL based on the Topo sheets of survey of India and Forest Atlas (Govt. of India's publication);

67. During route alignment all possible efforts are made to avoid the forest area infringement completely or to keep it to the barest minimum. Whenever it becomes unavoidable due to the geographical locations/terrain, mitigation costs involved towards avoidance needs to be worked out.

4.1 PTCUL's approach towards Route selection

68. For selection of optimum route, the following points are taken into consideration:

i) The route of the proposed transmission lines does not involve any human habitation.
ii) Any monument of cultural or historical importance is not affected by the route of the transmission line.
iii) The proposed route of transmission line does not create any threat to the survival of any community with special reference to Tribal Community.
iv) The proposed route of transmission line does not affect any public utility services like playgrounds, schools, other establishments etc.
v) The line route does not pass through any sanctuaries, Protected Park etc.
vi) The line route does not infringe with area of natural resources.

69. In order to achieve this, PTCUL has undertaken route selection for individual transmission lines in close consultation with representatives from State Forest Department, the Ministry of Environment and Forests and the Department of Revenue. Although under National law, PTCUL has the right (Indian Electricity (Supply) Act, 1948, Section-42) yet alternative alignments are considered keeping in mind the above-mentioned factors during site selection, with minor alterations often added to avoid environmentally sensitive areas and settlements at execution stage.

- As a principle, alignments are generally cited 10-15 km away from major towns, whenever possible, to account for future urban expansion.
- Similarly, forests are avoided to the maximum extent possible. When it is not possible, a route is selected in consultation with the local Divisional Forest Officer that causes minimum damage to existing forest resources.
- Alignments are selected to avoid wetlands and unstable areas for both financial and environmental reasons.

70. In addition, care is also taken to avoid Protected parks/Forests, Bird sanctuaries and any other forest area rich in wild life.

71. Keeping above in mind the various routes of line, the transmission system has been so aligned that it takes care of above factors. As such different alternatives were studied with the help of Govt. published data like Forest Atlas, Survey of India topographical maps etc. to arrive at most optimum route which can be taken up for detailed survey and assessment of environmental & social impacts for their proper management.

4.2 Transmission Line

72. At different tower locations for its protection retaining/revetment walls shall be constructed in which weep holes shall be provided along-with a mesh so that ground runoff water may passes through this mesh loaded weep holes dully filtered.

4.3: Evaluation of route alignment alternatives of 400 KV D.C. Loharinagpala – Koteshwar line: The alternate alignment is given in **Table 4.1**.

Table 4.1: Evaluation of route alignment alternatives of 400 KV D.C. Loharinagpala – Koteshwar line

Sl. No.	Description	Alignment-I	Alignment-II	Alignment-III
1	Route Particulars			
i)	Length	90.0Kms	86.0 Kms	89.0 Kms
ii)	Terrain	100% Hilly	100% Hilly	100% Hilly
a	Hilly/ Plain In (Kms) %	80% / 20%	85% / 15%	85% / 15%
b)	Agriculture	15%	10%	10%
c)	Wet/ Marshy	NO	NO	NO
d)	Estuarine	NO	NO	NO
e)	Other type of land	Forest/civil forest	Forest/civil forest	Forest/civil forest
2	Environmental Details			
i)	Name of District / District details (through which transmission line Pass)	Uttarkashi-Tehri	Uttarkashi-Tehri	Uttarkashi-Tehri
ii)	Population of district	294179 / 605608	294179 / 605608	294179 / 605608

Sl. No.	Description	Alignment-I	Alignment-II	Alignment-III
a)	Details of poverty line (In Rs.)	Rs. 2200 /-	Rs. 2200 /-	Rs. 2200 /-
b)	No. of People / Percentage of people below poverty line	35%	35%	35%
iii)	Town in Alignment (Nearby)	Barshu, Churangikhal, Kandakhal, Pipaldali	Thorang, Shivnagar, Indwangaon Pipola,	Manjgaon, Khaliagaon, Ghandiyalgaon, Julangaon
iv)	House with in ROW	NO	NO	NO
v)	Forest in Km. / Ha	83.7Kms/292.95Ha	87.75Kms/307.12Ha	88.2Kms/308.7Ha
a)	Type of forest: Reserve / Protected / Mangrove / Wild life area / any other environment sensitive area	Reserve Soyam (civil) Private	Reserve Soyam (civil) Private	Reserve Soyam (civil) Private
b)	% of Forest	62.0	62.6	62.9
c)	Type of Fauna & Flora	Jungle fox, Cat, Bhutia Dog, Leopard, Jackol, etc. Trees, Chir, Uttis etc.	Jungle fox, Cat, Bhutia Dog, Leopard, Jackol, etc. Trees, Chir, Uttis etc.	Jungle fox, Cat, Bhutia Dog, Leopard, Jackol, etc. Trees, Chir, Uttis etc.
d)	Endangered species if any	NO	NO	NO
e)	Historical / Cultural monument	NO	NO	NO
f)	Any other relevant information	Nil	Nil	Nil
3	Consumption cost			
i)	Crop	Extend of damage can be evaluated during detailed survey / construction.		
ii)	Forest			

Sl. No.	Description	Alignment-I	Alignment-II	Alignment-III
ii)	Forest (Approx. no of trees)	11121[1]	11700	12500
4	No. of Crossing	3	10	2
i)	Railway	No	No	No
ii)	Trans. Line	No	No	No
iii)	River Xing etc.			
5	Construction Problem	Forest Clearance, no other specific problem	Forest Clearance, no other specific problem	Forest Clearance, no other specific problem
6	O&M Problem	Minimum	Moderate	Moderate
7	Overall Remarks	Best Suitable	_	_

73. Reasons for selection of final Route: Considering the various reasons based on information in the table **Alignment – I** is best suitable. It involves lesser forest, lesser tree to be cut and minimum ROW problems, hence, selected for detailed survey as final route.

[1] During DPR stage the counting of trees was very approximate, which has been updated during construction stage. The no. of trees of 11121 will not be cut however max. no of tree to be cut will be approximately 8500. The details of 11121 trees are given in **Annexure- 4.6.**

5.0 SCREENING OF POTENTIAL ENVIRONMENT IMPACTS AND MITIGATION MEASURES

5.1 Environment problems due to project location and design

74. Potential adverse environment impacts associated with transmission lines can be avoided or minimized through careful route selection. The following factors have been incorporated while selecting the alignment. For the selection of the optimum route, consideration was given to ensure that route:

(i) Minimizes human resettlements

(ii) Does not affect monuments of cultural or historical importance

(iii) Does not create a threat to the survival of any community with special reference to tribal communities:

(iv) Does not affect any public utility services like playgrounds or schools:

(v) Does not pass through any sanctuaries, national park, etc, and,

(vi) Minimizes damage to existing forest resources.

75. The alignment is sited 5-10 km away from major settlements, whenever possible, to account for future urban expansion. Forests areas and thick vegetation areas are avoided wherever possible; however route alignment passes through forest area. Alignment in this project has avoided wetlands and geologically unstable areas, which can also pose foundation related problems.

76. Land values are not expected to be affected, as the selected transmission line route generally passes through forest area, uninhabited areas and cultivated lands. According to the Electricity (Supply) Act, 1948 no land acquisition is required for placing transmission towers on private land. However any damage to the crops during the construction phase of the project will be duly compensated. Associated impacts on agricultural land will be restricted to the construction phase and will be temporary in nature. Agricultural land will be lost permanently at the base of the transmission tower. After construction, Agricultural land within the transmission corridors can be used again for farming purpose.

5.2 Environmental problems associated with Construction and Operation Stage

77. The project activities during construction phase will involve clearing of trees along the route alignment wherever required, excavation for installation of towers, erection of towers, civil works related to transmission line and line stringing. During the operation phase, most of the construction phase impacts will get stabilized and the impacts will be restricted only to the operation and maintenance of the project.

78. The impacts on the environment from various activities of the project can be categorized as follows:

- Impact on Physical Resources
  - Impact on Topography
  - Impact on Climate
- Impact on Environmental Resources
  - Impact on Air Quality
  - Impact on Noise Levels
  - Impact on surface Water Quality
  - Impact on ground Water Quality
  - Impact on Soils and Geology
- Impact on Ecological Resources
  - Terrestrial Ecology
  - Wild Life
  - Aquatic Ecology
- Impact on Human Environment
  - Health and Safety
  - Agriculture
  - Socio-economics
  - Resettlement and Rehabilitation
  - Cultural sites
  - Traffic and Transport
  - Interference with other utilizes and traffic
- Waste Disposal
  - Solid waste disposal
  - Liquid waste disposal

79. The impacts of the project activities on various environmental attributes are discussed in subsequent sections.

5.2.1 Impact on Physical Resources

➢ Impact on Topography

80. During the construction of the transmission line, the topography will change due to excavation and erection of tower, fill and cut for the leveling the tower erection place. The most prominent impact on the surface topography will be due to the removing of the trees in the hilly region at the tower erection site and all along the Right Of Way (ROW) for construction facilitation. This will lead to change in the surface features only. The impact will be irreversible as the present features along the ROW will be changed due to presence of the transmission line.

81. No topographical changes are envisaged during the operation phase of the transmission line. The existing access routes will be utilized during the operation and maintenance of the transmission lines.

- **Impact on Climate**

82. The study area along the ROW is predominantly forest area, thick patches of vegetation in the project area. However, impact on the climate conditions from the proposed projects both during the construction and operation phases will not be significant.

5.2.2 Impact on Environmental Resources

- **Impact on Air Quality**

83. During the construction phase, the activity would involve excavation for the tower erection, movement of transporting vehicles carrying the construction materials etc. along the haul road (through pucca roads, but are not maintained). At majority of locations movement of vehicle is not possible; from approach road to construction site material will be head loaded or using other means like donkeys and horses etc. All these activities would give rise to emission of dust particles thereby affecting air quality marginally at the site which although will be transitory in nature. Sprinkling of water during excavation will reduce the dust emission to the greater extent.

84. The construction of transmission line will not have any negative impact on the air quality of the region during the operation phase.

- **Impact on Noise Levels**

85. During the construction phase, the major sources of noise pollution are movement of vehicles transporting the construction material and equipment to the site. Since most of the access roads along the alignment are not motor able, material transfer has to be done by non-motorize transport vehicle. The major work of the construction is expected to be carried out during the day time. The noise produced during the construction will have negligible impact on the residents of Villagers as they are too far as already discussed the predominant land use along the most part of alignment is forest area. There will be very limited presence of population being exposed to noise generated during the construction phase.

86. During the operation phase of the project there will noise from the corona noise from the conductors which will be felt only up to 15 to 30 m area, hence the ambient noise level meets the CPCB standard for residential areas (55 dB(A) during daytime and 45 dB(A) during night time).

- **Impact on Surface Water Quality**

87. The construction and operation of the transmission lines will not have any major impact on the surface and ground water quality in the area. Contamination to water bodies may result due to spilling of construction materials and surface runoff from the construction site joining the water body. There may be increase in the turbidity levels in Bhagirathi River where the proposed alignment is crossing and if the surface runoff

during construction meets the river. This can be avoided by careful selection of the tower site and the access roads so that the surface runoff does not meet the river.

88. Care shall be taken to locate the temporary construction worker sheds away from the water bodies. Adequate drinking water facilities, sanitary facilities and drainage in the temporary sheds of the construction workers should be provide to avoid the surface water pollution. Provision of adequate washing and toilet facilities should be made obligatory. This should from an integral component in the planning stage before commencement of construction activity.

- **Impact on Ground Water Quality**

89. Ground water pollution can take place, if chemical substances and oily waste get leached by precipitation of water and percolate to the ground water table. For transmission line construction activity, no chemical substance or oil is used hence there is no impact on ground water quality.

- **Impact on Soil and Geology**

90. The impact on soils will be due to the soil erosion at the tower construction site and along the access routes due to excavation activity and land clearance the erosion prone areas have been minimized while site selection for towers. Leveling and stabilization of tower construction sites will be done after completion of construction activity.

91. Geological impacts are related to damage due to seismic conditions. The study falls under marcalli intensity scale zone IV where the max. intensity could reach VIII Which is not severe seismic zone. However, foundation design of the towers shall be done considering the probability of occurrence of earthquake at the design stage itself.

5.2.3 Impact on Ecological Resources

92. There is no national wildlife park, bird sanctuary, wetland in the close vicinity of the proposed alignment. Although the study area for route alignment having forest area thick vegetation. The ecological impacts are briefly describe in the following sections

- **Impact on Terrestrial Ecology**

93. The initial construction works along the alignment involves land clearance, cutting, filling and leveling may cause loss of vegetation. This will be irreversible impact. Care has been taken to avoid the thick vegetation as far as possible and tower locations are selected at the hilltops where the vegetation is thin. This will minimize the tree loss. Compensation will be pay to the tree owners in the private areas.

94. Clearing of forest area is involved along the route alignment, hence the compensatory a forestation is required for which clearance will be obtained from the appropriate authority of the forest department and amount for compensation will be paid.

95. There is no sensitive ecological area / protected forest area such as national wildlife park, bird sanctuary crossing the proposed route alignment.

96. The removal of herbaceous vegetation from the soil and loosening of the top soil generally causes soil erosion. However, such impacts would be primarily confined to the project site during initial periods of the construction phase and would be minimized through adoption of mitigate measures like paving and surface treatment and water sprinkling.

97. During operation phase corridor along the alignment will be chopped of vegetation and lopping of trees will be done for maintenance purpose. This will also reduce the chances of fires due to electric sparks.

- **Wild Life**

98. For selecting the route alignment, wild life travel routes has been avoided as far as possible during the field visits.

- **Impact on Aquatic Ecology**

99. The proposed transmission line would cross over the river Bhagirathi and Bhelangana. No significant impacts on aquatic ecology of the river are envisaged, as there will be careful selection of the tower sites near the river, to avoid the river pollution and disturbance to the aquatic fauna of the area.

5.2.4 Impact on Human Environment

- **Health and Safety**

100. Health and safety impacts will be in terms of risk of accidents and exposure to electromagnetic fields along the alignment. The accidents may due to electro-cutting, lightening, fires and explosions. To avoid this, the houses will not be allowed within the ROW of the project. Necessary training regarding safety aspects to the personnel working at the line will be provided by the contractor. Personal protective equipments like safety gloves, helmet, mufflers etc will be provided during construction period and during the maintenance work. First aid facilities will be made available with the labor gangs and doctors called in from nearby towns when necessary. Workers are also covered by the statutory Workmen Compensation Act by the contractor.

- **Agriculture**

100. Impact on agriculture would be due to the permanent and temporary loss of agricultural land due to tower location in the agricultural field and loss of crop for access route etc. There will not be any land acquisition for the tower erection. As far as possible the prime agricultural land will be avoided and the construction will be done after crop harvesting.

- **Socio-economics**

101. Construction of transmission line will generate local employment, as number of unskilled labors (men/women) will be required at the time of construction activities. Local employment during this period will increase socio-economic standards.

➢ Resettlement and Rehabilitation

102. For the construction of transmission line no land acquisition is required, hence there is no resettlement and rehabilitation is involved in the project.

➢ Cultural sites

103. There are no archaeological, historical or cultural important sites along the route alignment; hence the impacts on these sites are not envisaged.

➢ Traffic & Transport

104. During the construction phase, traffic disturbance needs to be minimized by avoiding high-density areas, proper traffic signs, ensuring proper access roads and avoiding road blockage.

➢ Interference With Other Utilities and Traffic

105. As per regulations enacted by Government of India and Uttarakhand, it is mandatory for PTCUL to seek clearance prior to construction from department of Railways, Telecommunications and wherever necessary from aviation authorities that are likely to be affected by the construction of transmission lines. The transmission lines affect nearby telecommunication circuits by causing electrical interference. A standing committee- Power Telecom Co-ordination Committee (P.T.C.C.) has been constituted by Government of India to plan and implement the mitigating measures for the induced voltage which may occur to nearby telecom circuit and suggest necessary protection measures to be adopted. The committee suggests measures like rerouting of the telecom circuits, conversion of overhead telecom circuits into cables etc. to minimize the interference. The cost of such measures is determined by the Committee and is shared by PTCUL and Telecom Department on the basis of prevailing norms and guidelines. Though the exact cost to mitigate the impacts of induction in neighboring telecom circuits would vary from case to case. Wherever transmission line crosses the railways, clearance is taken from that department. In general, the system is planned and executed in such a way that adequate clearance is maintained between transmission lines on the one hand, and railways, civil aviation and defense installations on the other. Wherever the transmission lines passes near the airport, the towers beyond specified height are painted in alternate orange and white stripes for easy visibility and warning lights are placed on the top of these towers.

5.2.5 Waste Disposal

➢ Solid Waste Disposal

106. The solid waste generation will be at the location of the tower erection site which will include metal scraps, wooden packing material etc. Wooden waste and metal scrap will be collected and disposed of in compliance with the Environmental Protection Act, 1986, and applicable regulations and rules.

- **Liquid Waste Disposal**

107. There will be no oil or chemical waste generates during the construction of transmission line, hence no mitigation is required.

108. The environmental impact matrix and the mitigation measures are given in Table-5.1 below.

Table – 5.1: Environmental Impact Matrix

Sl. No.	Environmental attribute	Potential impacts	Nature of impact	Magnitude of impacts			Mitigation measures	Implementation & Monitoring
				Low	Medium	High		
A.	Physical Resources							
1.	Topography	Change in the surface features and present aesthetics due to the construction of the project.	Direct/Local/ irreversible		X		The compensatory a forestation of double the area of forest land in ROW will be undertaken by the Forest Department to compensate for the loss on PTCUL expenses to minimize the impact of loss of vegetation as per existing norms under the Forest (Conservation) Act, 1980.	Before construction phase
2.	Climate	No impacts on the climatic conditions	Direct/Local/ irreversible	X			No measure impact on the climatic conditions, hence no mitigation is required	
B.	Environmental Resources							
1.	Air Quality	Project will have marginal impact on air quality during the construction period due to increase in the dust emission.	Direct/Local/ reversible	X			Water Spraying at construction site, limited bare soils, maintenance of vehicles etc.	During construction activity

2.	Noise	Noise due to general construction activities .	Direct/Local / reversible	X			Restriction of noise generating activities at night and use of personal protective equipment like ear plugs, mufflers etc.	During construction activity
		Noise arising from corona noise from conductors	Direct/Local / reversible	X			Monitoring of possible corona noise to identify and correct problems.	During operational phase
3.	Surface and Ground Water quality	Runoff from the construction site	Direct/Local / reversible	X			Careful sitting of towers and access roads.	Before and during construction activity
		Domestic wastewater from construction sites	Direct/Local / reversible	X			Domestic waste treatment by providing septic tank soak pits..	During construction and operation
4.	Soils and Geology	Soil erosion due to tower erecting and clearing of vegetation in the ROW and access roads.	Direct/Local / reversible				Avoiding sites, which are prone to the soil erosion. Leveling of tower construction sites. Use of few access roads. Rehabilitation and stabilization of disturbed land.	During and after the construction activity
		Damage due to seismic activity	Direct/regional/ reversible		X		Site selection and proper tower foundation design considering the geological conditions and seismicity of the area.	Before the construction activity.

C.	Ecological Resources							
1.	Terrestrial Ecology	Loss of vegetation	Direct/Local / irreversible		X		Location of towers at the forest area and thick vegetated area. Selection of few access roads. Compensation to the tree owners. The a forestation two times of the trees cleared along the route alignment will be done by the forest department for which PTCUL will pay the amount to them.	Before the construction phase
2.	Terrestrial Fauna	Disturbance to the local fauna during construction	Direct/Local / reversible	X			Wildlife routes and their habitats has been avoided as far as possible during the route selection .	Before and during construction phase
		Disturbance to the local fauna during operation	Direct/Local / reversible	X			Monitoring of line especially for bird strikes during the operation and use of deflectors if required.	During operation phase
3.	Aquatic Ecology	No significant impacts envisaged	Direct/Local / reversible	X			No mitigations required	Before and during construction phase

D.	Human Environment							
1.	Health and Safety	Exposure to electromagnetic fields	Direct/Local/ continuous	X			Alignment route away from the settlement. No houses in the immediate vicinity and will be allowed in the ROW of the alignment. No mitigations required.	Before and after the construction phase.
		Fires, explosion and other accidents at the route alignment of transmission line.	Direct/Local	X			Use of personal protective equipments during construction. By lopping and chopping of trees fire hazards will be avoided during maintenance period. Regular inspection of lines for faults prone to accidents.	During construction and operation phase
2.	Agriculture	Permanent and temporary loss of agriculture land due to tower erection and due to access routes.	Direct/Local/ reversible	X			Avoid prime agriculture land. Assessment of land required and compensation. Construction activity after crop harvesting and selection of few access routes.	Before and during construction phase.
3.	Socio-economics	Beneficial impacts from rural and urban electrification. Job opportunities during construction phase	Direct/regional		X		Unskilled labor and indirect benefits. Overall economic growth of the region.	During operational phase
4.	Resettlement	Resettlement of the house falling along the ROW.	Direct/Local/ reversible	X			Route alignment is selected in such a way that there is no resettlement issue.	Before the construction phase.

5.	Cultural sites	No archaeological, historical or cultural important sites are affected by the construction of the lines.	Direct/Local/ reversible	X			No archaeological, historical or cultural important sites are affected, hence no mitigation required	--
6.	Traffic and Transportation	Traffic congestion due to movement of construction vehicles	Direct/Local/ reversible	X			Avoid high density traffic areas, proper traffic signs at the construction site, ensuring proper access roads	During construction phase
E	Solid Waste Generation	Probability of Surface and ground water pollution	indirect/Local/ reversible	X			Separated wooden and scrap will be collected and disposed of in compliance with the Environmental Protection Act, 1986, and applicable regulations and rules.	During operation phase

6.0 INSTITUTIONAL REQUIREMENT AND ENVIRONMENTAL MONITORING PROGRAM

6.1 Institutional arrangements

109. The mitigation measures suggested requires monitoring of environmental attributes both during construction and operational phase of the project. PTCUL have a separate environmental cell for dealing with the various environmental issues at the corporate level. In the PTCUL there is environmental cell both at the corporate and regional levels to monitor and implement environmental good practices.

110. The environment management cell at both the levels is headed by qualified and experienced engineer who is well aware of the project activities and its impacts on the environment. The engineer should be able to give guidance to the personnel to adopt the environmental good practice.

111. The duties of the environmental cell at the corporate level:

- Monitoring and implementation of mitigation measures during construction and operation phases of the project.
- Prepare environmental management cell at both the levels is headed by qualified and experienced engineer who is aware of the project activities and its impacts on the environment. The engineer should be able to give guidance to the personnel to adopt the environmental good practice.
- Advising and coordinating regional environmental management cells activity towards effective environment management.
- Prepare environment and safety manual for the operation of sub-stations.
- Liaise with the Ministry of Environment Forest (MoEF), New Delhi and State Department of environment and sought their help to solve the environment related issues of the project implementation.
- Advise to project planning cell on environmental and social issues while route selection of the alignment at the planning stage to avoid negative environmental impact.
- Provide Training and awareness on environmental and social issues related to power transmission projects to the project staff.

112. The duties of the environmental cell at the regional level:

- Implement the environment policy guidelines and environmental good practices at the sites.
- Advising and coordinating the field offices activity towards effective environment management.
- Implement environment and safety manual.
- Liaise with the State pollution control board and sought their help to solve the environment monitoring related issues.
- Carry out environmental and social survey in conjunction with project planning cell while route selection of the alignment at the planning stage to avoid negative environmental impact.
- Provide Training and awareness to the field offices on environmental and social issues related to power transmission projects.

6.2 Environmental Monitoring

113. During the construction and operation phase of this project, the monitoring of the environmental aspects shall be done at the transmission line by a competent officer under guidance of the regional and corporate level offices. During the construction phase, the prospective contractor should ensure that activities like handling of earth work, clearing work, access road construction, putting proper traffic signals is done properly to have minimum impact. This in turn should be monitored by the Engineer-in – Charge of the individual transmission line.

114. Monitoring of sanitary waste treatment should be done periodically to avoid water pollution. Other environmental good practices include noise abatement, maintaining hygienic conditions, maintenance of fire and safety equipment etc. Monitoring report should be prepared once in six months with the corrective action plan for the problem areas.

115. Overall the environmental good practices should be followed as per environmental policy guidelines.

6.3 Critical Environmental Review Criteria

(i) Loss of irreplaceable resources

116. The transmission projects do not involve any large scale excavation and land is lost to the extent of 0.2-1 sqm only for each tower foundation. Rest of the area under the tower continues to be under use. Forest cover felled in the Right of Way is allowed to regenerate except in 3 meter wide strips, after construction work is over. The compensatory a forestation of double the area of forest land in ROW is undertaken by the Forest Department to compensate for the loss on PTCUL expenses to minimize the impact of loss of vegetation as per existing norms under the Forest (Conservation) Act, 1980.

(ii) Accelerated use of resources for short-term gains

117. The project will not be making use of any natural resources occurring in the area during construction as well as maintenance phases. The construction material such as tower members, cement etc shall come from factories while the excavated soil shall be used for backfilling to restore the surface. Thus the project shall not cause any accelerated use of resources for short term gains.

(iii) Endangering of species

118. No endangered species of flora and fauna exist in the project area as well as in the affected forest thus there seems to be no possibility of endangering/causing extinction of any species.

(iv) Promoting undesirable rural-to urban migration

119. The project will not cause any submergence or loss of land holdings that normally trigger migration. It also does not involve acquisition of any private land holdings. Hence, there is no possibility of any migration.

(v) Increase in affluent/poor income gap

120. The project will increase availability and reliability of power in Uttarakhand State. It is well known that power is a key input to the economic development of any area. Past experience indicates that economic development leads to generation of more jobs which in turn should raise the living standards of poor. Thus the project is expected to contribute in reduction of affluent/poor income gap.

6.4 Environmental Management Plan

121. The environmental management and monitoring plan (EMP) that was prepared for the project in 2005 was the basis for determining the anticipated impacts, monitoring requirements, and development of mitigation measures with respect to the following stages: (i) pre-construction, (ii) construction, and (iii) operation and maintenance. Detailed, site-specific mitigation measures and monitoring plans are developed and will be implemented during the project implementation phase. The Detailed EMP is also attached in the **Annexure-3**.

122. **Environmental Management Plan Budget Costs:** The main benefits of the environmental mitigation plan are (i) ensuring that environmental standards are met during design, construction, and operation of the project; (ii) providing offsets to negate project impacts especially ecological impacts, e.g., in the form of compensatory afforestation, greenbelt development and landscaping. Without such expenditures, the project might generate large environmental impacts, causing the biophysical environment in the area to deteriorate and indirectly depressing the economies of local communities.

123. **Table 4.1** gives an illustrative analysis of the three alignments for the proposed subproject. Summary EMP for the project components is provided in Table as **Annexure- 3**. The compliance with the EMP has been prepared based upon optimum and reasonable costs that are derived upon minimization of mitigation measures on a "least-cost" basis. Cost estimate summaries for the implementation of environmental mitigation measures, and monitoring costs, independent audit costs for the project is provided in **Table 6.4.1** and **Table 6.4.2** during pre-construction and construction stage respectively.

Table 6.4.1: Transmission line EMP cost

Sl. No.	Item Description	Quantity	(In INR-Rupees) Lacs
1.	**Pre-Construction stage**		
A.	Total Forest cost (Compensatory afforestation and Approval of forest land)-***Tree plantation shall be done by Forest Department for which necessary payment will be made by the PTCUL. PTCUL shall deposit the amount for the following;*** ***A)*** Plantation of trees ***B)*** Net Present Value (NPV) ***C)*** Lease Rent for 30 years ***D)*** Maintenance for 3-5 years ***E)*** Plantation of bonsai tree below the transmission line conductor	1,11,210 trees to be planted for cutting of approximately 11,121 of trees	2200.00
B.	**Crop compensation**	Exact crop compensation will be evaluated during final survey	50.00
C.	Power Telecom Co-ordination Committee (PTCC) clearance	Lump sum	5.00
Total EMP cost during pre construction stage			**2255.00 lacs**

Table 6.4.2: EMP Cost during Construction Stage

S. No.	Activity	Unit	Rate (INR)	Quantity	Amount (INR) Lacs
1	**Safety awareness program among the villagers and workmen.** The contractor will conduct Information Education and Consultation Communication (IEC) campaigns at least every other month, addressed to all site staff and labour to the immediate local community and project affected people about the project related environment management and social issues.	No.	-	at least every other month	Contractor shall implement the same as per clause 22.1 of Section 8 – Special Condition of Contract
2	Personal Protective Equipment (PPE) such as Safety Helmets, gumboots, safety Jackets, Ear plugs & Nose masks to workers working at construction site. The minimum no of PPE shall be 200 each of define item at one time.	No.	-	200	The contractor will maintain a stock of at least 200 PPE's in his stores for uses as per clause no

S. No.	Activity	Unit	Rate (INR)	Quantity	Amount (INR) Lacs
					22.2 of Section 8 - Special Condition of Contract.
3	Environmental enhancement such as repairing, whitewashing of worship places and schools, provision of drinking water facilities, sitting benches etc. and development of green belt along the worship place and schools, repairing of approach road and provision of bathing ghats close to project site. Detail plan with costing will be prepared by Implementing Agency and upon approval by Engineer/PTCUL, it will be executed. Upon verification of concerned Engineer, the payment shall be done.	Lump sum			23.50
4	Medical camps for workmen and society including checkup of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS and health awareness program on monthly basis shall be done by the Contractor. Payment to the contractor for preparation and implementation this program shall not exceed the provisional sum dedicated for this purpose (***Clause 22.2.7 of Section – 8 of Special Condition of Contract***)	No.	15000	30	4.50
Total EMP cost during construction stage					**28.00**

7.0 ASSOCIATED FACILITIES

124. The total proposed power evacuation by Loharianagpala-Koteshwar 400 KV DC line line is 1080 MW. This transmission line will evacuate the power of Loharinagpala Hydropower Project (600 MW) of NTPC. This line will also be utilised in future for evacuation of power of Palamaneri Hydro Power Project (480 MW) of UJVNL. The transmission line for the evacuation of power from Pala Maneri is covered by PTCUL under other finance schemes (Non ADB).

125. Presently, evacuation of no other Hydropower project is proposed utilizing this line. For other proposed power houses in Bhagirathi basin like NHPC's Kotlibhel (Stage IA-195 MW), Kotlibhel (Stage IB-320 MW) and Kotlibhel (Stage II-530 MW), the power will be evacuated through the 220 KV D/C Kotlibhel-Dehradun line by PTCUL under other finance schemes (Non ADB).

126. In the same way Bhelangana-I (22.5 MW), Bhelangana-II (49 MW) and Bhelangana-III (24 MW), power will be evacuated through 220 KV D/C Ghanshali-Chamba-Srinagar line by PTCUL under other finance schemes (Non ADB).

127. Moreover, for other small SHPs, the power evacuation will occur at 132KV/ 33KV and hence their evacuation cannot be directly connected on 400 KV Loharinagpala - Koteshwar line.

128. Implementation agreement between NTPC limited and Government of Uttarakhand for the execution of Loharinagpala 600 MW (4X150 MW) Hydro electric power project in Uttarakhand has been made on dated 23 June 2004.

129. Construction of Pala Maneri 480 MW (4x120 MW) Hydroelectric project in Uttarakhand by M/s. Uttarakhand Jal Vidyut Nigam Limited has been approved by Central Electricity Authority vide letter no. 2/utr/2/03-CEA/PAC/155-86 on dated 23 Feb 2007. For the evacuation of power of above projects, approval of construction of 400 KV Loharinagpala – Koteshwar line is covered under PFR-II which is approved by CEA and MoP (**Annexure-1** & **Annexure-2**).

8.0 PUBLIC INFORMATION AND CONSULTATION

130. Whenever a power transmission system is planned and put up for the Government's approval, a Gazette notification of the transmission scheme is made in the state Gazette under section 29(II) of the Electricity (Supply) Act of 1948. The details of the schemes including the locations (villages/towns) through which it will pass should be published in daily news papers of the area for information and to solicit comments, from the public within stipulated period. This is to allay fears and apprehensions of people and the objections or suggestions received, are considered in the location of the project. Presently the public consultation is done as a part of social assessment separately to ascertain the people's reaction and the related issues are covered separately in the social assessment report.

131. During the survey, public consultation has done to know the people's perceptions about the project and environmental problems. The purpose of the public consultation includes the following:

- To ascertain the public views on various environmental issues related to transmission line;
- To encourage and provide for people's participation in project implementation; and
- To obtain new insight and site specific information, and to appropriating possible mitigation measures based on local knowledge of the communities.

Process Adopted:

132. Public consultation is an integral part of EMP report. Community consultations covering Environmental and Social aspects have been done close to proposed route of transmission line with Panchayat members and local villagers including women group. Local communities, who are primary stakeholders, have been chosen for consultation. Focused group discussion with the local community is adopted as a tool for the consultation along the transmission line. The local communities had been informed in advance about the date, venue, and purposes of the public consultation with briefing on project interventions including its benefits and disadvantages. The environmental concerns and suggestions made by the participants has been listed out, discussed and dissolved.

133. The details of scheme including the locations (villages/towns) where the route alignment of transmission line is proposed is published in daily news papers Amar Ujala, Uttarakhand edition, Danik Jagran, Uttarakhand edition and Times of India, Delhi edition) for information and to solicit comments from the public within stipulated period is given in **Annexure 4.1**.

134. Information about the proposed project in English and Local language (Hindi) is shared, which is given in **Annexure 4.2 (a) & Annexure 4.2 (b)**.

135. Public Consultation and Awareness Program in English and Local language (Hindi) for the proposed project is done based on certain questions, which is given in **Annexure 4.3 (a) & Annexure 4.3 (b)**.

Outcome of Public Consultation:

136. Most of the people seems to be unaware of the environment problems but after awareness and consultation program, people felt necessary to have new transmission line in the interest of development of state. After the discussion, the response of the people was obtained on the response sheet. Public consultation details are summarized in following **table**:

Public Consultation Details:

S. No.	Issues	Public Response	PTCUL's Explanations
1.	Are you aware of the project?	Most of the people were unaware of the project.	Officers of PTCUL team explained the importance of project and its benefits.
2.	Are you aware of the environmental issues related to the project?	a. Generally people were worried about the cutting of trees.	a. Consultation team ensured the people that double the afforestation will be done by the forest department at the expenses of PTCUL to compensate the deforestation. It was also briefed that route alignment is done in such a way that minimum tree cutting is required.
		b. Some people were worried about the dust emission.	b. It was informed that soil excavation area is very less for construction of tower foundation and during the construction spray of water will be done to mitigate the dust emission.
		c. Few people also enquired about the traffic/heavy vehicle traffic.	c. Officers explained that tower will be transported in parts and it will be done by using the normal trucks.
		d. Some people were worried about noise of transport vehicles	d. It was explained to them that construction period for tower foundation near to the specific village is very short and it is in weeks.

S. No.	Issues	Public Response	PTCUL's Explanations
		e. Some people asked the question about the cutting of land (benching work) and stabilization of land, if any.	e. It was briefed that designing of towers (uneven legs extensions) is done in such a way that minimum cutting of land, if any, is required. Even if cutting of land is required stabilization of land will done by constructing retaining/breast wall and by doing revetment work.
3.	Other issues	a. Some people, especially ladies, were worried about the nuisance by the outside workers.	a. Public was ensured that contractor will be asked strictly to maintain the discipline among the outside workers.
		b. Some people asked about the employment from this project.	b. It was informed that contractor will be asked to prefer the local employment for unskilled jobs. Indirect income to the villagers will be generated in the form of purchases by the outside workers for their daily needs and in the form of animal transportation of material if required.
		c. Some people asked about importance of constructing power line in an already electrified village.	c. It was explained to them that this line will be of high voltage and will evacuate the power generated in HEPs to load centers. This will solve the problem of power shortage, provide quality power at low cost to the state consumers and by selling the surplus power it will increase the revenue of the State of Uttarakhand.
		d. Some people enquired about the loss to their personal land and crops, if any.	d. It was ensured to them that it will be avoided. However, if there is any loss it will be compensated as per departmental norms. Crop compensation will be provided to them by PTCUL but the case will be processed by the state government revenue department.

The attendance sheet and photographs of public consultation is given in **Annexure 4.4** and **Annexure 4.5** respectively.

9.0 FINDINGS AND RECOMMENDATIONS

137. It is been evaluated form the impact matrix that the project will not have significant negative environmental impacts and the project would help in improving the socio-economic conditions of this developing state. As the project falls in category B as per the ADB's guidelines, no detailed EIA study is required.

10.0 CONCLUSION

138. Based on the environmental assessment and surveys conducted for the project, associated potential adverse environmental impacts can be mitigated to an acceptable level by adequate implementation of the measures as stated in the IEE. Adequate provisions should be made in the project to cover the environmental mitigation and monitoring requirements, and their associated coasts.

139. As already mentioned, new 400 KV D.C. Loharinagpala –Koteshwar line will evacuate the power of Hydro- electric power project at Loharinagpala whose proposed capacity is 600 MW. In future it will also evacuate the power of Hydro- electric power project at Palamaneri whose proposed capacity is 480 MW. Koteshwar will be the inter-state polling point and from there the power will be evacuated by PGCIL. This will improve operational efficiency, quality of power, reliability of the system and at the same time will reduce losses. The 400 KV Loharinagpala – Koteshwar transmission line will boost to the economic and industrial development of Uttarakhand state as state will get 12% free power as well as transmission charges.

140. Overall, the major social and environmental impacts associated with transmission project is limited to the construction period and can be mitigated to an acceptable level by implementation of recommended measures and by best engineering and environmental practices.

Central Electricity Authority
भारत सरकार
Government of India
प्रणाली, आयोजना एवं परियोजना मूल्यांकन
System Planning & Project Appraisal Division
सेवा भवन, आर.के.पुरम
Sewa Bhawan R K Puram,
नई दिल्ली - 110066
New Delhi -110066

No. 12A/G/2006-SP&PA/ 39

Date: 09.01.2007

Sub:- Integrated Transmission System in Uttaranchal

Sir,

Managing Director, PTCUL vide letter no. 12/PTCUL/MD/CEA dt. 03.01.07 have furnished the details of the transmission proposal to be constructed by them from the generating projects in Uttaranchal. Copy of their letter along with the enclosure is enclosed. PTCUL have requested that the revised proposal for transmission of power from the hydropower projects in Uttaranchal be sent to MoP and DEA for signing ADB loan agreement. The revised project proposals envisages power evacuation system for 5406.5 MW of generation projects in Yamuna, Bhagarathi, Alaknanda and Sarda basin projects for an estimated cost of Rs. 2446.74 croes based on the 4th quarter price of 2004 (excluding IDC).

The issue of PTCUL proposing to take up transmission system for development of comprehensive/integrated power evacuation system in Uttaranchal was discussed in the meeting taken by Secretary (Power) on 15th September 2006. As the issue of inter-state transmission was also involved, it was decided that before taking further action, the matter needs discussion in the regional power committee of the Northern Region.

The matter was discussed in the 2nd TCC meeting held at Moussoorie on 9th November 2006, wherein Chairman/members of TCC observed that PTCUL could take up the intra-state transmission system up to the pooling point on their own, for which there was no requirement of any commitment for payment of transmission charges by other constituents and arrangement of recovery of transmission charges will be only between PTCUL and the generators and it was agreed in TCC that PTCUL/generators would apply for open access for inter-state transmission system to CTU so that POWERGRID in consultation with

CEA could firm up inter-state transmission system and necessary modification in the system up to pooling point would also be firmed up in the process. The above views of TCC was endorsed in the 3rd NRPC meeting held at Mossoourie on 10th November 2006.

Based on the decision taken in the TCC and NRPC meeting, the proposal of PTCUL and the scope of transmission have been examined, it is found that PTCUL has proposed the transmission system from the generation projects within Uttaranchal and up to the pooling point within Uttaranchal i.e 400 kV Tehri/ Koteshwar pooling station, 400 kV Roorkee, Kashipur and Pithoragarh.

In view of the above and as the transmission system proposed by PTCUL would not have any direct commitment for payment of transmission charges by the other constituents and recovery mechanism is only between PTCUL and the generators, we have no objection to PTCUL taking up implementation of this transmission system.

(A K Asthana)
Chief Engineer(SP&PA)

Encl:- As above (2 Nos)

1. Joint Secretary (Trans.), MoP,
   S.S. Bhawan, Rafi Marg, New Delhi

2. Director (Projects), PGCIL,
   'Saudamini', Plot no.2, Gurgaon.

Copy to: Shri S Mohan Ram, Managing Director, PTCUL

Power Transmission Corporation of Uttaranchal Ltd.
Intergraed power Transmission System of Uttaranchal
XI PLAN (2007-2012)

Annexure-I

(Mop (Go) OM 11/5/2004-IC dt. 04-05-2007 & CEA No. 12A/G/2006-SP&PA/39 dt.09.01.2007

Generating Scheme and Installed Capacity in MW	Transmission Work	Ckt. Kms. / Capacity/ No.	Target
(I) Yamuna Basin			
Arakot(72)	220KV D.C Mori-Nogaon-Khodri Line	2x100	2011-12
Tuni Pasu(40)	220KV D.C. Arakot-Tuni-Mori Line	2x40	2011-12
Hanol Tuni(45)	LILO of 220KV Arakot-Tuni-Mori Line at Tuni plasu	2x2	2011-12
Mori Hanol(63)	LILO of 220KV Arakot-Tuni-Mori Line at Hanol Tuni	2x3	2011-12
Jakhol Sankri(33)	LILO of 220KV Arakot-Tuni-Mori Line at Mori Hanol	2x2	2011-12
Natwar Mori(33)	LILO of 220KV D.C. Jakhol-Sankri-(220kv)Line	2x30	2011-12
Vyas (120)	LILO of 220KV Jakhol-sankri-(220KV) at Naitwar Mori	2x8	2011-12
Lakhwa (300)	LILO of 220 KV Mori - Khodri Line Nogaon	2x5	2011-12
	220 KV GIS Mori Substation	2x50	2011-12
	220 KV GIS Substation Nogaon	2x50	2011-12
Subtotal(708 MW)		200 MVA	
(II) Bhagirathi Basin			
Loharinagpala(600)	400 KV Loharinagpala - Koteshwar Line & LILO of Loharinagpala Koteshwar Line at Pala Maneri	2x2	2010-11
Pala Maneri(480)	220 KV DC Line from 400 KV Substation, Roorkee (PGCIL)-220 KV Substation, Roorkee	2x15	2009-10
Kotlibhel IA(195)	220 KV DC Kotlibhel St. II-Dehradun	2x90	2011-12
Kotlibhel IB(320)	220 KV DC Kotlibhel 1B-Kotlibhel St. II Line & LILO of this line at Kotlibhel IA	2x34.5	2011-12
Kotlibhel II(530)	220 KV DC Bhilangana III-Ghansali Line	2x15	2008-9
Bhilangana I(22.5)	LILO of 220 KV DC Bhilanga na II-Ghansali Line of Bhilangana II	2x1	2008-9
Bhilanga na II(49)	220 KV Ghansali-Chamba Li ne	2x50	2007-08
Bhilanga na III(24)	220 KV GIS Ghansali Substation	2x50	2008-9
	220 KV Bay at Chamba	1	2008-9
Subtotal(2220.5)			

(III) Alaknanda Basin			
Lata Tapovan(171) Badrinath(140) Vishnugad(520) Pipalkoti(444) Bawala Nandprayag(132) Nandprayag Langrasu(141) Devsari(300) Singoli Bhatwari(60) Gaurikund(19) Phatabhyung(11)	400 KV DC Vishnugad-Kuwaripass(Pipalkoti) Line	20	2010-11
	LILO of 400 KV Vishnugad-Muzzafarnagar line at Kuwaripass(Pipalkoti) Substation	3	2010-11
	400 KV DC Kuwaripass(Pipalkoti)-Karanprayag Line	45	2010-11
	400 KV DC Srinagar 400 KV S/S-Srinagar Powerhouse(HEP)	6	2010-11
	220 KV Tapovan-Joshimath Line	21	2010-11
	220 KV Tapovan-Joshimath Line at Badrinath	62	2010-11
	220 KV DC Joshimath-Kuwaripass(Pipalkoti) Line	30	2010-11
	220 KV DC Devsari-Karanprayag Line	26	2010-11
	220 KV Dc Nandprayag-Karanprayag Line	20	2010-11
	LILO of 220 KV Nandprayag-Karanprayag Line at Langrasu	8	2010-11
	220 KV DC Baramwari-Srinagar Line	70	2010-11
	LILO of 400 KV (I Ckt.) Kuwaripass(Pipalkoti)-Srinagar Line at Karanprayag	10	2011-12
	LILO of 400 KV (I Ckt.) Kuwaripass(Pipalkoti)-Srinagar Line at Karanprayag	16	2011-12
	LILO of 220 KV Baramwari-Srinagar line at Singoli Bhatwari	10	2010-11
	132 KV DC Gaurikund-Baramwari Line	30	2010-11
	LILO of 132 KV Gaurikund-Baramwari Line at Phatabyung	5	2010-11
	400 KV GIS S/S Karanprayag	2x240	2011-12
	400 KV GIS Substation, Kuwaripass(Pipalkoti)	2x240	2010-11
	400 KV S/S Srinagar	2x240	2010-11
	400 KV Srinagar Bay at 400 KV S/S Kashipur	1	2010-11
	220 KV GIS S/S Baramwari	2x50	2009-10
	220 KV Bays at Srinagar	2	2010-11
Subtotal(1938)			
(IV) Sharda Basin			
Khasiabara(260) Urthingsobla(280)	400 KV DC Karanprayag-Srinagar Line	70	2011-12
	400 KV DC Srinagar-Kashipur Line	140	2011-12
	220 KV Madkote-Khasibara Line	12	2010-11
	400 KV DC Urthingsobla-Pithoragarh Line	95	2011-12
	LILI(220) of 400 KV Urthinsobla-Pithoragarh Line at Dharchula	10	2011-12
	400 KV Khasibara-Pithoragarh Line	95	2010-11
	220 KV DC Pithoragarh(PGCIL)-Almora	80	2010-11
	220 KV GIS Madkot Substation	2x25	2010-11
	220 KV GIS Substation, Dharchula	2x50	2010-11
	220 KV Substation, Almora	2x100	2010-11
Subtotal(540)			
Total(5406.5)			

No. 11/5/2004-IC
Government of India
Ministry of Power
*****

Shram Shakti Bhawan, Rafi Marg
New Delhi, the 4th May 2007

OFFICE MEMORANDUM

Sub: Uttaranchal Power Sector Development Project with ADB assistance – Proposal – Regarding.

*****

The undersigned is directed to refer to DEA's O.M. No. 21/1/2005-ADB.II dated 1.8.2006 on this subject and to state that the Government of Uttaranchal/ Power Transmission Corporation of Uttaranchal had earlier proposed earlier an Integrated Power Transmission System for the State with ADB assistance. The said transmission system scheme will be constructed from the generating projects in Uttaranchal. The revised project proposal as forwarded by PTCUL for ADB assistance has been reviewed by Central Electricity Authority (CEA). The proposal envisages construction of a power evacuation system for 5406 MW in the four river basin projects of the State at an estimated cost of Rs.2,446.74 crore.

The proposal has been examined in this Ministry and is found to be in order (copy of the details sent by them is enclosed).

It is requested that this detailed revised proposal be recommended by DEA for assistance by ADB.

Encl: As above.

(Alok Kumar)
Director (IC)
(Tele: 23714000 / Fax: 23717519)

To

The Ministry of Finance,
Department of Economic Affairs,
(Shri U Chatterjee, Under Secretary (ADB-II),
North Block, New Delhi (Fax: 23092477)

Copy to:
1. Shri S. Mohan Ram, MD, PTCUL, 7-8, Lane No.1, Vasant Vihar Enclave, Dehra Dun, Uttaranchal (Fax: 0135-2762490)
2. Secretary (Power), Government of Uttaranchal
3. JS(Trans) (along with its encl.)

ENVIRONMENT MANAGEMENT PLAN

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
Pre -construction / Design Phase						
Selection of alignment	1. Impact on habitations/Settlements 2. Impact on trees / plantations 3. Impact on eco-sensitive areas	1. **Avoidance of:** • *Human settlements and grazing land* • *Environmental sensitive locations such as school, colleges, hospitals, religious structures, monuments etc* • *Notified Eco-sensitive locations and dense plantation* • *State / National / International boundaries* • *Socially, Culturally, Archaeologically sensitive area* 2. Consultation with local villagers and relevant authorities	**Nearest distance from:** • Human settlements and grazing land • Environmental sensitive locations such as school, colleges, hospitals, religious structures, monuments etc • Notified Eco-sensitive locations and dense plantation • State / National / International boundaries • Socially, Culturally, Archaeologically sensitive area	Once - at time of detailed siting and alignment survey and design	PTCUL	During detailed alignment survey and design
Location of transmission towers.	• Exposure to safety related risks	1. Setback of dwellings to overhead line route designed in accordance	Tower Location and alignment selection with respect to the	Distance to nearest houses, water bodies, railway lines and	PTCUL	Part of Tower sitting survey and detailed

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
	• Impact on water bodies, railway lines, roads etc	with permitted level of power frequency and the regulation of supervision at site 2. Avoidance of location of towers nearest to the water bodies, railway lines and roads at maximum extent possible 3. Consultation with local villagers and landowners	nearest dwellings and nearby water bodies, railway lines and roads	roads		alignment survey
Transmission line design crossing the existing transmission line(s)	Exposure to electromagnetic interference	Transmission line design to comply with the limit of exposure to electromagnetic interference from overhear power lines	Electromagnetic field strength for proposed line design	Line design compliance with relevant standards	PTCUL	During detailed alignment survey and design
Transmission line through forest land / jungle (if necessary)	Deforestation and Loss of biodiversity	1. Avoid encroachment by careful site and alignment selection 2. Minimise the need by using existing towers, tall towers and ROW, wherever possible 3. Obtaining forest clearance as necessary	Tower location and alignment nearest or within the forest area / jungle	1. Tower Location 2. Consultation with local villagers and forest department 3. Consultation with design engineers	PTCUL	During detailed alignment survey

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
Encroachment into farmland	Loss of agricultural productivity	1. Use existing tower footings/towers wherever possible 2. Avoid sitting new towers on farmland wherever feasible 3. Farmers compensated for any permanent loss of productive land 4. Farmers/landowners compensated for significant trees that need to be trimmed/ removed along ROW.	1. Tower location and line alignment selection 2. Design of Implementation of Crop Compensation (based on affected area) 3. Design of Implementation of Tree compensation (estimated area to be trimmed/removed) 4. Statutory approvals for tree trimming /removal	Consultation with local authorities and design engineers – once & Consultation with affected parties – once in a quarter	PTCUL	During detailed alignment survey and before setting up of tower
Air Craft hazards from Tower	Nearest Air port and distance from Tower location	The site should be at appropriate distance from nearest air port/air force station etc.	Distance from nearest Air port	The site should be at least 15 km distance from nearest air port/air force station etc.	PTCUL	During detailed alignment survey
Tree cutting on private land	Impact on environment	Tree plantation in case of cutting tress on private land	Number of tree to be cut	Number of tree to be cut due to proposed TL	PTCUL	During detailed alignment survey

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
Construction Phase						
Equipment layout and installation	Noise and vibrations	Construction techniques and Machinery selection seeking to minimize ground disturbance.	Construction techniques and machinery	Construction techniques and machinery creating minimal ground disturbance—once at the start of each construction phase	PTCUL / Supervision Consultant/ Contractor	Throughout the construction period
Site Clearance	Vegetation	Minimum disturbance to vegetation shall be permitted due to tower erection	Vegetation marking and clearance control	Once per site – as approved by site in charge	PTCUL / Supervision Consultant/ Contractor	Once during construction period
Physical Construction	Disturbed nearby farming activities	Construction activities on land timed to avoid disturbance on the nearby field crops (within 1 month of harvest wherever possible)	Time period of available field crop	• Crop disturbance-post harvest • Crops – once	PTCUL / Supervision Consultant/ Contractor	Throughout the construction period
Mechanized Construction	Noise and Vibration	• The machines should be properly fitted with silencers • Regular maintenance of constructional equipments • Turning off plant when not in use	Constructional equipments	Once at the start of constructional activities and at least once during middle of construction stage	PTCUL / Supervision Consultant/ Contractor	Throughout the construction period
Construction of roads for accessibility	Increase in airborne dust particles	Existing roads and tracks used for construction and maintenance access to the line wherever possible	Access roads, routes (length and width of new access roads to be constructed)	Use of established roads wherever possible every 2 weeks	PTCUL / Supervision Consultant/ Contractor	Throughout the construction period

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
			nearest dwelling or social institution			
	Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the ROW	Access width (meters) & Tower location and line alignment selection (distance to agricultural land)	Consultation with local authorities and land owners- Once	PTCUL / Supervision Consultant/ Contractor	Throughout the construction period
Tree cutting or Trimming of trees within ROW	1. Fire hazards, 2. Loss of vegetation and biodiversity	1. Trees allowed to grow up at specified height within ROW by maintaining adequate clearance between the tree top and the conductor as per regulation 2. Trees that can survive pruning to comply should be pruned instead of cleared 3. Pruned trees or felled trees to be disposed off with consultation to the respective Forest Department. 4. Compensatory afforestation for each tree felled.	1. Species specific tree retention as approved by statutory authorities (maximum height at maturity) 2. Disposal off felled trees as complied by Forest Department. 3. Compensatory afforestation for each tree felled.	1. Presence of target species in ROW following vegetation clearance - once 2. No. of trees planted as compensatory afforestation (two times)	PTCUL /Supervision Consultant/ Contractor	After deforestation
Wood/vegetation harvesting	Loss of vegetation and deforestation	Construction workers prohibited from harvesting wood in the project area	Illegal wood /vegetation harvesting (area in	Complaints by local people or other evidence of illegal	PTCUL /Supervision Consultant/	Construction period

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
		during their employment (apart from locally employed staff continuing current legal activities).	m^2, number of incidents reported)	harvesting - every 2 weeks	Contractor	
Tower construction- Disposal of surplus Earthwork/ fill	1. Accidental runoff and 2. Solid waste disposal can cause groundwater contamination	1. Excess fill from tower foundations excavation (being fertile top soil) shall be used in backfilling while erection of towers and the remaining to be spread in the nearby agricultural fields. 2. Regular check over accidental spillage 3. Excavated unsuitable material shall be disposed off at proper location	1. Type and quantity of spillage 2. Soil disposal location and volume(m^3)	1. Appropriate fill disposal sites- every two weeks 2. Acceptable solid waste disposal sites- every 2 weeks.	PTCUL /Supervision Consultant/ Contractor	Construction period
Storage of constructional materials	Accidental contamination in groundwater	Fuel and other hazardous materials to be stored securely.	Location of hazardous material, spill reports (type of chemical spilled and quantity, etc)	Fuel storage location and regular check over the same	PTCUL /Supervision Consultant/ Contractor	Construction period
Construction schedules	Noise nuisance to neighboring properties	Construction activities only Undertaken during the day and local communities informed of the construction schedule.	Timing of construction (noise emissions, [dB(A)])	Daytime construction only— every 2 weeks	PTCUL, UJVNL, Contractor through contract provisions	Construction period

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
Provision of facilities to the constructional workers	Contamination of receptors (land, air, water)	Proper sanitation, water supply and waste disposal facilities	Amenities of workforce facilities	Presence of proper sanitation, water supply and waste disposal facilities	PTCUL /Supervision Consultant/ Contractor	Construction period
Encroachment into farmland	Loss of agricultural productivity	Use existing access roads wherever possible	Usage of existing utilities	Complaints received by local people/authorities— every 2 weeks	PTCUL /Supervision Consultant/ Contractor	Construction period
		Ensure existing irrigation facilities are maintained in working condition	Status of existing facilities			
		Protect /preserve topsoil and reinstate after construction completed	Status of facilities (earthwork in m^3)			
		Repair /reinstate damaged bunds, etc. after construction completed	Status of facilities (earthwork in m^3)			
	Social inequities	Compensation for temporary loss in agricultural production	Implementation of Crop compensation (amount paid, dates, etc.)	Consultation with affected parties— once in a quarter	PTCUL /Supervision Consultant/ Contractor	
Health and Safety of Workers	Injury and Sickness	1. Safety equipments for constructional workers 2. Contract provisions specifying minimum requirements for construction camps 3. Contractor to prepare and implement health and safety camps	Safety provision during construction; and Contract provision for safety issue	Contract clauses compliance – once every quarter	PTCUL /Supervision Consultant/ Contractor	Construction period

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
		4. Contractor to arrange for health and safety training sessions				
Involuntary resettlement or land acquisition	Social inequities	Compensation paid for temporary/ permanent loss of productive land as per LAA & its process	RAP implementation	Consultation with affected parties – once in a quarter	PTCUL with the help of Supervision Consultant	During detailed alignment survey and design
Vehicular movement during Construction	Danger to local villagers	Safety awareness program among the villagers prior to construction	Safe movement of the construction vehicles	Safe driving of construction vehicle	PTCUL / Supervision Consultant/ Contractor	Once during construction period
Inadequate Construction stage monitoring	Likely to maximize damages	1. Training of environmental monitoring personnel 2. Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements 3. Appropriate contract clauses to ensure satisfactory implementation of contractual environmental mitigation measures	1. Training Schedules 2. Respective contract checklist and remedial actions taken thereof. 3. Compliance report related to environmental aspects for the contract	1. Number of programs attended by each person – once a year 2. Submission of duty completed checklists of all contracts for each site – once 3. Submission of duty completed compliance report for each site – once 4. Monitoring of Ambient Air and Ambient Noise at construction site close to habitations	PTCUL /Supervision Consultant/ Contractor	Construction period

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
		4. Monitoring of Ambient Air and Ambient Noise at construction site close to habitations		at regular intervals		
Environmental enhancement along the project site						Construction period
Operational Phase						
Location of towers and transmission line alignment and design	Exposure to Safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites	Compliance with setback distance ("as built" diagram)	Setback distances to nearest houses – once in quarter	PTCUL	During Operation
Workers' health and safety	Injury and Sickness / Health hazards	1. Careful design 2. Safety awareness 3. Fire emergency plan 4. Training and capacity building 5. Adequate sanitation and medical facilities	Usage of appropriate technologies, Awareness amongst the staff, provision of facilities etc	1. Capacity building and training – once a year 2. Complaints received from staff – every two weeks	PTCUL	During Operation
Oil spillage	Contamination of land/nearby water bodies	Substation transformers located within secure and impervious bunded areas with a storage capacity of at least 100% of the capacity of oil in transformers and associated reserve tanks.	Substation bunding ("as-built" diagrams)	Bunding capacity and permeability - once	PTCUL	During operations

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	1. Careful design using appropriate technologies to minimize hazards 2. Safety awareness rising for staff. 3. Preparation of fire emergency action plan and training given to staff on implementing emergency action plan 4. Provide adequate sanitation and water supply facilities	1. Usage of appropriate technologies (lost work days due to illness and injuries) 2. Training/awareness programs and mock drills 3. Provision of facilities	1. Preparedness level for using these technologies in crisis – once each year 2. Number of programs and percent of staff /workers covered – once each year 3. Complaints received from staff /workers every 2 weeks	PTCUL	During operations
Electric Shock hazards	Injury / Mortality	1. Careful design 2. Safety awareness 3. Fire emergency plan 4. Security fences around substation 5. Barriers to prevent climbing 6. Warning signals	1. Proper maintenance of fences, barriers, signals etc 2. No. of injuries and accidents	Every month	PTCUL	During Operation
Transmission Line maintenance	Exposure to electromagnetic interference	Transmission line design to comply with the limits of electromagnetic interference from overhead power lines	Required ground clearance (meters)	Ground clearance - Once	PTCUL	During Operation
Operation and maintenance staff skills less than	Unnecessary environmental losses of various types	1. Adequate training to all the staff 2. Preparation and training in the use of O	Training / Mock drills for all the staff	Number of programs and number of staff covered – once every year	PTCUL	During Operation

Project Activity / Stage	Potential Impact	Proposed Mitigation Measures	Parameters to be Monitored	Measurement and Frequency	Institutional responsibility	Implementation Schedule
acceptable		and M manuals and standard operating practices				
Environmental monitoring	Inadequate Environmental monitoring will cause diminished ecological and social values	Staff to receive training of environmental monitoring at various point of time during operation	1.Environmental and social parameters 2.Training / Mock drills / Awareness for all the staff	1.Environmental parameters-every 6 months 2.Number of programs and number of staff covered – once every year	PTCUL	During Operation
Noise generating equipments	Nuisance to neighboring properties	Equipments to be well installed with noise absorbing techniques	Noise level in dB (A)	Every month or as desired in consultation with affected parties (if any)	PTCUL	During Operation

Annexure 4.1

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0
7बी, लेन नं01, बसन्त विहार एन्क्लेव, देहरादून

विज्ञप्ति सं0 2/पी0टी0सी0यू0एल0 जुलाई, 2007

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0 ने विद्युत पारेषण के लिए निम्न योजना तैयार की है जिसकी सूचना एतद् द्वारा निम्नलिखित ग्राम निवासियों एवं टेलीग्राफ अथॉरिटी को इलेक्ट्रिसिटी एक्ट 2003 की धारा सं0 68 तथा 69 के अनुपालन में दी जाती है। यदि कोई व्यक्ति चाहे तो पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0 के समक्ष इस सूचना के सरकारी गजट में प्रकाशित होने के एक माह के अन्दर प्रतिवेदन कर सकता है।

कार्यों का विवरण:

1 योजना का नाम : 400 के0वी0 डी.सी. लोहारीनागपाला – कोटेश्वर लाइन

2 क्षेत्र : उत्तराखण्ड राज्य।

3 विशिष्ट बिन्दु : उक्त योजना के विशिष्ट बिन्दु निम्न हैं:-

(अ) पारेषण लाईन 400 के0वी0 डी.सी. लोहारीनागपाला-कोटेश्वर : लम्बाई (लगभग) 90 कि.मी.

(ब) स्थान : उक्त पारेषण लाईन उत्तराखण्ड राज्य के निम्न जनपद / क्षेत्र से होकर जायेगी:

क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम
1	[illegible]	14	[illegible]	27	बनाली	40	धापड़ा
2	[illegible]	15	[illegible]	28	कोटगा	41	डोबरा
3	[illegible]	16	[illegible]	29	[illegible]	42	क्याली
4	भटवारी	17	धौनतरी	30	पाल	43	डन्डोली
5	[illegible]	18	[illegible]	31	ओखाला	44	पालम
6	[illegible]	19	[illegible]	32	बगाड़ा	45	मिली
7	[illegible]	20	[illegible]	33	धारकोट	46	पैपल्टी
8	[illegible]	21	बेजपुर	34	रिनडाल	47	बन्दरी
9	[illegible]	22	[illegible]	35	बंदिल	48	पयालगाँव
10	[illegible]	23	बलोरी	36	कंडा खाल	49	कोटेश्वर
11	[illegible]	24	[illegible]	37	कनसोली		
12	[illegible]	25	[illegible]	38	पालम		
13	[illegible]	26	[illegible]	39	तिलफरी		

(स) जनपद : उत्तरकाशी एवं टिहरी

4 औचित्य एवं लक्ष्य : उत्तराखण्ड राज्य में स्थापित निर्माणाधीन 400 के0वी0 डी.सी. लोहारीनागपाला – कोटेश्वर लाईन को ग्रिड से जोड़ने के लिए।

5 लाभान्वित क्षेत्र : उत्तराखण्ड राज्य

6 योजना का पूंजीगत व्यय : 180.00 करोड़

7 योजना पूर्ण होने की सम्भावित अवधि : 2010–2011

प्रबन्ध निदेशक,
पिटकुल

No. 433/MD/PTCUL/Advertisement
Dated 24.07.07

(राष्ट्र हित में ऊर्जा बचायें)

AMAR UJALA – 25th JULY 2007

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0

7बी. लेन न01, वसन्त विहार एन्क्लेव, देहरादून

विज्ञप्ति सं0 2/पी0टी0सी0यू0एल0 जुलाई, 2007

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0 ने विद्युत प्रेषण के लिए निम्न योजना तैयार की है जिसकी सूचना एतद् द्वारा निम्नलिखित ग्राम निवासियों एवं टेलीग्राफ अथॉरिटी को इलैक्ट्रिसिटी एक्ट 2003 की धारा सं0 68 तथा 69 के अनुपालन में दी जाती है। यदि कोई व्यक्ति चाहे तो पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0 के समक्ष इस सूचना के सरकारी गजट में प्रकाशित होने के एक माह के अन्दर प्रतिवेदन कर सकते हैं।

कार्यों का विवरण

1 योजना का नाम : 400 के0वी0 डी.सी. लोहारीनागपाला –कोटेश्वर लाईन

2 क्षेत्र : उत्तराखण्ड राज्य।

3 विशिष्ट बिन्दु : उक्त योजना के विशिष्ट बिन्दु निम्न हैः–

(अ) पारेषण लाईन 400 के0वी0 डी.सी. लोहारीनागपाला–कोटेश्वर : लम्बाई (लगभग) 90 कि.मी.

(ब) स्थान : उक्त पारेषण लाईन उत्तराखण्ड राज्य के निम्न जनपद / क्षेत्र से होकर जायेगी।

क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम
1	धरग	14	सननगाँव	27	बनगली	40	चोपड़ा
2	बरसू	15	सौर	28	कोटगी	41	डांबेरा
3	पला	16	भितियारा	29	कोड़ा	42	चपाली
4	भटवारी	17	धौनतरी	30	पाला	43	डन्डोली
5	रैथाल	18	कौडर	31	ओखला	44	पालम
6	नेरी	19	गरदागाँव	32	बंगद्वारा	45	मिली
7	नातिन	20	सिरविनी	33	धारकोट	46	पैपल्टी
8	कनेटा	21	बीजपुर	34	सिंगदाल	47	बन्दरी
9	गैताल	22	जौगढ	35	बदिरा	48	पगुलगाँव
10	छिरिया	23	बसौरी	36	कांडा खाल	49	कोटेश्वर
11	लवैन	24	सुजाईगाँव	37	डागसोली		
12	गेन्डाखाल	25	स्यालगी	38	पालम		
13	मस्तारी	26	पतूरी	39	सिलयारी		

(स) जनपद : उत्तरकाशी एवं टिहरी

4 औचित्य एवं लाभ : उत्तराखण्ड राज्य में स्थापित निर्माणाधीन 400 के0वी0 डी.सी. लोहारीनागपाला – कोटेश्वर लाइन को ग्रिड से जोड़ने के लिए।

5 लाभान्वित क्षेत्र : उत्तराखण्ड राज्य

6 योजना का पूंजीगत व्यय : 180.00 करोड़

7 योजनापूर्ण होने की सम्भावित अवधि : 2010--2011

No. 433/MD/PTCUL/Advertisement
Date : 24.07.07

(राष्ट्र हित में ऊर्जा बचायें)

प्रबन्ध निदेशक,
पिटकुल

DANIK JAGRAN – 26th JULY 2007

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0
7बी. लेन नं01, वसन्त विहार एन्क्लेव, देहरादून

विज्ञप्ति सं0 2/पी0टी0सी0यू0एल0 जुलाई, 2007

पावर ट्रान्समिशन कारपोरेशन आफ उत्तराखण्ड लि0 ने विद्युत पुरेषण के लिए निम्न [illegible] तैयार [illegible] है जिसकी सूचना [illegible] द्वारा [illegible] निर्धारित एवं टेलीग्राफ अथोरिटी को इलेक्ट्रिसिटी एक्ट 2003 की धारा सं0 68 [illegible] 69 के अनुपालन में दी जाती है। यदि कोई [illegible] चाहे तो पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0 के [illegible] इस सूचना के [illegible] में प्रकाशित होने के एक माह के अन्दर प्रतिवेदन कर सकता है।

कार्यों का विवरण

1. योजना का नाम : 400 केवी0 डी.सी. लोहारीनागपाला – कोटेश्वर लाईन
2. क्षेत्र : उत्तराखण्ड राज्य।
3. विशिष्ट बिन्दु : इस योजना के विशिष्ट बिन्दु निम्न है:–

(अ) पारेषण लाईन 400 के0वी0 डी0सी0 लोहारीनागपाला - कोटेश्वर : लम्बाई (लगभग) 90 कि.मी.

(ब) स्थान : उक्त पारेषण लाईन उत्तराखण्ड राज्य के निम्न जनपद / क्षेत्र से होकर जायेगी।

क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम	क्र0 सं0	गाँवों के नाम
1	[illegible]	14	[illegible]	27	बनाली	40	[illegible]
2	[illegible]	15	[illegible]	28	[illegible]	41	डोबेरा
3	[illegible]	16	[illegible]	29	[illegible]	42	[illegible]
4	[illegible]	17	[illegible]	30	[illegible]	43	डुन्डोली
5	[illegible]	18	कोडर	31	[illegible]	44	[illegible]
6	[illegible]	19	[illegible]	32	[illegible]	45	[illegible]
7	[illegible]	20	[illegible]	33	[illegible]	46	[illegible]
8	[illegible]	21	[illegible]	34	[illegible]	47	बन्दरी
9	[illegible]	22	[illegible]	35	[illegible]	48	[illegible]
10	[illegible]	23	बसोरी	36	[illegible]	49	कोटेश्वर
11	[illegible]	24	[illegible]	37	[illegible]		
12	[illegible]	25	[illegible]	38	[illegible]		
13	[illegible]	26	[illegible]	39	[illegible]		

(स) जनपद : उत्तरकाशी एवं टिहरी

4. औचित्य एवं लाभ : उत्तराखण्ड राज्य में स्थापित निर्माणाधीन 400 के0वी0 डी.सी. लोहारीनागपाला – कोटेश्वर लाईन को ग्रिड से जोडने के लिए।
5. लाभान्वित क्षेत्र : उत्तराखण्ड राज्य
6. योजना का पूर्वानुमानित व्यय : 180.00 करोड़
7. योजना पूर्ण होने की सम्भावित अवधि : 2010–2011

प्रबन्ध निदेशक,
पिटकुल

No. 433/MD/PTCUL/Advertisement
Dated: 24.07.07

(राष्ट्र हित में ऊर्जा बचायें)

TIMES OF INDIA — 26th JULY 2007

Annexure 4.2 (a)

Public Information

General public is hereby informed that constructions of Extra High Voltage lines are proposed with the financial assistance of Asian Development Bank. Power generated in Hydro Electric Power Houses will be evacuated by these lines, which are under construction/proposal nearby.

Following points are for your awareness:-

1. Sate of Uttarakhand will progress by leaps and bounce due to more power generated, as the state will get free 12% of the generated electric power as well as the transmission charges by transmitting the electric power. Thus the state will get more revenue and more electric power. You all will get uninterrupted electric power supply due to this more power generated. The extra revenue generated will be used in various development activities of state, which will increase your living standards.

2. Construction of these lines will generate local employment, as large number of unskilled labors (men/women) will be required at the time of construction activities. Completion period of these projects will be around 2-3 years. Local employment which you get during this period will increase your living standards.

PTCUL Department needs your co-operation for successful completion of these projects. Let us together contribute for the prosperity of the state.

Thank You

By-

Dy. General Manager
(ADB Project works)
Urja Bhavan Compound
Kanwali Road, Dehradun
Ph. No. 0135-2761587

Power Transmission Corporation of Uttarakhand Ltd.
(A Government of Uttarakhand Undertaking)

Annexure-4.2(b)

सार्वजनिक सूचना

सर्वसाधारण को सूचित किया जाता है कि एशियन डवलपमैंट बैंक की वित्तीय सहायता से उच्च शक्ति की विद्युत लाईनों का निर्माण किया जाना प्रस्तावित है। इन लाईनों के निर्माण से निर्माणधीन/प्रस्तावित विद्युत ग्रहों के उत्पादन की निकासी की जायेगी। आस–पास बनने वाले विद्युत गृहों के उत्पादन की निकासी की जाएगी।

आप सभी को निम्न बिन्दुओं से अवगत कराना है :–

1. विद्युत उत्पादन अधिक होने से उत्तराखण्ड राज्य का अत्याधिक विकास होगा क्योंकि विद्युत उत्पादन का 12 प्रतिशत हिस्सा राज्य को मुफ्त प्राप्त होगा तथा विद्युत के पारेषण से पारेषण शुल्क प्राप्त होगा। इस प्रकार उत्तराखण्ड राज्य को राजस्व एवं विद्युत दोनों प्राप्त होगें। अधिक विद्युत प्राप्त होने पर आप सभी को निरन्तर विद्युत मिलेगी। राज्य का राजस्व आप सभी के लिए विभिन्न विकास योजनाओं में उपयोगी होगा तथा सभी का जीवन स्तर बढ़ेगा।

2. विद्युत लाईनों के निर्माण के दौरान स्थानीय निवासियों को रोजगार प्राप्त होगा क्योंकि अकुशल श्रमिक (पुरूष एवं महिला) की निर्माण कार्य के दौरान अत्यधिक आवश्यकता होगी। यह परियोजना लगभग दो से तीन साल में पूरी होगी। इस अवधि में रोजगार प्राप्त होने से आप सभी का जीवन स्तर बढ़ेगा।

उपरोक्त परियोजना के सफल निर्माण हेतु विभाग (पिटकुल) को आप सभी का सहयोग चाहिए। आईये आप और हम मिलकर राज्य की खुशहाली में अपना योगदान दें।

धन्यवाद

द्वाराः

उपमहाप्रबन्धक
ए0डी0बी0 परियोजना कार्य
ऊर्जा भवन परिसर
कांवली रोड, देहरादून–248001
फोन नं0–0135–2761587

पावर ट्रांसमिशन कारपोरेशन आफ उत्तराखण्ड लि0
(उत्तराखण्ड सरकार का उपक्रम)

Annexure 4.3 (a)

Public Consultation and Awareness Program

(ADB Financed Project, PFR-IV)

Name of Project: Construction of 400 KV Double Circuit Loharinagpala – Koteshwar Line

Following General Knowledge was shared /imparted during the Public Consultation and Awareness Program.

(1) Are you aware of the project?

(2) How this will benefit you personally society and state as a whole?

(3) What are the environmental issues related to the project?

(4) What are the disadvantages and how these can be mitigated?

(5) Considering all the positive & negative factors, should the project be implemented or not?

Dy. General Manager
(ADB Project works)
Urja Bhavan Compound
Kanwali Road, Dehradun
Ph. No. 0135-2761587

Annexure-4.3(b)

जनजागरूकता एवं विचार विमर्श कार्यक्रम

(ए0डी0बी0 पोषित परियोजना–पी0एफ0आर0–IV)

परियोजना का नाम – जल विद्युत गृह लोहारी . नागपाला से कोटेश्वर तक 400 के0वी0 लाईन का निर्माण कार्य

जनजागरूकता एवं विचार विमर्श कार्यक्रम के अर्न्तगत निम्नलिखित सामान्य ज्ञान का आदान–प्रदान किया गया।

1. क्या आप परियोजना से परिचित हैं ?
2. यह किस प्रकार आपको व्यक्तिगत रूप से, समाज एवं राज्य को लाभान्वित करेगा ?
3. इस परियोजना से सम्बन्धित पर्यावरण के मुद्दे क्या हैं ?
4. परियोजना के निर्माण से क्या नुकसान हैं एवं उनके प्रभाव को किस प्रकार कम किया जा सकता है ?
5. सभी सकारात्मक एवं नकारात्मक पहलुओं/तथ्यों को ध्यान में रखते हुये क्या परियोजना का निर्माण करना चाहिये या नहीं ?

उपमहाप्रबन्धक
ए0डी0बी0 परियोजना कार्य
ऊर्जा भवन परिसर
कांवली रोड, देहरादून–248001
फोन नं0–0135–2761587

Annexure 4.4

01

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Barshu (400 के0वी0 लोहारी नाग पाला - कोटेश्वर लाईन) दिनांक : 18 - 8 - 2008 समय : 08.25

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	श्री रघुवीर सिंह	32	M	खेती	सहमत	[signature]
2	,, धजपाल रावत	26	,,	आर्मी	"	[signature]
3	,, जगविंदर रावत	24	,,	आर्मी	"	[signature]
4	,, रघवेन्द्र सिंह	35	,,	खेती	"	[signature]
5	,, सरदार सिंह	53	,,	,,	"	सरदार सिंह
6	,, बचेन्द्र सिंह	29	,,	खेती	"	[signature]
7	श्रीमती रवीन्द्री रावत	26	F	,,	"	[signature]
8	श्री मानवेंद्र सिंह	25	M	खेती	"	[signature]
9	श्री हरिओम	41	M	खेती	"	[signature]
10	,, राजपाल	30	M	खेती	"	[signature]
11	श्रीमती गायत्री देवी	28	F	,,	"	गायत्री

हस्ताक्षर जनप्रतिनिधि हस्ताक्षर अवर अभियन्ता हस्ताक्षर अधिशासी अभियन्ता

एडीबी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Uttarakashi (Pala-Maneri) दिनांक : 18-8-2008 समय : 10.15

(400 के0वी0 लोहारी नाग पाला-टिहरी (भूमिगत))

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	श्री Pushkar Singh Rawat	33	पु०	कृषि	सदस्य	
2	श्री Pushkar Singh Rawat	65	,,	कृषि	,,	
3	,, Gajendra Singh Chauhan	17	,,	विद्यार्थी	,,	
4	,, Bhanwar Singh	15	,,	विद्यार्थी	,,	
5	,, Jeet Singh Rawat	26	,,	कृषि/नौकरी	,,	
6	Shrimati Pushpa Devi	25	श्रीमती	कृषि	,,	
7	,, Sangeeta Devi	26	,,	,,	,,	
8	Km Anupama	20	,,	विद्यार्थी	,,	
9	Shrimati Meena	31	,,	कृषि	,,	
10	श्री Virendra Singh	55	पु०	नौकरी	,,	
11	Km Sangeeta	13	कुमारी	विद्यार्थी	,,	

हस्ताक्षर
जनप्रतिनिधि

हस्ताक्षर
अवर अभियन्ता

हस्ताक्षर
अधिशासी अभियन्ता

3

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Maneri (400 के0वी0 लोहारी नागपाला - कोटेश्वर लाईन) दिनांक : 18-8-2008 समय : 12.15

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	श्री जगजीत सिंह पंवार	24	पुरुष	होटल व्यवसाय	सहमत	
2	" भगवान सिंह	35	"	" "	"	
3	" रमेश सिंह बिष्ट	29	"	" "	"	
4	" राजकुमार खिनाल	29	"	ड्राइवर	"	
5	" उमेश रावत	67	"	Retd (Army)	"	
6	" बुद्धिलाल	40	"	टेलर	"	
7	" मोहन लाल	35	"	खेती	"	
8	" मोहन सिंह रावत	31	"	I.T.I. वेल्डर	"	
9	" रणवीर सिंह रावत	45	"	दुकानदार	"	
10	" खुशहाल सिंह	30	"	खेती	"	
11	" सुनील	20	"	दुकान	"	
12	" महेन्द्र सिंह पंवार	35	"	Army		

हस्ताक्षर जनप्रतिनिधि

हस्ताक्षर अवर अभियन्ता

हस्ताक्षर अधिशासी अभियन्ता

4

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Chaurangi khal
400 के0वी0 [illegible] लाइन

दिनांक : 18-8-2008

समय : 14.05

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	प्रेम सिंह चौहान सुरजन सिंह	56	M	कृषि	सहमत	[signature]
2	[illegible] सिंह चौहान [illegible] [illegible] श्री [illegible]	24 26	M M	कृषि कृषि	"	[signature]
3					"	[signature]
4	[illegible] सिंह [illegible]	46	M	कृषि	"	[signature]
5	[illegible]	36	M	कृषि	"	[signature]
6	[illegible]	48	M	[illegible]	"	[signature]
7	श्री [illegible]	51	M	[illegible]	"	[signature]
8	[illegible]	52	"	[illegible]	"	[signature]
9	[illegible]	57	"	खेती	"	[signature]
10	श्री [illegible]	65	"	कृषि	"	[signature]
11	श्री [illegible] सिंह चौहान	30	"	"	"	[signature]

हस्ताक्षर
जनप्रतिनिधि

हस्ताक्षर
अवर अभियन्ता

हस्ताक्षर
अधिशासी अभियन्ता

06

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Pipaldali (400 के0 वी0 लोहारी नागपाला - कोटेश्वर लाइन)   दिनांक : 19-8-2008   समय : 08.15

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	Dinesh Chandra S/o Satyeshwar Prd.	30	M.	Business	सहमत	[illegible]
2	जवाहर सिंह पंवार	27	m	कुमार सर्वेयर	"	[illegible]
3	अखिल मन्द्री	31	m	नौकरी	"	[illegible]
4	जगत सिंह नेगी	38	m	खेती	"	[illegible]
5	मूर्ति सिंह	60	"	दुकानदार	"	मूर्ति सिंह
6	Akhil Nautiyal	25	M	Shop keeper	"	Akhil
7	पदम सिंह	32	m	Govt	"	पदम सिंह
8	[illegible]	55	m	नौकरी	"	[illegible]
9	मुरलीलाल सेमवाल	46	"	दुकान [illegible]	"	[illegible]
10	Man Mohan S/o Ram Chandra	40	M.	[illegible]	"	[illegible]
11	Ishwar Singh Bisht [illegible]	30	M	नौकरी	"	[illegible]

हस्ताक्षर जनप्रतिनिधि   हस्ताक्षर अवर अभियन्ता   हस्ताक्षर अधिशासी अभियन्ता

05

ए0डी0बी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Kandakhal (400 के0वी0 श्रीहरि नागराजा - ... लाइन) दिनांक : 18-8-2008 समय : 17.15

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	राजवीर पंवार S/- कुंवर सिंह पंवार	35	M	[illegible]		20.08.08
2	सुमन नौटियाल ... नौटियाल	34	M.	गृह सेवा		
3	धीरज सिंह पंवार S/ धर्म सिंह पंवार	37	M	हलवाई		
4	रामसिंह S/ ... सिंह	42	"	नौकरी		
5	क्षेत्रीत सिंह रावत सुरेन्द्र सिंह	30	"	नौकरी		
6	साहब सिंह चौहान S/o विजय सिंह चौहान	58	M	व्यवसाय		
7	बाबूलाल उनियाल S/o श्री नारायण दत्त उनियाल	58	M	स० सेवा (अध्यापक)		
8	जीत सिंह पंवार S/ श्री ... सिंह पंवार	53	M	— do —		
9	संजय डोवाल	32	M	N.G.O.		
10	आशीष उनियाल	24	M	खेती		
11	श्री गोविंद सिंह रावत	68	M	खेती		

हस्ताक्षर जनप्रतिनिधि — हस्ताक्षर अवर अभियन्ता — हस्ताक्षर अधिशासी अभियन्ता

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Jhakhanidhar (400 के0वी0 श्रीनगर-काशीपुर लाइन)　　दिनांक : 19-8-2008　　समय : 11.45

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	चन्द्र सिंह पुत्र [illegible]	40	पुरुष	कृषि	सहमत	चन्द्र सिंह
2	जईहारी लाल	42	"	"	"	जईहारी लाल
3	मोहन लाल	40	"	"	"	मोहन लाल
4	Umed Singh	48	"	"	"	[illegible]
5	रमेश चन्द्र	30	"	श्रम	"	[illegible]
6	मुकेश प्रसाद	26	"	कृषि	"	[illegible]
7	कपिल अमोला	20	"	Student	"	कपिल
8	अजय बहुरी	20	"	Student	"	Ajay
9	अरविन्द सजवाण	18	"	Student	"	Arvind S.
10	कपिल पंवार	18	"	Student	"	Kapil Sing
11	[illegible]	38	"	[illegible]	"	[illegible]

हस्ताक्षर जनप्रतिनिधि　　हस्ताक्षर अवर अभियन्ता　　हस्ताक्षर अधिशासी अभियन्ता

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : Koteshwar (400 के0वी0 टिहरी नागपाला - कोटेश्वर) लाइन दिनांक : 21-8-2008 समय : 14.15

क्रम सं0	नाम एवं पिता / पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	[illegible]	42	M	[illegible]	सहमत	[signature]
2	Ravindra Singh	18	M	Student	"	Ravindra
3	मे सिंह	58	"	दर्जी	"	मेसिंह
4	प्रताप सिंह	40	"	कृषि	सहमत	[signature]
5	Abhay Som	29	"	[illegible]	"	[signature]
6	Dev Singh	18	M	Student	"	[signature]
7	हीरा लाल	39	M	ग्राम प्रहरी	"	[signature]
8	चण्डी प्रसाद डंगवाल	50	M	चालक	"	चण्डीप्रसाद डंगवाल
9	Amiya Pd. Bhatt	34	M	Tech.	"	Amiya
10	Surat Singh	50	M	खेती	"	Surat Singh
11	U.P. [illegible]	28	M	service	सहमत	[signature]

हस्ताक्षर जनप्रतिनिधि हस्ताक्षर अवर अभियन्ता हस्ताक्षर अधिशासी अभियन्ता

ए०डी०बी० वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : DHAK दिनांक : 14-10-2008 समय : 11.25 hrs

परियोजना का नाम : लता तपोवन विद्युत गृह से जोशीमठ से 400 के०वी० उपसंस्थान पीपलकोटी तक 220 के०वी० डबल सर्किट लाईन का निर्माण कार्य

क्रम सं०	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	Sri Ramesh Chandra Semval S/o Sri Ram Chandra Semwal	48	Male	Post-master	Agree	[signature]
2	" Bhagwati Prasad Budhiprasad Semwal.	51	"	Agriculture.	"	भगवती प्रसाद
3	" Mohan Singh Bist Ram Singh Bist	50	"	"	"	मोहन सिंह
4	Ms Nanda Devi	43	female	Housewife	"	[signature]
5	" Manorama Devi W/o Sri Mohan Singh.	47	"	"	"	[signature]
6	Ms. Aneeta Devi W/o Sri Bhagwati Prasad	25	"	Member of gram panchayat.	"	मनोरमा देवी
7	Sri Sukhdev Prasad Thapliyal S/o Sri Narottam Prasad	45	Male	Agriculture	"	[signature]
8	Sri Devendra S/o Sri Ramesh	22	"	Contractor.	"	[signature]
9	Sri Bhagat Singh Bist S/o Sri Dharam Singh Bist	35	"	Agriculture	"	[signature]
10	Sri Mahaveer Thapliyal S/o Sri Rameshwar Prasad Thapliyal	28	"	"	"	महावीर
11	Sri Mahendra Lal " Banke Lal	23	"	"	"	[signature]

हस्ताक्षर
जनप्रतिनिधि

हस्ताक्षर
अवर अभियन्ता

Executive Engineer (Project)
Power Trans. Corpn. of Uttarakhand Ltd.
हस्ताक्षर
DEHRADUN

ए0डी0वी0 वित्त पोषित परियोजना हेतु जन जागरूकता अभियान

स्थान : BADAGAON दिनांक : 14-10-2008 समय : 13 · 15 Hrs

परियोजना का नाम : उत्तर नगीना विद्युत गृह से जोशीमठ से 400 के0वी0 उपसंस्थान पीपलकोटी तक 220 के0वी0 डबल सर्किट लाईन का निर्माण कार्य

क्रम सं0	नाम एवं पिता/पति का नाम	आयु	लिंग	व्यवसाय	टिप्पणी	हस्ताक्षर
1	Sri Pushkar Singh S/o Sri Balvant Singh	34	Male	Labour	Agree	
2	" Vikram Lal Mahipa Lal	30	"	"	"	
3	" Narayan Singh Bachan Singh	48	"	Farmer.	"	
4	" Shiv Singh Aman Singh	65	"	"	"	
5	" Manoj Singh Mangal Singh	26	"	Shopkeeper	"	
6	" Jawahar Singh Shital Singh	60	"	Farmer	"	
7	" Raghunath Singh Bacha Singh	60	"	"	"	
8	" Suraj Singh Bhandari Govind Singh Bhandari	25	"	Shopkeper	"	
9	" Ajit Pal Vijay Singh	32	"	"	"	
10	" Shyam Singh Ajab Singh	42	"	Farmer	"	
11	" Rajesh Vedwal Trilochan Vedwal	28	"	Student	"	

हस्ताक्षर
जनप्रतिनिधि

हस्ताक्षर
अवर अभियन्ता

Executive Engineer (P)
Power Trans. Corporation of Uttarakhand Ltd.
Urja Bhawan, Kanwali Road
DEHRADUN 248001

Annexure 4.5

JHAKHANIDHAR

JHAKHANIDHAR

JHAKHANIDAR

JHAKHANIDHAR

KANDA KHAL

KANDA KHAL

CHORANGIKHAL

CHORANGIKHAL

BARSU

BARSU

BARSU

LOHARINAGPALA

PALAMARODI

PALAMARODI

Annexure 4.6

ABSTRACT OF TREE TO BE CUT

Range	Land Type	0-10 cm Girth size	10-20 cm Girth size	20-30 cm Girth size	30-40 cm Girth size	40-50 cm Girth size	50-60 cm Girth size	60-70 cm Girth size	70-80 cm Girth size	80-90 cm Girth size	More Than 90 cm Girth size	Total Trees
Tehari	**Civil**	147	57	40	20	8						272
	Private	225	153	118	51	12	3				2	564
Pokhal	**Civil**	62	26	18	1	2	0	0	0	0	0	109
	Private	37	25	15	2	0	0	0	0	0	0	79
	R. Forest	10	7	6								23
Lambgaoo	**Civil**	40	60	80	23	27	0	0	0	0	0	230
	Private	50	106	67	66	12						301
	R. Forest	280	371	237	136	76	63	30	12	0	0	1205
Mokhem	**Civil**	268	249	181	98	60	33	11	13	9	2	924
	Private	42	40	31	5	5	5	5	0	0	1	134
	R. Forest	325	341	579	591	476	363	225	176	100	4	3180
Dunda	**R. Forest**			663	538	377	257	174	36	14	2	2061
Badahat	**Civil**		11	26	32	28	29	32	27	10	19	214
	Private		2	5	7	8	3	3				28
	R. Forest	5	88	348	343	359	285	111	51	5		1595
Taknore	**Civil**											0
	Private	1	16	6		1						24
	R. Forest	0	11	20	22	28	38	35	14	7	3	178
Total	**Civil**	517	403	345	174	125	62	43	40	19	21	1749
Total	**Private**	355	342	242	131	38	11	8	0	0	3	1130
Total	**R. Forest**	620	818	1853	1630	1316	1006	575	289	126	9	8242
Total		1492	1563	2440	1935	1479	1079	626	329	145	33	11121
Total No. of Trees			**11121**									